Ordinary Meeting of Council Agenda

to be held on Tuesday 30 April 2019 at 7.00pm Richmond Town Hall

Arrangements to ensure our meetings are accessible to the public

Council meetings are held at either the Richmond Town Hall or the Fitzroy Town Hall. The following arrangements are in place to ensure they are accessible to the public:

- Entrance ramps and lifts (off Moor Street at Fitzroy, entry foyer at Richmond).
- Interpreting assistance is available by arrangement *(tel. 9205 5110).*
- Auslan interpreting is available by arrangement *(tel. 9205 5110).*
- A hearing loop is available at Richmond only and the receiver accessory is available by arrangement *(tel. 9205 5110).*
- Proposed resolutions are displayed on large screen.
- An electronic sound system amplifies Councillors' debate.
- Disability accessible toilet facilities are available at each venue.

Recording and Publication of Meetings

An audio recording is made of all public Council Meetings and then published on Council's website. By participating in proceedings (including during Public Question Time or in making a submission regarding an item before Council), you agree to this publication. You should be aware that any private information volunteered by you during your participation in a meeting is subject to recording and publication.

www.yarracity.vic.gov.au

Order of business

1. **Statement of recognition of Wurundjeri Land**
2. **Attendance, apologies and requests for leave of absence**
3. **Declarations of conflict of interest (Councillors and staff)**
4. **Confidential business reports**
5. **Confirmation of minutes**
6. **Petitions and joint letters**
7. **Public question time**
8. **General business**
9. **Delegates' reports**
10. **Questions without notice**
11. **Council business reports**
12. **Notices of motion**
13. **Urgent business**

1. Statement of Recognition of Wurundjeri Land

"Welcome to the City of Yarra."

"Yarra City Council acknowledges the Wurundjeri as the Traditional Owners of this country, pays tribute to all Aboriginal and Torres Strait Islander people in Yarra and gives respect to the Elders past and present."

2. Attendance, apologies and requests for leave of absence

Anticipated attendees:

Councillors

- Cr Danae Bosler (Mayor)
- Cr Misha Coleman (Deputy Mayor)
- Cr Mi-Lin Chen Yi Mei
- Cr Jackie Fristacky
- Cr Stephen Jolly
- Cr Mike McEvoy
- Cr Daniel Nguyen
- Cr James Searle
- Cr Amanda Stone

Council officers

- Vijaya Vaidyanath (Chief Executive Officer)
- Ivan Gilbert (Group Manager Chief Executive's Office)
- Lucas Gosling (Director Community Wellbeing)
- Gracie Karabinis (Group Manager – People, Culture and Community)
- Chris Leivers (Director City Works and Assets)
- Diarmuid McAlary (Director Corporate, Business and Finance)
- Bruce Phillips (Director Planning and Place Making)
- Mel Nikou (Governance Officer)

3. Declarations of conflict of interest (Councillors and staff)

4. Confidential business reports

Item

4.1 Contractual matters

4.2 Matters prejudicial to Council and/or any person

4.3 Matters prejudicial to Council and/or any person

Confidential business reports

The following items were deemed by the Chief Executive Officer to be suitable for consideration in closed session in accordance with section 89 (2) of the *Local Government Act* 1989. In accordance with that Act, Council may resolve to consider these issues in open or closed session.

RECOMMENDATION

1. That the meeting be closed to members of the public, in accordance with section 89 (2) of the *Local Government Act* 1989, to allow consideration of:

    (a) Contractual matters

    (b) Matters prejudicial to Council and/or any person

2. That all information contained within the Confidential Business Reports section of this agenda and reproduced as Council Minutes be treated as being and remaining strictly confidential in accordance with the provisions of sections 77 and 89 of the *Local Government Act* 1989 until Council resolves otherwise.

5. Confirmation of minutes

RECOMMENDATION

That the minutes of the Ordinary Council Meeting held on Tuesday 16 April 2019 be confirmed.

6. Petitions and joint letters

7. Public question time

Yarra City Council welcomes questions from members of the community.

Public question time procedure

Ideally, questions should be submitted to Council in writing by midday on the day of the meeting via the form available on our website. Submitting your question in advance helps us to provide a more comprehensive answer. Questions that have been submitted in advance will be answered first.

Public question time is an opportunity to ask questions about issues for which you have not been able to gain a satisfactory response on a matter. As such, public question time is not:

- a time to make statements or engage in debate with Councillors;
- a forum to be used in relation to planning application matters which are required to be submitted and considered as part of the formal planning submission;
- a forum for initially raising operational matters, which should be directed to the administration in the first instance;

If you wish to raise matters in relation to an item on this meeting agenda, Council will consider submissions on these items in conjunction with and prior to debate on that agenda item.

When you are invited by the meeting chairperson to ask your question, please come forward and take a seat at the microphone and:

- state your name clearly for the record;
- direct your questions to the chairperson;
- ask a maximum of two questions;
- speak for a maximum of five minutes;
- refrain from repeating questions that have been asked previously by yourself or others; and
- remain silent following your question unless called upon by the chairperson to make further comment or to clarify any aspects.

8. General business

9. Delegates' reports

10. Questions without notice

11. Council business reports

Item		Page	Rec. Page	Report Presenter
11.1	626 Heidelberg Road, Alphington - Planning Application No. PLN17/0703.01 - Section 72 Amendment	8	80	Amy Hodgen – Coordinator Statutory Planning
11.2	Community Transport - Social Support Group Activity	282	286	Adrian Murphy – Manager Aged and Disability Services
11.3	Route 96 Accessible Tram Stop Proposals (Stops 16-22)	288	311	Simon Exon - Unit Manager Strategic Transport Planning
11.4	Yarra Planning Scheme Amendment C328 (Yarra DCP) - Panel report	470	475	Michael Ballock – Executive Planner Strategic Projects
11.5	Community Grants 2019/20 Initiation Report	678	684	Michael Van Vliet - Community Grants Team Leader
11.6	Children's Services Priority of Access Policy Review	724	728	Deanne Halpin - Coordinator Children's Services
11.7	Living Melbourne: Our Metropolitan Urban Forest	735	738	David Walmsley – Manager City Strategy
11.8	Councillor Attendance at ALGWA 2019 National Conference	1005	1006	Ivan Gilbert – Group Manager Chief Executive's Office

The public submission period is an opportunity to provide information to Council, not to ask questions or engage in debate.

Public submissions procedure

When you are invited by the meeting chairperson to make your submission, please come forward and take a seat at the microphone and:

- state your name clearly for the record;
- direct your submission to the chairperson;
- speak for a maximum of five minutes;
- confine your remarks to the matter under consideration;
- refrain from repeating information already provided by previous submitters; and
- remain silent following your submission unless called upon by the chairperson to make further comment.

12. Notices of motion

Nil

13. Urgent business

Nil

11.1 626 Heidelberg Road, Alphington - Planning Application No. PLN17/0703.01 - Section 72 Amendment

Executive Summary

Purpose

1. This report provides Council with an assessment of an application to amend Planning Permit PLN17/0703 at 626 Heidelberg Road, Alphington against the provisions of the Alphington Paper Mill Development Plan 2016 and the Yarra Planning Scheme.

Key Issues

2. The key issue for Council in considering the proposal relate to consistency with the Development Plan.

3. Other key planning considerations include:
   (a) Clause 15.01 – Urban Environment;
   (b) Clause 22.05 – Interface Uses Policy;
   (c) Clause 22.10 – Built Form and Design Policy;
   (d) Clause 43.04 – Schedule 11 to the Development Plan Overlay;
   (e) Clause 52.06 – Car Parking; and
   (f) Clause 58 – Apartment Guidelines.
4. Also relevant is Council's determination in October 2018 regarding the Community Facilities.

Financial Implications

5. None at this stage. However, there is a risk for a challenge of any decision Council makes at the Victorian Civil and Administrative Tribunal.

Submissions

6. The application is exempt from notification pursuant to the Development Plan Overlay. No submissions have been received in relation to the amendment.

Key Recommendations

7. Based on the following report, the proposal is considered to comply with the relevant planning policy and should therefore be supported.

CONTACT OFFICER: **Amy Hodgen**
TITLE: **Coordinator Statutory Planning**
TEL: **9205 5330**

11.1 626 Heidelberg Road, Alphington - Planning Application No. PLN17/0703.01 - Section 72 Amendment

Trim Record Number: D19/64112
Responsible Officer: Director Planning and Place Making

Proposal:	Section 72 Amendment to make various modifications to permit conditions and the original plans.
Existing use:	Vacant land (Former Amcor Paper Mill)
Applicant:	Alpha APM No 2 Pty Ltd
Zoning / Overlays:	Mixed Use Zone Development Plan Overlay – Schedule 11 Environmental Audit Overlay Heritage Overlay (HO70)
Date of Application:	7 December 2018
Application Number:	PLN17/0703.01

Background

8. At the Special Council meeting on 29 May 2018, Council resolved to issue a Planning Permit PLN17/0703 for:

   (a) *Use and Development of the land for a mixed use development containing dwellings, supermarkets, shops, food and drink premises, office (including medical centre), restricted recreation facility (gym), childcare centre, education centre (primary school) and place of assembly and a reduction in the car parking requirements and creating access to a Road Zone Category 1 Road generally in accordance with the Development Plan.*

9. The permit PLN17/0703, which is subject to the current amendment request, was subsequently issued on 5 June 2018 subject to a suite of permit conditions. This included various conditions that were either added or modified at the Special Council meeting. A copy of the resolution has been included as an attachment to this report. The permit conditions will be discussed as relevant in this report.

10. Plans addressing the permit conditions had not been provided prior to this current application.

Community Facilities

11. At its meeting on Tuesday, 2 October 2018, Council considered a possible revised layout to the community infrastructure within the Village Alphington Development and resolved the following (inter alia):

   (a) That Council, having noted Proposal 2 (being a *possible revised layout*) provide a preliminary comment that:

      (i) the indoor multi-purpose court is considered beneficial compared to the open court area; and

      (ii) the general configuration of the possible revised layout is broadly supportable subject to modifications, which will be further discussed later within this report; and

   (b) That Alpha Nominees be advised that:

      (i) the above resolution is based on the submission of schematic plans only, and the comments provided in this resolution are preliminary comments only to a formal

statutory planning process regarding the community facility components that would be vested in Yarra City Council, and

(ii) that a formal Council decision would be required based on the submission of necessary town planning plans, and other required documentation, that also show any other consequential changes to the plans determined by Council in June 2018.

(c) That Alpha Nominees be advised that any formal proposed changes to the community facilities (and other consequential changes) will require a complete town planning submission which can be processed in accordance with the statutory planning process and further, that the decision of that planning process will be determined by the full Council.

12. The revised potential layout for the Community Facilities presented at the Council meeting on 2 October 2018 has now been formalised as part of the current application. This will be discussed in greater detail later within this report.

Section 50 Amendment

13. On 10 April 2019, this application was amended (at the request of the applicant) via Section 50 of the *Planning and Environment Act* 1987 to retain a number of the conditions as per the wording of the original planning permit. As outlined in the proposal description, it is sought to amend various conditions to enable staging of the proposed development. The application initially sought to amend further conditions to allow staging, however following feedback from Council officers, this has been refined to the conditions now contained within the proposal description. The Section 50 Amendment also included a request to delete Condition 61 of the permit as it is repeat of Condition 60. This is also supported and reflected in the proposal description in this report.

Planning History

14. The subject site and surrounds has an extensive history. Of relevance, the Alphington Paper Mill Development Plan (Parts 1 & 2) was endorsed on 27 May 2016 in accordance with 3.0 of Schedule 11 to the Development Plan Overlay. This is the first Development Plan that has been prepared and endorsed for the site since the Development Plan Overlay Schedule 11 was introduced into the Yarra Planning Scheme on 18 July 2013.

15. Since the Alphington Paper Mill Development Plan was endorsed, a number of planning permits have been issued in accordance with the Development Plan. These were detailed within the original report. Planning permits and current applications for land immediately surrounding the subject site are discussed in this report within the surrounds description.

The Proposal

16. The current amendment application seeks to make various changes to the decision plans considered in the original application. This will also result in deletion and modification of a number of conditions within the planning permit. These will be discussed as relevant through the report.

17. The permit preamble will generally remain unchanged, except for the inclusion of ‘use of the land for serviced apartments’ and removal of reference to ‘use of land for a medical centre’ with these uses and being added and deleted respectively as part of the current amendment application.

18. In addition to changes to permit conditions as a result of the amended plans, the permit applicant is also seeking the following changes to the current conditions:

(a) Amendments to the following conditions to allow staging of the development to be considered; Conditions 5, 8, 19, 23, 24, 58-59, 63-64, 68-69;

(b) Deletion condition 61 as a repeat of condition 60;

(c) Remove the Village Square from the landscape concept plan set, with details to be resolved via a separate design process; and

(d) Modify the operating hours for the retail/shop uses within Condition 43 to allow the larger supermarket to operate between 6am – 12 midnight. Condition 43 current allows operation Monday to Sunday 6.00am to 10.00pm.

19. A comparison between the proposed uses (and area/size) from the original application and the current amendment is provided in the table below:

Land Use	**Original**	**Proposed**
Supermarket x 2	6,065 sqm	5,797 sqm
Specialty Retail	4,134 sqm	4,062 sqm
Food and Drink	2,286 sqm	337 sqm
Office	3,412 sqm	9,196 sqm
Childcare Centre	120 children	unchanged
Gymnasium	1,928 sqm	892sqm
Medical Centre	15 practitioners (2,366 sqm)	N/A
Primary School (Years 5 & 6)	300 students & 12 staff	unchanged
Place of Assembly	1700 sqm	957 sqm
Community Centre	300sqm	459 sqm
Sports Pavilion	300 sqm	N/A
Netball Court	Approx. 950sqm	N/A
Multi-purpose Court	N/A	865 sqm
Dwellings	281 dwellings (34 x 1 bed, 163 x 2 bed, 84 x 3 bed)	313 (43 x 1 bed, 257 x 2 bed, 13 x 3 bed
Serviced Apartments	N/A	40

20. A summary of the original and proposed car parking and bicycle allocation is provided in the table below:

	Original	**Proposed**
Car Parking		
Visitor	453	461
Resident	387	504
Staff	61	53
TOTAL	**901**	**1018**
Bicycle Parking		
Visitor	38	216
Resident	274	313
Staff	110	56
Students	62	38
Serviced Apt	N/A	4
TOTAL	**484**	**627**

21. As illustrated above, both the car parking and bicycle facilities have increased since the previous application, however the distribution of spaces has changed.

22. The road to the east (Latrobe Avenue) has been relabelled as Mills Boulevard and the southern access lane has been named as Nelmoore Lane.

Commercial and Community facilities

23. A summary of changes to the commercial component of the proposed development at each level is provided below:

Basement 1

(a) The basement level has been reduced in size providing 112 car spaces (227 spaces previously), of which 48 spaces are allocated as 'staff' and 6 spaces as disabled parking;

(b) 118 bicycle spaces and end of trip facilities have been added to this level (none previously);

(c) A 100kL rainwater tank is provided (previously 60kL);

Lower ground floor

(d) Car parking area increased, with subsequent reduction to the retail space within the south-east corner;

(e) 402 car spaces (287 car spaces previously) and 356 bicycle spaces (110 previously);

(f) Shop tenancies reduced from 1,744sqm to 480sqm and food and drink premises (245sqm) deleted;

(g) Car park entrance introduced to Nelmoore Lane (southern access lane) closer to Mills Boulevard (formally Latrobe Avenue);

Ground floor

(h) The ground floor layout is similar to the original design however the food and drink premises have been replaced with 'shops';

(i) A serviced apartment lobby has been added facing Heidelberg Road;

(j) A commercial tenancy has been added to the south-west corner in lieu of the car park entrance to the lower levels (which is now at the Lower ground floor);

(k) Single finished floor level (FFL) of RL32.50 (previously RL31.86 and RL32.50), except for the shop at the north-east corner, which has a FFL of RL31.61 (Previously RL31.86) connecting with the footpath level at this point;

(l) School bicycle storage cage accommodating 38 bicycles located beneath the stairs leading to the first floor concourse;

(m) 88 bicycle spaces depicted along the adjacent public realm (previously 38 bicycle spaces);

Level 1

(n) Car parking area has increased with 275 car spaces (previously 201 car spaces);

(o) Two dwellings added facing the Outer Circle Mews;

(p) School relocated from Heidelberg Road to the centre of the site, west of the Village Square;

(q) Community centre (place of assembly) shifted to Heidelberg Road;

(r) Second community centre/ pavilion enlarged and shifted further to the east, with direct connection to the place of assembly;

(s) Enclosed multi-purpose court introduced with a double height roof, immediately west of the community pavilion;

(t) First floor terrace redesigned with a more linear form extending the length of the Village Square;

(u) Food and drink premises to the north-east corner replaced with an office tenancy;

(v) School bicycle storage (64 bicycles) removed;

(w) 157 bicycle spaces removed, with bicycle spaces no longer proposed on this level;

(x) Gymnasium reduced in area and courtyard deleted;

(y) Residential storage (132 cages) units deleted;

Level 2

(z) Car parking area has increased with 229 car spaces (Previously 196 spaces);

(aa) Two dwellings added facing Outer Circle Mews;

(bb) Sports pavilion and netball court deleted;

(cc) Upper level of the school relocated to centrally within the site (above the relocated lower level) immediately east of the multiple purpose court;

(dd) Eight serviced apartments added along the Heidelberg Road between the residential apartments and the office tenancies, all fronting Heidelberg Road with amenities and back of house services on the southern side of an internal corridor;

(ee) Office tenancy to the south-east enlarged around the existing void area;

Level 3

(ff) Childcare centre removed (relocated to Level 5) and replaced with greater office area;

(gg) Level 2 of the school relocated to the centre of the site, directly above the level below;

(hh) Level 2 of the serviced apartments facing Heidelberg Road, directly above the level below. 15 rooms provided along a double loaded corridor, 8 rooms fronting Heidelberg Road and 7 rooms facing south;

(ii) Office tenancy to the south-east enlarged around the existing void area;

Level 4

(jj) Level 3 of the school relocated to the centre of the site, directly above the level below;

(kk) Void spaces to the office tenancies on the levels below are shown;

(ll) Level 3 of the serviced apartments facing Heidelberg Road, directly above the level below with an identical floor layout;

Level 5

(mm) This is a new level to the eastern commercial component of the site;

(nn) Level 4 of the office tenancy in the north-east corner;

(oo) Level 4 of the serviced apartments facing Heidelberg Road, directly above the level below with an identical floor layout;

(pp) Void space to the school Level 3 below;

(qq) Childcare centre located above the office in the south-east corner with an outdoor area of 759sqm extending along Mills Boulevard and wrapping around the southern side of the building facing Nelmoore Lane;

Level 6

(rr) This is a new level to the eastern commercial component of the site;

(ss) Level 5 of the office tenancy in the north-east corner;

(tt) Level 5 of the serviced apartments facing Heidelberg Road, directly above the level below with an identical floor layout;

(uu) Level 4 of the school with an outdoor space immediately to the west (above the multipurpose court on Level 1), with an area of 811sqm;

Level 7

(vv) This is a new level to the eastern commercial component of the site;

(ww) Level 5 of the school, directly above the level below, with a void space above the school outdoor area; and

(xx) Level 6 of the serviced apartments facing Heidelberg Road, directly above the level below with an identical floor layout.

Residential Apartments

24. Details of the changes that have occurred to the residential component of the development is proposed below:

    (a) The dwellings within the podium facing Heidelberg Road are largely unchanged with the exception for relocating the 2-bed dwelling from the western to the eastern end of the corridor;

    (b) Internal corridor widths to all residential towers has been increased from a minimum of 1.54m to 1.8m;

    (c) Separation between the residential apartments (Sculptural Building) from the commercial component to the east has increased from 3.14m to 11m, with a subsequent reduction between the east and west towers (Sculptural Building and the Living Matrix) from 20.65m to 14.69m;

    (d) To levels above the podium, the separation between the western tower (Living Matrix) and the northern tower (Urban Anchor) has reduced from a minimum of 12.4m to 12m and the separation between the eastern tower (Sculptural Building) and the northern tower (Urban Anchor) has reduced from 17.05m to 15.33m;

    (e) The setback of the Living Matrix from the southern boundary has reduced from between 8.4m and 10.75m to between 3.3m and 7.4m;

    (f) The southern setback of the Sculptural Building has increased from between 4m and 9.6m to between 5.19m and 11.64m;

    (g) The residential lobby/common area has been relocated from the Sculptural Building to the Living Matrix at the podium level;

    (h) A greater provision for balconies has been provided to the Living Matrix; and

    (i) A residential roof terrace has been added above the serviced apartments directly accessible from the residential apartment building facing Heidelberg Road (Urban Anchor).

Materials and Design

25. The materials and the design detail has been modified as follows:

Heidelberg Road

26. Along Heidelberg Road the revised elevation introduces:

    (a) Glass blocks and display cabinets have been introduced within the ground level along the supermarket interface;

    (b) The metal screen (associated with the school) along Heidelberg Road has been deleted and replaced with a glass brick screen (associated with the serviced apartments;

    (c) Brick snap cladding in lieu of the glazed louvers to the podium of the western residential component (Precinct 2A); and

    (d) The upper levels associated with the Urban Anchor residential building have replaced the brick snap cladding with an operable metal screen.

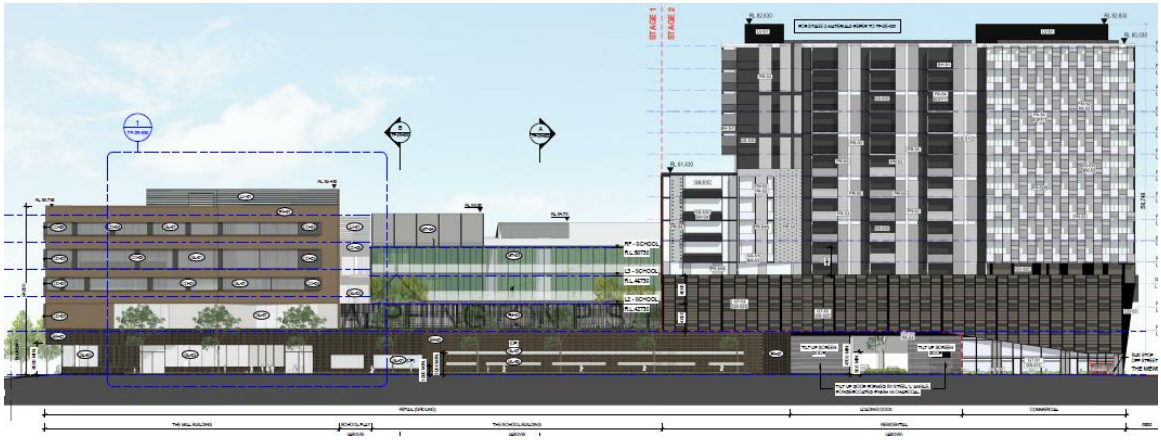


Figure 1: Original Heidelberg Road (north) elevation

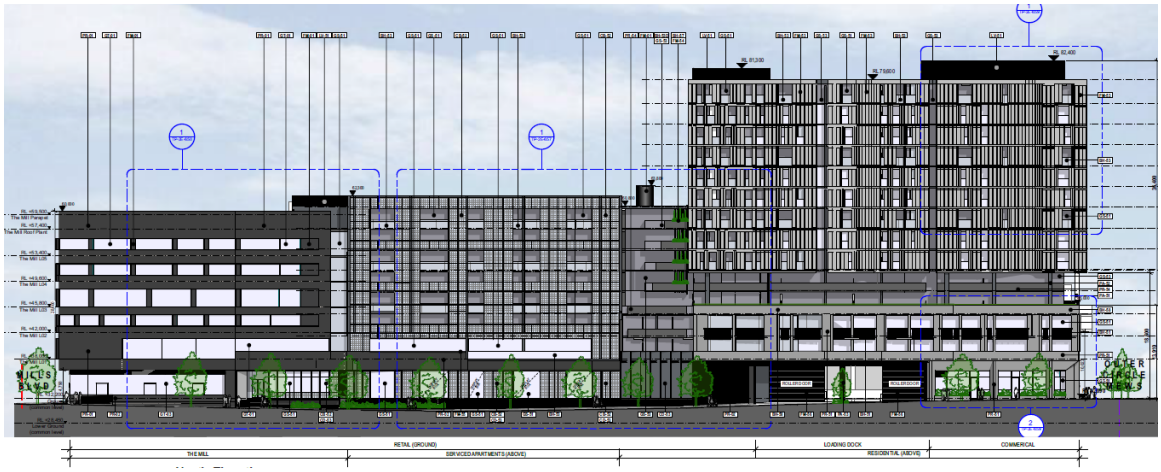


Figure 2: Heidelberg Road (north) elevation

Outer Circle Mews

27. Along the Outer Circle Mews, the metal batten podium screen has been replaced with brick snap cladding, matching the revised Heidelberg Road podium.

28. The timber-look cladding and glazing to southern portion of the Living Matrix Building has been replaced with the extension of the perforated metal screen for the northern section and concrete form liner walls with projecting glass balustrade balconies for the remainder of this elevation.

29. The external feature stair, which was proposed to be constructed with a metal balustrade with strip lighting has been replaced with a steel plate balustrade with strip lighting no longer proposed.

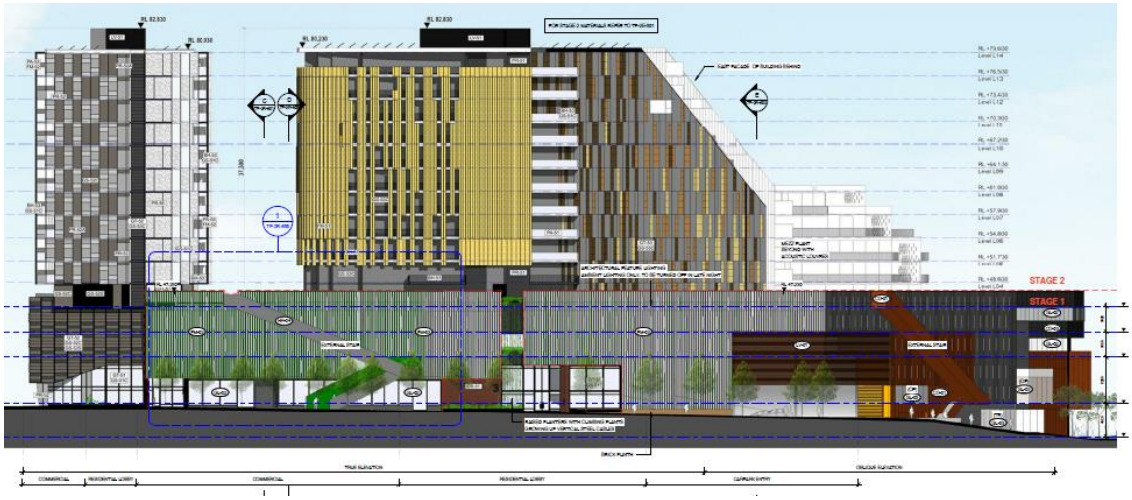


Figure 3: Original Outer Circle Mews (West) elevation

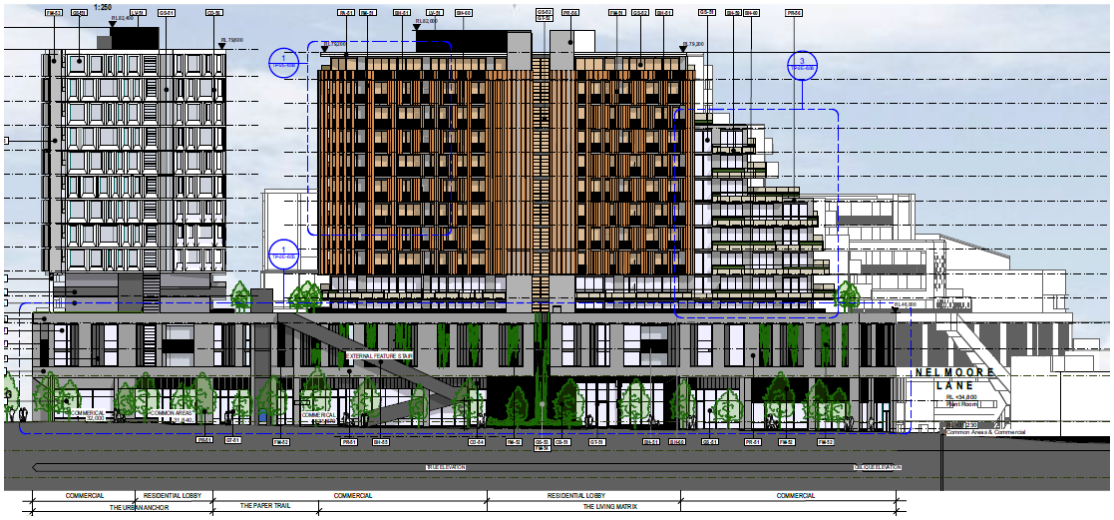


Figure 4: Proposed Outer Circle Mews (West) elevation

Southern Access Lane (Nelmoore Lane)

30. The metal batten cladding to the western portion of the podium facing Nelmoore is proposed to be replaced with concrete form liner but matching the proportions and cut-out design of the podium along the Outer Circle Mews and Heidelberg Road.

31. The podium treatment to the western end of Heidelberg Road has been continued along the Outer Circle Mews and the western portion of Nelmoore Lane.

32. The weathered metal cladding that was proposed to be used for the external stair case and the lower levels of the Machinery Hall Building has been deleted.

33. The feature stairs are now to be constructed in a steel plate, matching the external stair case along the Outer Circle Mews.

34. The Machinery Hall building to be composed of brick snap cladding in lieu if the weathered metal cladding and composite aluminium cladding.

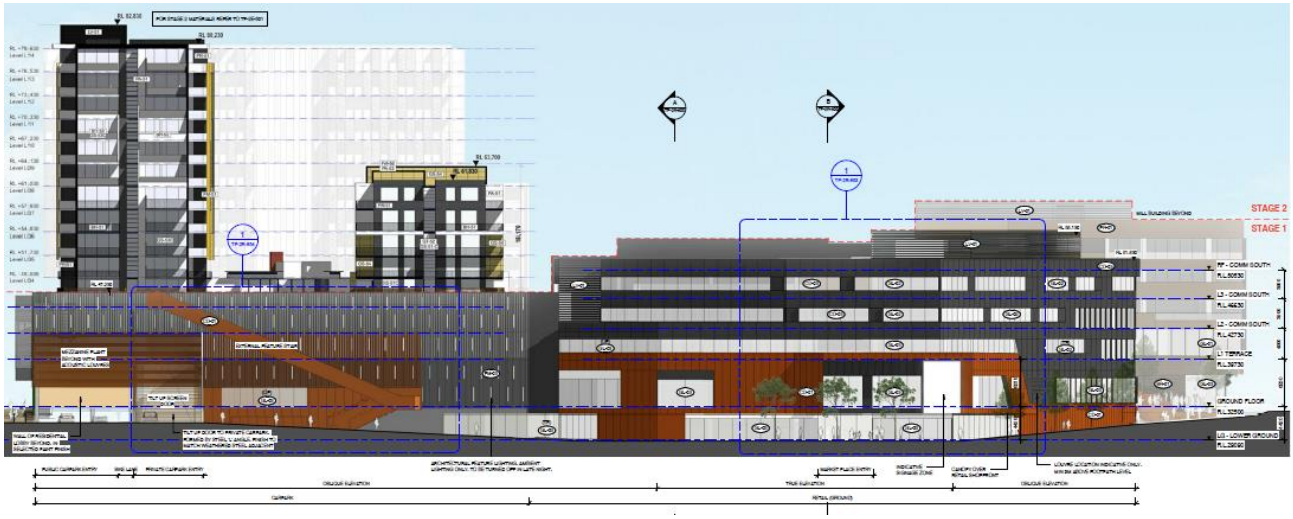


Figure 5: Original Nelmoore Lane (southern) elevation

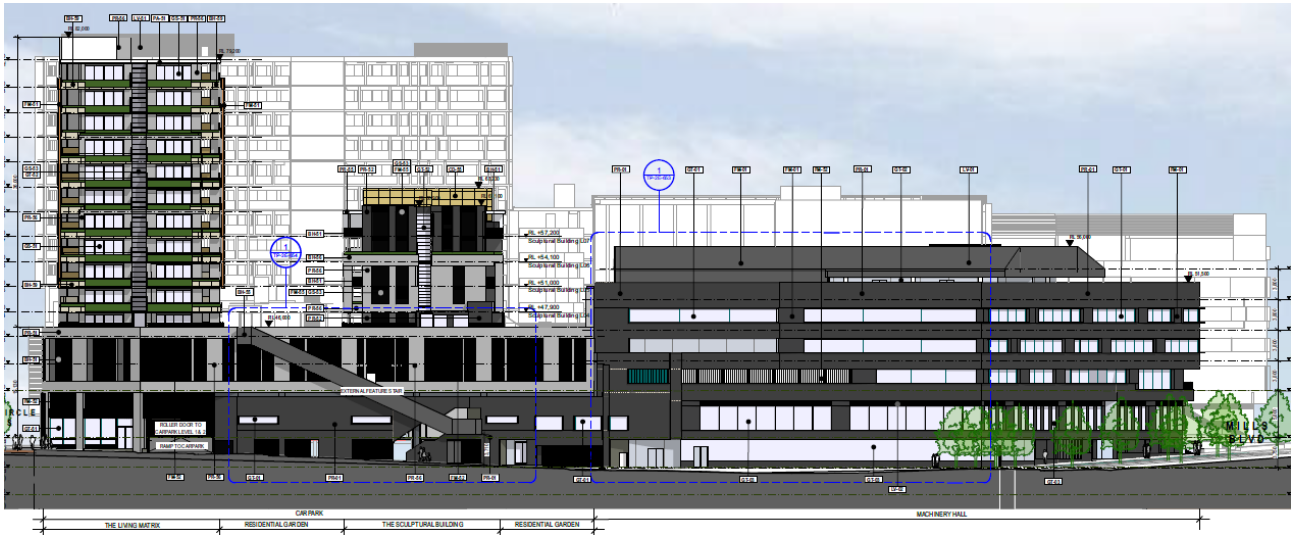


Figure 6: Proposed Nelmoore Lane (southern) elevation

Mills Boulevard (formally Latrobe Street)

35. The brick snap cladding is proposed to continue along the eastern elevation of the Machinery Hall Building in lieu of the weather metal cladding and composite aluminium cladding.

36. The brick snap cladding is also proposed to the ground level fascia as it extends behind the Village Square. This is to replace the weathered metal previously proposed for this section.

37. The school building, setback behind the first floor terrace will comprise curtain glazing with exposed steel fins. Steel cabling will be provided to the top northern section of the eastern elevation.

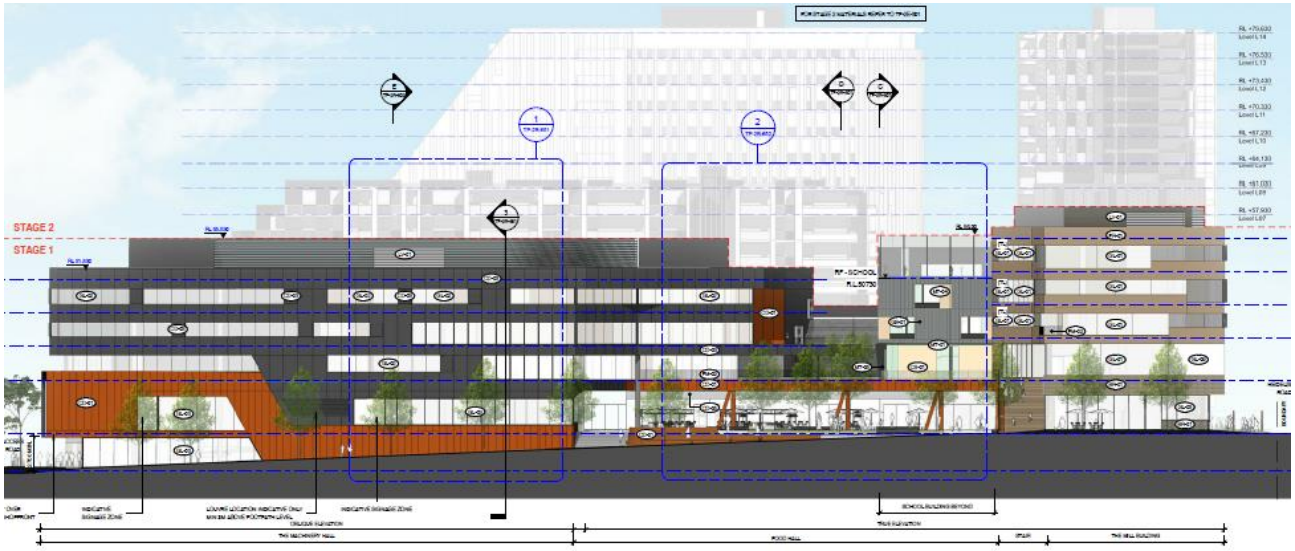


Figure 7: Original Mills Boulevard (Eastern) elevation

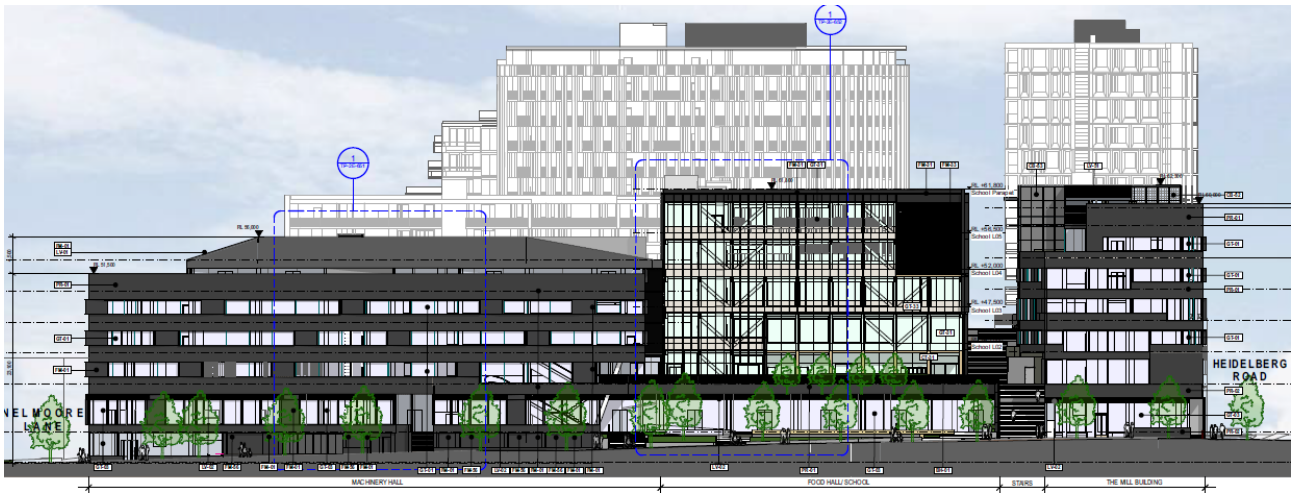


Figure 8: Proposed Mills Boulevard (Eastern) elevation

Existing Conditions

Subject Site

38. The existing conditions of the site have not changed since the original application. Extracts from the original report are contained below:

    (a) *The subject site is an irregular shaped site with a frontage to Heidelberg Road of 163.85m, Latrobe Avenue of 171.71 and an overall area of 2.066ha. The site also has secondary frontages to an access road to the south and a pedestrian mews (outer circle mews) to the west;*

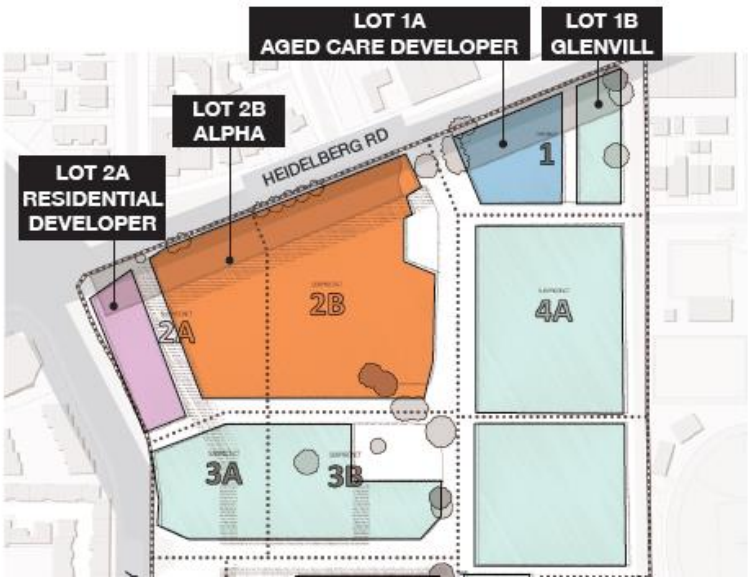


Figure 9: Subject site shown in orange

(b) *The northern portion of the site previously contained Building F6 (the Machine Room), however that has since been demolished under Planning Permit PLN16/0178 and is now vacant; and*

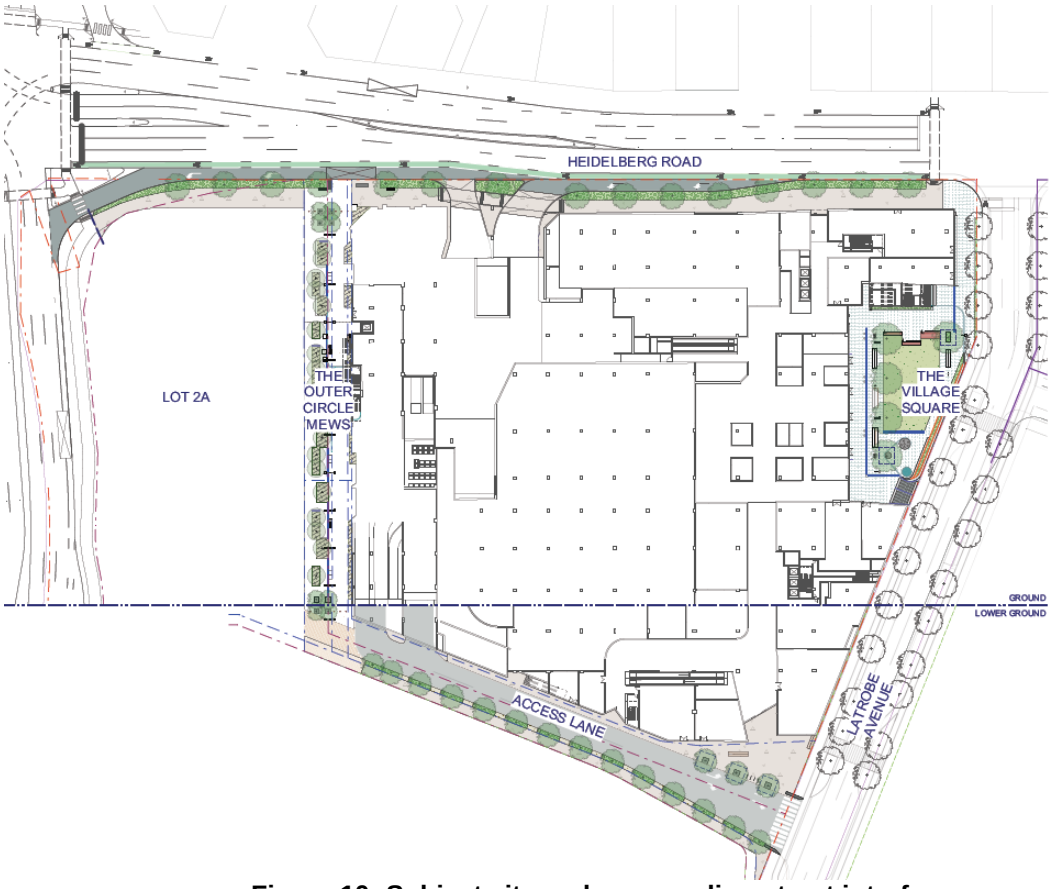


Figure 10: Subject site and surrounding street interfaces

(c) *A Section 173 Agreement (Instrument no. AN278787R) is registered on Title. This agreement contains Owner obligations that prior to the issue of an occupancy permit for Stage 2B (which includes the subject site), the owner must enter into an agreement to provide affordable housing on the subject land to an accredited Housing association,*

to be provided at a rental not less than 20% below the market rental for similar sized dwellings.

Surrounding Land

39. The former Alphington Paper Mill site is a large former industrial site of approximately 16.5ha in area. It is bounded by Heidelberg Road to the north, Parkview Road to the east, Chandler Highway to the west and the Yarra River to the south. The current application relates specifically to Precinct 2B as highlighted on the map below:

Figure11: Amcor site

40. Since the original permit was issued, the surrounding land within the former Amcor site has continued to develop as described below:

East

41. The following description was provided within the original application and is still relevant:

(a) *Latrobe Street is immediately to the east of the site. This is an existing road that runs through the Amcor site. This road is to be redesigned and reconstructed as part of the overall redevelopment of the Amcor site;*

(b) *On the eastern side of Latrobe Avenue are the Gateway and Park Precincts. The Gateway Precinct (Lots 1A & 1B shown on figure 1) faces Heidelberg Road with the Park Precinct (Lot 4A and beyond) located further to the south, separated by a private road. Both precincts extend between Latrobe Avenue and Parkview Road; and*

(c) *The Gateway precinct contains two sub-precincts, known as 1A and 1B. Sub-precinct 1A comprises the western section of the precinct and is situated on the corner of Latrobe Avenue and Heidelberg Road.*

A planning application (PLN17/0743) has been received for an 8 storey aged care facility comprising a total of 144 beds (Refer to image below). Vehicular access is to be provided from the private road to the south.

42. Since the previous report, Planning Permit PLN17/0272 has been approved and plans have been endorsed. Construction is expected to commence within the coming months.

West

43. To the west of the site, extending to Chandler Highway is the balance of Precinct 2A. At the time of the original permit was issued, there was a pending VCAT hearing lodged for Council's Failure to Determine planning application PLN17/0978 within the Statutory 60 day timeframe.

44. On 8 November 2018, VCAT directed that a planning permit be issued allowing:

    (a) *In accordance with the endorsed plans:*

        (i) *Construction of two or more dwellings on a lot under clause 32.04-6;*

        (ii) *Construction of a building or the construction or carrying out works under clause 43.01-1; and*

        (iii) *Reduction of the car parking requirement under clause 52.06-3.*

45. The approved development allows an apartment building between 5 and 17 storeys including townhouse-style dwellings and apartments. Communal open space provided to the podium and car and bicycle parking at ground floor and basement levels. Townhouses are to extend along the western side of the Outer Circle Mews adjacent to the subject site. Amended plans addressing the permit conditions have not yet been submitted for endorsement.

South

46. To the south of the site is the Artisan Precinct. A planning application (PLN18/0173) is currently being assessed for the construction of a four storey development containing 97 dwellings and 9 food and drink premises at ground level. On the north-east corner of this precinct is the Artisan Park, which contributes toward the overall 4.5% public open space contribution.

North

47. Since the original application, there have not been any notable changes to land to the north. The description as contained within the original report is still applicable and provided below:

    (a) *Heidelberg Road is immediately north of the subject site and forms the boundary between Yarra and Darebin City Councils. On the northern side of Heidelberg Road is a self-storage facility within a single level building.*

Planning Scheme Provisions

Zoning

48. The subject site is included within the Mixed Use Zone.

49. Pursuant to clause 32.04-2 (Table of uses), the following applies:

    (a) A 'dwelling' is a Section 1 – no permit required use;

    (b) The following proposed Section 1 uses require a planning permit because they exceed the associated area condition contained within Section 1:

        (i) Food & drink premises (as the leasable floor area exceeds 150sqm);

        (ii) Office (as the leasable floor area exceeds 250sqm);

        (iii) Shop (as the leasable floor area exceeds 150sqm);

    (c) The following proposed uses are Section 2 – permit required uses:

(i) Retail premises (other than food & drink premises and shop);

(ii) Place of Assembly (other than art gallery, carnival, circus, museum or place of worship);

(iii) Leisure and recreation (includes restricted recreation facility);

(d) The following proposed uses fall into Section 2 as 'any other use not in Section 1 or 3:

(i) Accommodation (includes serviced apartments, does not include dwellings);

(ii) Education centre; and

(iii) Childcare centre.

50. Pursuant to clause 32.04-6, a permit is required to construct two or more dwellings on a lot. An apartment development of five or more storeys, excluding a basement, must meet the requirements of clause 58.

51. Pursuant to clause 32.04-8, a permit is required to construct a building or construct or carry out works for a use in Section 2 of clause 32.04-2.

Overlays

Development Plan Overlay, Schedule 11 – Amcor Site, Heidelberg Road, Alphington

52. Pursuant to Clause 43.04-1, a planning permit must not be granted to use or subdivide land, construct a building or construct or carry out works until a development plan has been prepared to the satisfaction of the responsible authority.

53. As outlined in the history section earlier, the Alphington Paper Mill Development Plan was endorsed on 27 May 2016.

Heritage Overlay

54. Heritage Overlay HO70 is site specific to 626 Heidelberg Road - Australian Paper Mills. The overlay covers all land west of Latrobe Avenue within the former paper mill site.

55. Pursuant to clause 43.01-1, a permit is required to demolish a building, to construct a building and to construct or carry out works. The Schedule to the Heritage Overlay indicates external paint controls apply to HO70.

56. As identified earlier, the subject site is devoid of all buildings and structures, having already removed these under Planning Permit PLN16/0178.

Environmental Audit Overlay

57. Pursuant to 45.03-1, before a sensitive use (residential use, child care, pre-school centre or primary school) commences or before the construction or carrying out of buildings and works associated with a sensitive use commences, either:

(a) A certificate of environmental audit must be issued for the land in accordance with Part IXD of the *Environment Protection Act 1970; or*

(b) An environmental auditor appointed under the *Environment Protection Act 1970* must make a statement in accordance with Part IXD of hat Act that the environmental conditions of the land are suitable for the sensitive use.

58. As the proposed development includes sensitive uses, the requirements of this overlay apply. A Statement of Environmental Audit has been issued for the land (EPA SO No. 8005354).

Particular Provisions

Clause 52.06 – Car Parking

59. Pursuant to Clause 52.06-2, before a new use commences, the required car parking spaces must be provided on the land. The following table identifies the car parking requirement under Clause 52.06-5 for the various proposed uses:

Proposed Use	Quantity/ Size	Statutory Parking Rate	No. of Spaces Required	No. of Spaces Allocated
One-bedroom dwelling	43	1 space per dwelling	43	
Two-bedroom dwelling	257	1 space per dwelling	257	
Three-bedroom dwelling	13	2 spaces per dwelling	26	
Residential visitors	313 dwellings	1 space per 5 dwellings	62	
Office	9,875m^2	3.5 spaces per 100 m^2 of net floor area	345	
Supermarket (2 tenancies)	6,065 m^2	5 spaces per 100 m^2 of leasable floor area	303	
Shop	4,063 m^2	4 spaces per 100 m^2 of leasable floor area	162	
Food and Drink	337m^2	4 spaces per 100 m^2 of leasable floor area	13	
Childcare Centre	120 children	0.22 spaces to each child	26	
Primary School	300 students 12 employees	1 space to each employee of the maximum number of employees on site at any one time	12	
Community Centre (place of assembly)	300 patrons	0.3 spaces per patron	90	
Gymnasium	1,928 m^2	Not Specified	To the satisfaction of the RA	
Serviced apartments	40 rooms	Not Specified	To the satisfaction of the RA	
		Total:	**1,325 Spaces + Parking for Gymnasium & serviced apartments**	**1,018 spaces**

60. Pursuant to Clause 52.06-3, a permit is required to reduce the number of car spaces required under Clause 52.06-5, the application must be accompanied by a Car Parking Demand Assessment.

61. A permit is required to create or alter access to a road in a Road Zone Category 1. As Heidelberg Road is a Road Zone Category 1 road and it is proposed to create a new access, a permit is required under this provision. An application must be referred to the Road Corporation under Section 55 of the Act.

Clause 52.34 – Bicycle Facilities

62. Pursuant to Clause 52.34-1, a new use must not commence until the required bicycle facilities and associated signage are provided on the land. The following table identifies the car parking requirement under Clause 52.34-3, the provision on site, and the subsequent reduction below the statutory requirement:

Proposed Use	Quantity/ Size	Development Plan Requirements / Statutory Parking Rate	No. of Spaces Required	No. of Spaces Allocated
Dwellings	313 dwellings	1 bicycle parking space per dwelling (as per development plan requirements)	313 resident spaces	
		In developments of four or more storeys, 1 visitor space to each 10 dwellings	31 visitor spaces.	
Gymnasium (Minor Sports and Recreation Facility)	8 staff	1 employee space per 4 employees	2 employee spaces	
	892sqm	1 visitor space to each 200sqm of net floor area	4 visitor spaces	
Office (other than specified in the table)	9,875 sqm	1 employee space to each 300sqm of net floor area if the net floor area exceeds 1000 sqm	33 employee spaces	
		1visitor space to each 1000 sqm of net floor area if the net floor area exceeds 1000 sqm	10 visitor spaces.	
Primary School	300 students and 12 staff	1 space per 20 employees	1 space	
		1 space per 5 students over year 4	60 spaces	
Retail premises (other than specified in this table)	337 sqm	1 employee space to each 300 sqm of leasable floor area	1 employee spaces	
		1visitor space to each 500 sqm of leasable floor area	1 visitor spaces.	
Shop	4,063sqm	1 employee space to each 600 sqm of leasable floor area if the leasable floor area exceeds 1000 sqm	7 employee spaces	
		1 visitor space to each 500 sqm of leasable floor area if the leasable floor area exceeds 1000 sqm	8 visitor spaces.	
Bicycle Parking Spaces Total			**468 spaces - 313 resident / 60 employee spaces 78 visitor spaces 17 student spaces**	**313 resident / 56 employee spaces** **216 visitor spaces 38 students**
Showers / Change rooms		1 to the first 5 employee spaces and 1 to each additional 10 employee spaces	**6 showers / change rooms**	**6 showers / change rooms**

Clause 58 – Apartment Developments

63. This clause applies to an apartment development of five or more storeys, excluding a basement. A development should meet all the standards and must meet all the objectives.

64. The purpose of this clause is:

    (a) *To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies;*

    (b) *To encourage apartment development that provides reasonable standards of amenity for existing and new residents; and*

    (c) *To encourage apartment development that is responsive to the site and the surrounding area.*

General Provisions

65. The decision guidelines outlined at Clause 65 of the Scheme are relevant to all applications. Because a permit can be granted does not imply that a permit should or will be granted. Before deciding on an application, the Responsible Authority must consider a number of matters. Amongst other things, the Responsible Authority must consider the relevant State and Local Planning Policy Frameworks, as well as the purpose of the zone, overlay or any other provision.

66. The following SPPF provisions of the Scheme are relevant:

Clause 11.04-1 – Open Space Planning

67. The objective of this clause is:

    (a) *To assist creation of a diverse and integrated network of public open space commensurate with the needs of the community.*

Clause 11.06-2 - Housing Choice

68. The objective of this clause is:

    (a) *To provide housing choice close to jobs and services.*

69. Relevant strategies include:

    (a) *Manage the supply of new housing in locations that will meet population growth and create a sustainable city;*

    (b) *Facilitate increased housing in the established areas to create a city of 20 minutes neighbourhoods close to existing services, jobs and public transport;*

    (c) *Support housing growth and diversity in defined housing change areas and redevelopment sites;*

    (d) *Direct new housing to areas with appropriate infrastructure;*

    (e) *Provide certainty about the scale of growth in the suburbs by prescribing appropriate height and site coverage provisions for different areas;*

    (f) *Direct new housing and mixed0use development to urban renewal precincts and sites;*

    (g) *Support new housing in activity centres and other places that offer good access to jobs, services and public transport;*

    (h) Facilitate development that increased the supply of affordable and social housing in suburbs across Melbourne;

(i) Facilitate diverse housing that offers choice and meets changing household needs through:

(i) Provision of a greater mix of housing types;

(ii) Adaptable internal dwelling design; and

(iii) Universal design.

Clause 11.06-4 – Place and identity

70. The objective of this clause is:

(a) *To create a distinctive and liveable city with quality design and amenity.*

71. The relevant strategy:

(a) *Improve the design quality of public spaces and the interfaces between private development and the public domain.*

Clause 11.06-5 – Neighbourhoods

72. The objective of this clause is:

(a) *To create a city of inclusive, vibrant and healthy neighbourhoods that promote strong communities, healthy lifestyles and good access to local services and jobs.*

73. Relevant strategies include:

(a) *Create a city of 20 minute neighbourhoods, that give people the ability to meet most of their everyday needs within a 20 minute walk, cycle or local public transport trip of their home;*

(b) *Create mixed-use neighbourhoods at varying densities that offer more choice in housing, create opportunities for local businesses and jobs and deliver better access to services and facilities;*

(c) *Support a network of vibrant Neighbourhood Activity Centres;*

(d) *Create neighbourhoods that support safe community's and healthy lifestyles;*

(e) *Create neighbourhoods that enable and promote walking and cycling as part of daily life; and*

(f) *Develop a network of local open spaces that are accessible and of high-quality and include opportunities for new local open spaces through planning for urban redevelopment projects.*

Clause 13.03-1 – Use of contaminated and potentially contaminated land

74. The objective of this clause is:

(a) *To ensure that potentially contaminated land is suitable for its intended future use and development, and that contaminated land is used safely.*

Clause 13.04 – Noise and Air

75. The objective of this clause is:

(a) *To assist the control of noise effects on sensitive land uses.*

76. The relevant strategy:

(a) *Ensure that development is not prejudiced and community amenity is not reduced by noise emissions, using a range of building design, urban design and land use*

separation techniques as appropriate to the land use functions and character of the area.

Clause 15.01.1 – Urban Design

77. The objective of this clause is:

    (a) *To create urban environments that are safe, functional and provide good quality environments with a sense of place and cultural identity.*

Clause 15.01-2 – Urban Design Principles

78. The objective of this clause is:

    (a) *To achieve architectural and urban design outcomes that contribute positively to local urban character and enhance the public realm while minimising detrimental impact on neighbouring properties.*

79. This clause also states that planning must consider as relevant:

    (a) *Urban Design Guidelines for Victoria (Department of Environment, Land, Water and Planning, 2017);*

    (b) *Apartment Design Guidelines for Victoria (Department of Environment, Land, Water and Planning, 2017); and*

    (c) *Urban Design Charter for Victoria (Department of Planning and Community Development 2009).*

Clause 15.01-4 – Design for Safety

80. The objective of this clause is:

    (a) *To improve community safety and encourage neighbourhood design that makes people feel safe.*

Clause 15.01-5 – Cultural Identity and Neighbourhood Character

81. The objective of this clause is:

    (a) *To recognise and protect cultural identity, neighbourhood character and sense of place.*

Clause 15.02 – Sustainable Development

82. The objective of this clause is:

    (a) *To encourage land use and development that is consistent with the efficient use of energy and the minimisation of greenhouse gas emissions.*

Clause 15.03 - Heritage

83. The objective of this clause is:

    (a) *To ensure the conservation of places of heritage significance.*

Clause 16.01-1 – Integrated Housing

84. The objective of this clause is:

    (a) *To promote a housing market that meets community needs.*

Clause 16.01-2 – Location of residential development

85. The objective of this clause is:

    (a) *To locate new housing in or close to activity centres and employment corridors and at other strategic redevelopment sites that offer good access to services and transport.*

Clause 16.01-3 – Housing opportunity areas

86. The objective of this clause is:

(a) *To identify areas that offer opportunities for more medium and high density housing near employment and transport in Metropolitan Melbourne.*

Clause 16.01-4 – Housing Diversity

87. The objective of this clause is:

(b) *To provide for a range of housing types to meet increasingly diverse needs.*

Clause 16.01-5 – Housing affordability

88. The objective of this clause is:

(a) *To deliver more affordable housing closer to jobs, transport and services.*

Clause 17.01.1 - Business

89. The objective of this clause is:

(a) *To encourage development which meets the communities' needs for retail, entertainment, office and other commercial services and provides net community benefit in relation to accessibility, efficient infrastructure use and the aggregation and sustainability of commercial facilities.*

Clause 18.01 – Integrated Transport

90. The objective of this clause is:

(a) *To create a safe and sustainable transport system by integrating land-use and transport.*

Clause 18.02-1 – Sustainable personal transport

91. The objective of this clause is:

(a) *To promote the use of sustainable personal transport.*

Clause 18.02-2 - Cycling

92. The objective of this clause is:

(a) *To integrate planning for cycling with land use and development planning and encourage as alternative modes of travel.*

Clause 18.02-3 – Principal Public Transport Network

93. The objective of this clause is:

(a) *To facilitate greater use of public transport and promote increased development close to high-quality public transport routes in Metropolitan Melbourne.*

Clause 18.02-5 – Car parking

94. The objective of this clause is:

(a) *To ensure an adequate supply of car parking that is appropriately designed and located.*

Local Planning Policy Framework (LPPF)

Clause 21 – Municipal Strategic Statement (MSS)

Clause 21.04 – Land Use

95. The relevant objectives of this clause are:

(a) *Objective 1 To accommodate forecast increases in population:*

(i) *Strategy 1.1 Ensure that new residential development has proper regard for the strategies applicable to the neighbourhood in question identified in clause 21.08;*

(ii) *Strategy 1.2 Direct higher density residential development to Strategic Redevelopment Sites identified at clause 21.08 and other sites identified through any structure plans or urban design frameworks;*

(b) *Objective 2 To retain a diverse population and household structure;*

(i) *Support the provision of affordable housing for people of all abilities particularly in larger residential developments and on Strategic Redevelopment Sites; and*

(c) *Objective 3 To reduce potential amenity conflicts between residential and other uses.*

Clause 21.04-2 – Activity Centres

96. The relevant objective and strategies of this clause is:

(a) Objective 5 To maintain the long term viability of activity centres:

(i) Strategy 5.2 Support land use change and development that contributes to the adaptation, redevelopment and economic growth of existing activity centres;

(ii) Strategy 5.3 Discourage uses at street level in activity centres which create dead frontages during the day; and

(iii) Strategy 5.4 Permit residential development that does not compromise the business function of activity centres.

Clause 21.04-3 – Industry, office and commercial

97. The objective of this clause is '*to increase the number and diversity of local employment opportunities*.'

Clause 21.04-4 – Community facilities, hospitals and medical services

98. The relevant objective and strategies of this clause is:

(a) Objective 9 To provide community services that meet the needs of a diverse and changing community:

(i) Strategy 9.2 Consider opportunities for the appropriate provision of, or contribution towards, community facilities or services to support new residents, for large scale residential development proposals; and

(b) Objective 10 To provide accessible community services.

Clause 21.04-5 – Parks, gardens and public open space.

99. The relevant objectives:

(a) Objective 12 To establish a linked open space network; and

(b) Objective 13 To provide an open space network that meets existing and future community needs.

Clause 21.05-1 Heritage

100. The relevant objective:

(a) Objective 14 To protect and enhance Yarra's heritage places.

Clause 21.05-2 – Urban design

101. The relevant objectives and strategies of this clause is:

(a) Objective 16 To reinforce the existing urban framework of Yarra;

(b) Objective 17 To retain Yarra's identity as a low-rise urban form with pockets of higher development:

(i) Strategy 17.2 Development on strategic redevelopment sites or within activity centres should generally be no more than 5-6 storeys unless it can be demonstrated that the proposal can achieve specific benefits such as:

a. *Significant upper level setbacks;*

b. *Architectural design excellence;*

c. *Best practice environmental sustainability objectives in design and construction;*

d. *High quality restoration and adaptive re-use of heritage buildings;*

e. *Positive contribution to the enhancement of the public domain; and*

f. *Provision of affordable housing; and*

(c) *Objective 18 To retain, enhance and extend Yarra's fine grain street pattern;*

(d) *Objective 20 To ensure that new development contributes positively to Yarra's urban fabric;*

(e) *Objective 21 To enhance the built form character of Yarra's activity centres; and*

(f) *Objective 22 To encourage the provision of universal access in new development.*

Clause 21.05-4 Public environment

102. The relevant objectives and strategies of this clause is:

(a) *Objective 28: To a provide a public environment that encourages community interaction and activity:*

(i) *Strategy 28.1 Encourage universal access to all new public spaces and buildings;*

(ii) *Strategy 28.2 Ensure that buildings have a human scale at street level;*

(iii) *Strategy 28.3 Require buildings and public spaces to provide a safe and attractive public environment;*

(iv) *Strategy 28.5 Require new development to make a clear distinction between public and private spaces;*

(v) *Strategy 28.8 Encourage public art in new development; and*

(vi) *Strategy 28.9 Apply the Public Open Space Contribution policy at clause 22.12.*

Clause 21.06 - Transport

103. The relevant objectives of this clause is:

(a) *To provide safe and convenient pedestrian and bicycle environments.*

(b) *To facilitate public transport usage;*

(c) *To reduce the reliance on the private motor car; and*

(d) *To reduce the impact of traffic.*

Clause 21.07 – Environmental Sustainability

104. The relevant objectives of this Clause are:

(a) *To promote environmentally sustainable development; and*

(b) *To improve the water quality and flow characteristics of storm water run-off.*

Clause 21.08 – Neighbourhoods

Clause 21.08-6 – Fairfield and Alphington

105. Clause 21.08-6 identifies that '*the Heidelberg Road neighbourhood activity centre is on the boundary between the Cities of Yarra and Darebin. It is a small convenience centre, with limited furniture and home wares outlets and a small amount of office space.'*

106. *Implementation of the built form strategies at cause 21.05 includes:*

(a) *Encouraging the redevelopment of the following strategic re-development sites in a way that contributes positively to the urban fabric and public domain of Yarra, and where subject to the Heritage Overlay, protects the heritage of the site and of the are:*

(i) *Site 1 626 Heidelberg Road (AMCOR); and*

(ii) *Site 2 224 – 252 Heidelberg Road.*

107. Figure 16; the built form character type identifies the subject site within a Main Road precinct, which seeks to:

(a) *Maintain the hard urban edge of development; and*

(b) *Reflect the fine grain of the subdivision pattern in building design where this exists along main roads.*

Relevant Local Policies

Clause 22.02 – Development Guidelines for Sites Subject to the Heritage Overlay

108. This policy applies to all new development included in a heritage overlay. The relevant objectives of this clause are:

(a) *To conserve Yarra's natural and cultural heritage;*

(b) *To conserve the historic fabric and maintain the integrity of places of cultural heritage significance;*

(c) *To retain significant view lines to, and vistas of, heritage places;*

(d) *To preserve the scale and pattern of streetscapes in heritage places; and*

(e) *To ensure that additions and new works to a heritage place respect the significance of the place.*

109. The design guidelines contained within the Development Plan addresses matters on heritage, therefore this policy will not be specifically referenced within the report.

Clause 22.05 – Interface Uses Policy

110. The objectives of this clause are:

(a) *To enable the development of new residential uses within and close to activity centres, near industrial areas and in mixed use areas while not impeding the growth and operation of these areas as service, economic and employment nodes; and*

(b) *To ensure that residential uses located within or near commercial centres or near industrial uses enjoy a reasonable level of amenity.*

Clause 22.12 – Public Open Space Contribution

111. This policy applies to all residential proposals, mixed use proposals incorporating residential uses and proposals incorporating residential subdivision. The public open space contribution is to be in the form of a land contribution of 4.5 per cent (7,500m^2) of the total Alphington Paper Mills site. The proposed Public Open Space areas are nominated on Figure 27 on p.43 of the Development Plan. Alphington Square is nominated within the eastern portion of the subject site and is to measure 17m by 42m.

Clause 22.16 – Stormwater Management (Water Sensitive Urban Design)

112. The relevant objectives of this clause are:

(c) *To achieve the best practice water quality performance objectives set out in the Urban Stormwater Best Practice Environmental Management Guidelines, CSIRO 1999 (or as amended). Currently, these water quality performance objectives require:*

(i) Suspended Solids - 80% retention of typical urban annual load;

(ii) Total Nitrogen - 45% retention of typical urban annual load;

(iii) Total Phosphorus - 45% retention of typical urban annual load;

(iv) iv. Litter - 70% reduction of typical urban annual load; and

(d) *To promote the use of water sensitive urban design, including stormwater re-use.*

Clause 22.17 – Environmentally Sustainable Development

113. This policy applies to residential development with more than one dwelling. The overarching objective is that development should achieve best practice in environmentally sustainable development from the design stage through to construction and operation. The Development Plan has specific environmental sustainability standards that will be referenced within the assessment section.

Other relevant documents

Alphington Paper Mill Development Plan (Parts 1 & 2).

114. Part 1 of the Development Plan (DP) contains design guidelines for each precinct. An assessment of the design guidelines for the Gateway Precinct is undertaken within this report.

115. Part 2 of the DP contains various supporting technical documents. Those relevant to the current application include:

(a) ESD Strategy prepared by Cundall dated August 2015;

(b) Traffic management Plan prepared by GTA Consultants dated 19 August 2015;

(c) Integrated Transport Plan prepared by GTA Consultants dated 19 August 2015;

(d) Preliminary Acoustic Assessment prepared by ARUP dated 21 August 2015; and

(e) Conservation Management Plan prepared by Lovell Chen dated May 2014 (Re-Issued August 2015).

Advertising

116. The application was not advertised under the provisions of Section 52 of the *Planning and Environment Act (1987)*. Pursuant to Clause 43.04-2, an application under any provision of the scheme which is generally in accordance with the development plan is exempt from the notice requirements of Section 52(1)(a), (b) and (d), the decision requirements of Section 64 (1), (2) and (3) and the review rights of Section 82(1) of the Act.

Referrals

117. The application was referred to the following internal departments and external authorities and their recommendations are contained within the attachments to this report.

External Referrals

118. The following referral authorities have provided comments:

(a) VicRoads; and

(b) Transport for Victoria (formally PTV).

Internal Departments

119. The following internal referrals have been provided:

(a) Open Space Unit;

(b) Urban Design Unit (internal) for comments on public realm;

(c) Environmental Sustainable Development (ESD) Advisor;

(d) Engineering Services Unit;

(e) Strategic Transport Unit;

(f) City Works on the Waste Management Plan; and

(g) City Works and Assets on the Community Facilities.

External Consultants

120. The following external consultant referrals have been provided:
    (a) Urban Design (David Lock Associates);
    (b) Traffic Engineering (Traffix Group);
    (c) Acoustic Engineers (SLR Consulting); and
    (d) Wind Consultants (MEL Consultants).
121. Referral comments have been included as attachments to this report.

OFFICER ASSESSMENT

122. The primary considerations for this application are as follows:
    (a) Strategic justification;
    (b) Land Use;
    (c) Development Plan Design Guidelines:
        (i) Built Form;
        (ii) Connectivity & Interaction;
        (iii) Building layout & Design;
        (iv) Open space and landscape design;
        (v) Environmentally sustainable Design;
        (vi) Apartment Specific Guidelines;
    (d) Clause 58 (Apartment Developments);
    (e) Car parking, bicycle facilities and traffic generation;
    (f) Community facilities; and
    (g) Staging of the proposal.

Strategic Justification

123. The proposed amendments to the original scheme, while numerous, are not significant from a strategic planning sense. Overall the amended proposal provides a more resolved design for the site. As will be discussed, the amendments further enhance the appearance of this prominent site, contributing positively to the surrounding area in a manner consistent with the aspirations of the Development Plan (DP).
124. The development will maintain a mixture of uses albeit a greater provision of office space and a lesser provision for food and drink premises. The current amendment has also introduced serviced apartments. As will be discussed in greater detail, the proposed amended development will continue to make a positive contribution to the development of the former Amcor site and the wider Alphington Neighbourhood.
125. The proposed amendments maintain a similar standard of environmentally sustainable development, which will meet Council's sustainability aspirations subject to some further refinement, as will be discussed within the relevant section of the report.
126. A greater provision for car parking and bicycle parking is provided on site, with the amendment seeking to improve the safety of vehicle and bicycle movements. This will be discussed in greater detail within the relevant sections of this report.

127. Overall, the proposed amendments maintain a strong level of consistency with the State and local strategic policy guidance for this site.

Land use

128. As outlined in the original report, Section 3.6 (land uses) of the DP anticipates a significant proportion of non-residential uses within the Village Precinct as follows:

(a)	Commercial	7.650sqm – 11,500sqm
(b)	Community	1,250sqm – 6,800sqm
(c)	Retail (incl. supermarkets)	12,750sqm

129. While a larger proportion of office tenancies are proposed, the amended will continue to align with the non-residential use expectations for the site. The commercial activities, which includes the office and gymnasium at 10,088sqm, will still be within the anticipated range. The community facilities, also including the school and childcare centre will account for 7,308sqm. This exceedance is largely due to the floor area of the school increasing from 2,559sqm to 4,052sqm. While the floor area of the school has increased, the number of students and staff is unchanged. Therefore, the increase in floor area is attributed to an improvement to the facilities and amenities onsite, rather than an increase in intensity of the school. The slight increase in the anticipated community facilities is not expected to impact upon the functionality and distribution of uses. Additionally, while the childcare has been included within the community facilities category, given that it is anticipated to be commercially operated, the childcare centre could equally fit within the 'commercial' floor area expectations. Redistributing the 975sqm childcare centre to the 'commercial' activity would result in consistency with both the commercial and community floor area expectations.

130. The retail uses (including the food and drink premises, speciality shops and supermarket) at 10,197sqm also continue to be within the anticipated floor area for retail space.

131. As outlined in the original report and the planning controls section, a permit continues to be required for all the non-residential uses proposed, this includes the serviced apartments, which have been introduced as part of the current amendment. Also as identified within the original report, the food and drink premises, office and shops only trigger a planning permit as the 'as of right' floor areas nominated within the Mixed Use Zone are exceeded.

132. While the appropriateness of the majority of the uses proposed was already considered as part of the original application, further consideration needs to be given to the amendments proposed to the appropriate uses. Assessment of the serviced apartments is also required and how this new use will integrate with the overall development. The key policy consideration for new uses is contained within clause 22.05 (Interface Uses Policy) of the Scheme.

133. In the original application, it was identified that the dwellings within the podium may be impacted by noise from the loading bay for the commercial uses in the event that the loading bay doors are pervious. The applicant provided further acoustic advice with the current amendment that supported pervious doors (which allow the loading bay to be naturally ventilated). This has been reviewed by Council's acoustic consultant who have subsequently recommended that an Lmax assessment of noise from the trucks entering the loading bay be provided within the acoustic report. Furthermore post-construction of the loading bay noise is also recommended to demonstrate whether compliance with SEPP N-1 is achieved. Based on this advice, condition 1(k)(vii) will be deleted and a subsequent condition requiring Lmax assessment of the trucks and post-construction acoustic testing will be introduced.

134. On review of the amended plans, Council's external acoustic consultant also raised that the amended design presents a greater risk of nuisance from mechanic plant noise. For this reason they have also recommended that post-construction testing also be undertaken for the mechanical plant noise from the most affected sensitive receiver locations to demonstrate compliance with SEPP N-1. This will also be included as an additional condition on the amended permit.

135. The following paragraphs will consider each permit required use in turn.

Serviced Apartments

136. As outlined in the proposal description, it is sought to introduce 40 single-bedroom serviced apartments as part of the current amendment. It is understood that these are to be available for temporary accommodation for persons away from their normal place of residents thereby falling within the definition of a 'residential hotel'. External impacts generated by the serviced apartments would be comparable to a dwelling and as such would be expected to have little impact on the surrounding land-use. In regard to the impact of other uses on the serviced apartment, lower amenity expectations would be attributed to this activity given its temporary nature.

137. As will be discussed later within the report, there are potential overlooking opportunities and impacts on daylight and outlook associated with the proximity of the serviced apartments to the school building and outdoor playground, however given the temporary nature of the serviced apartments, the impact is considered acceptable and an adequately level of internal amenity will be received via the proposed 6.45m wide separation between the buildings.

138. Matters relating to car parking and traffic will be covered later within the report. The waste and loading facilities already proposed onsite are considered sufficient to support the proposed serviced apartments. Also various amenities and services are proposed on site for the serviced apartments (colour coded accordingly) including linen storage, a generous lobby facing Heidelberg Road, luggage room, conference room. Given the 24hour nature of the use, a condition will be included on the permit requiring a management plan for the serviced apartments to detail security procedures for guests.

139. Given that the acceptability of the design and layout is based upon the use of these rooms for serviced apartments of a temporary nature, it is necessary to ensure that they are not converted into conventional dwellings at a later date. Given that 'dwellings' are an as of right activity (thus would not require a planning permit for conversion), it is necessary to introduce a Section 173 Agreement requiring that the serviced apartments are maintained as temporary accommodation only. This will be added as a condition to the amended permit.

School

140. The relocation of the school to a more central location within the site does not create any unreasonable interface issues. The outdoor playground will now be separated from the residential uses (instead of directly adjoining), which will reduce the potential noise transfer impacts. The acoustic report submitted with the application has considered this interface and determined that the noise emissions would not be unreasonable. This advice was also accepted by Council's external acoustic consultants.

141. The outdoor area separation however measures at 5.2m from the balcony associated with the south-eastern corner apartments within the Urban Anchor building (illustrated in the image below). To ensure that the amenity of these apartments is not unreasonably impacts, a condition will require the sections of the outdoor playground within 9m of the balconies associated with these dwellings to be screened to a maximum height of 1.7m and maximum 25% transparency.

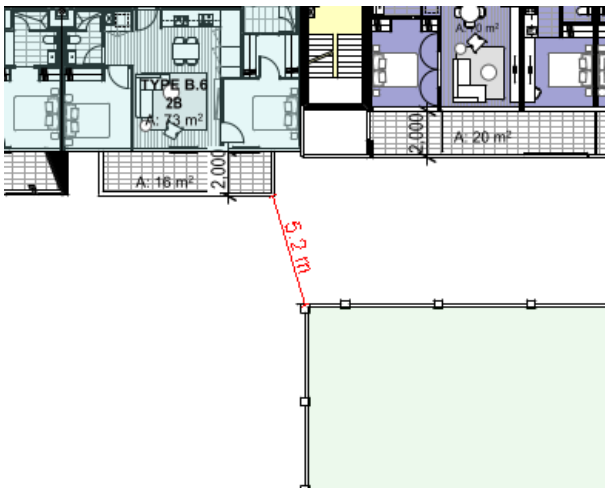


Figure 12: Distance between the Urban Anchor apartment and the outdoor playground

142. The balconies and habitable room windows associated with the serviced apartments will also be able to be overlooked from the school outdoor area, however given that this is temporary accommodation, the views between these areas are not considered to cause an unreasonable amenity impact.

143. The outdoor area to the school will have 9.8m high mesh fencing to the perimeter to prevent balls or other objects from escaping the school grounds. The south facing apartments to the Urban Anchor are not considered to be unreasonably affected by this screen, given none have a direct interface to the school.

144. The Sculptural Building has been relocated further to the west, resulting in a separation of 11.3m from the school outdoor area. This separation is considered sufficient to mitigate any unreasonable overlooking or visual bulk impacts.

145. Condition 15 of the planning permit required CO2 emissions testing within the school playground. This was included within the Council resolution as an amendment to the officer recommendation. The condition was included to respond to concerns for the health of the school children consequence to the direct interface of the school playground and Heidelberg Road and the potential health impacts from truck fumes and the like. In the current amendment, this potential concern has been addressed with the school now located more centrally within the development and shielded from Heidelberg Road by the Services apartments. As such, this condition is no longer considered needed and it is proposed to be deleted as part of the current amendment.

Childcare

146. The relocation of the childcare from L3 to L5 does not pose any additional amenity impacts. The other key changes to the childcare centre as part of the current amendment were the reduction in floor area from 1189sqm to 975sqm and an increase in the outdoor area from approximately 550sqm to 759sqm. It is understood this changes are largely driven by the regulations for indoor and outdoor space. The outdoor area has been located adjacent to the street interfaces and as such is not anticipated to generate any significant noise impacts on any proximate residential uses. .

147. The existing permit conditions relating to capacity (staff and children) and the hours of operation are not sought to be changed.

Office

148. As has been identified, the office area within the development is increasing, however the provision remains consistent with the expectations of the development plan. The general location of the office activity is also consistent with the approved development, which is not

anticipated to create any offsite amenity impacts. The existing permit conditions relating to the hours of operation will be unchanged.

Retail/shop/food and drink premises.

149. The food and drink premises on the lower ground and ground floor levels have been replaced with shop tenancies as part of the current amendment, with the only remaining food and drink premise to be located on Level 1, situated to the south of the Level 1 terrace. This will have a floor area of 337sqm, a substantial reduction from the previous floor area of 2,286sqm. The reduction in food and drink offerings is considered acceptable on the basis that an acceptable retail offering would be maintained within the amended proposal through the provision of additional 'shop' tenancies.

150. Furthermore, there is proposed to be substantial food offerings provided within Precinct 3B (Artisan Precinct) immediately to the south of the site, with a total of 9 food and drink premises proposed as part of this precinct. These would be readily accessible for customers/staff and residents of the Village Precinct.

151. A condition was applied to the original planning permit restricting the total patrons to the food and drink premises to 1143 patrons. Given the significant reduction in the floor area, the patron capacity is no longer appropriate. In discussions with the permit applicant, this will be reduced to 170 patrons accordingly.

152. The hours for the food and drink premises and the shops (excluding the supermarket) will be unchanged by the current amendment. Noting that the food and drink premises are permitted to trade an additional hour (11pm rather than 10pm), the greater provision for 'shops' in lieu of 'food and drink' premises will have a lesser impact on late night trade.

153. Under the current planning permit, the supermarket hours would be regulated by the shops (i.e. 6am to 10pm). As part of the current amendment, the permit applicant has requested that the supermarkets be allowed to trade until 12middnight. The later trading hours are considered reflective of standard supermarket trading hours. Given that the supermarket is located within the ground level away from the residential component of the development, the extended operating hours are considered of little consequence. Also, customers numbers to the supermarkets between 10pm and 12middnight would be expected to be relatively low, thus would be unlikely to cause noticeable offsite amenity impacts such as patron noise or traffic impacts. A condition will be added to reflect the alternative hours for the supermarket uses.

154. The proposed amendments are not anticipated to significantly impact upon the delivery/loading arrangement associated with the retail component. The loading bays as approved will not be affected. An amended acoustic report was prepared to address the outstanding acoustic matters in relation to noise from the loading bay. These matters will be discussed later within this report.

Community Space/Place of Assembly

155. There is limited information on how the larger community spaces are to be used at this stage, the original application considered that these spaces may be used for music performance. This may still be the case. While the original report recommended a condition restricting all music and entertainment noise to be at background levels, the Council resolution was to allow noise above background level in addition to a revised acoustic report that would provide adequate acoustic treatment to the community spaces to enable live music/performance and protect the abutting residents. This has not been addressed within the acoustic report submitted with the amended application and will be retained as a condition of permit with respect to the updated report.

156. The reconfiguration of these spaces toward Heidelberg Road would create limited additional impacts. Regarding noise impacts, it is acknowledged however that there now be an apartment directly abutting the western wall of the community centre. This will need to be

considered within a revised acoustic report pursuant to the existing planning permit conditions.

157. Further discussion regarding the community facilities will be provided later within this report.

Multi-purpose court

158. The multi-purpose court replaces the previously approved sports court. The major difference between the approved development and the current amendment is that the amendment is seeking to enclose the court. This significantly reduces the potential noise impacts from the sports court. In the initial report, potential noise impacts were identified in relation to the proximity of the court to the residential buildings to its west. Enclosing the court will significant reduce the noise emitted and enable the structure to be better acoustically treated to reduce the offsite noise impacts. The residential component has also been set back further from the court, further reducing the potential offset impacts.

159. The original planning permit included conditions (Condition 11(a)) requiring acoustic treatment of apartments in close proximity to the netball court to achieve specific targets. The acoustic report submitted with the application has addressed this, however Council's external acoustic consultant has recommended that in light of the new design, the external walls of the court should be treated to achieve reasonable external noise levels on apartment balconies. While this is more than the original permit sought to achieve, given that the multi-purpose court is now to be enclosed, it is reasonable for the multi-purpose court to be treated to achieve this level of amenity To ensure that this is adequately addressed, condition 11(a) of the original permit will be replaced with a condition requiring acoustic specifications of the external walls to the multi-purpose court to achieve reasonable external noise levels on adjacent apartments.

160. Furthermore, as will be discussed under the assessment of the community facilities later in this report, enclosing the court will allow the court to be used for other purposes such as school concerts or presentation nights. Treating the exterior walls of the court will ensure that it can be also used for these purposes without unreasonable detriment to the adjacent residents. The original condition 11(f) as discussed for the community facilities above will be expanding to also include the potential impact for music performances within the multi-purpose court.

161. Another concern raised with the original design was the potential reverberation impacts from the court (e.g. ball bouncing) on the community space, which was located beneath the court in the original design. The revised plans have relocated the community facilities to the north of the court and separated by amenities. While the modifications to the layout would likely minimise the potential reverberation between these uses, there is a concern that structure borne noise may impact the commercial uses below, the offices on Level 2 and the adjacent school building. Condition 11(b) of the original permit will be updated and specifically reference potential structural borne sound on these surrounding uses.

The original application did not provide details of lighting to the multipurpose court. To allow the court to be used in the evenings (particularly in winter months), condition 1(z), 27 and 35 of the original permit required for details of outdoor lighting and these be baffled from light spill to adjacent residential properties. The replacement of the outdoor court with an indoor facility addresses these concerns with this facility no longer needing separate light installations or baffling, with these able to be addressed via the internal fitout of the court. As such, condition 1(z), 27 and 35 are no longer necessary and can be deleted.

Gym

162. The size of the gym has reduced from 1,928sqm to 892sqm, however the general location on Level 1 within the south-east corner of the site has not changed. The existing permit conditions will be retained on the planning permit, including the requirement for an operational management plan prior to commencement of the use. These conditions will ensure that any adverse amenity impacts can be appropriately managed.

163. The potential interface impacts of the gym in relation to noise reverberation such as through the dropping of weights on the surrounding office tenancies was considered in the original application and was to be addressed via an amended acoustic report pursuant to Condition 11(b). The revised acoustic report submitted with the application has not specifically addressed this, however given that the gym no longer directly abuts office tenancies, reverberation between uses is not expected to be an issue.

164. Council's acoustic consultants have also acknowledged the small gym proposed within the serviced apartments, however do not expected this to create any unreasonable amenity impacts. It would be expected that this could be adequately managed by the operators of the serviced apartments to minimise any impacts on their residents accordingly.

Development Plan Design Guidelines

Built Height

165. The DP suggests that buildings should be 14 storeys within Precinct 2A and 8 storeys within Precinct 2B. Unlike other areas within the DP, these heights are displayed as preferred rather than mandatory heights.

166. The original proposed includes two residential towers of 14 storeys in height to the west of the site (within Precinct 2B). The current amendment does not seek to modify the height of these approved buildings.

167. The current amendment however does propose to increase the height of the built form further to the east facing Heidelberg Road (within Precinct 2B). The Mill Building, which is on the corner of Heidelberg Road and Mills Boulevard (formally Latrobe Avenue) was approved at a height of 5 storeys. The current amendment seeks to increase this to 6 storeys. The increase in the height of the Mill Building continues to comply with the preferred heights in the DP, with the increased height contributing to the landmark qualities of this corner.

168. One of the key changes as part of the amendment is the infill of the void area along Heidelberg Road through the relocation of the school building. As part of the amendment it is proposed to introduce 7 storeys of serviced apartments above the ground floor retail component, resulting in an overall height of 8 storeys. This will continue to comply with the preferred height limited within the DP. Further discussion regarding setbacks is provided in the following section.

169. The school building, now located centrally within the site, will extend to a maximum of 7 storeys (inclusive of the lower commercial levels). This will fill in a void area proposed in the original scheme along Mills Boulevard. The proposed height of the school building complies with the preferred DP height of 8 storeys and is therefore considered acceptable.

170. The current amendment does not seek to modify the heights of the remaining buildings within the development.

Setbacks

171. The design guidelines for the Village Precinct suggest that built form should generally follow a podium tower typology extending to the property boundaries on all sides, with buildings above the podium to be set back. The guidelines also refer to the Built Form Treatment Plan (below). This plan indicates a podium treatment is to be provided along Heidelberg Road, Mills Boulevard (formally Latrobe Avenue) and the Nelmoore Lane to the south. The general requirements for the podium interface are *'to be built to the public realm interface at all levels'* with articulation to be provided through indented built form.

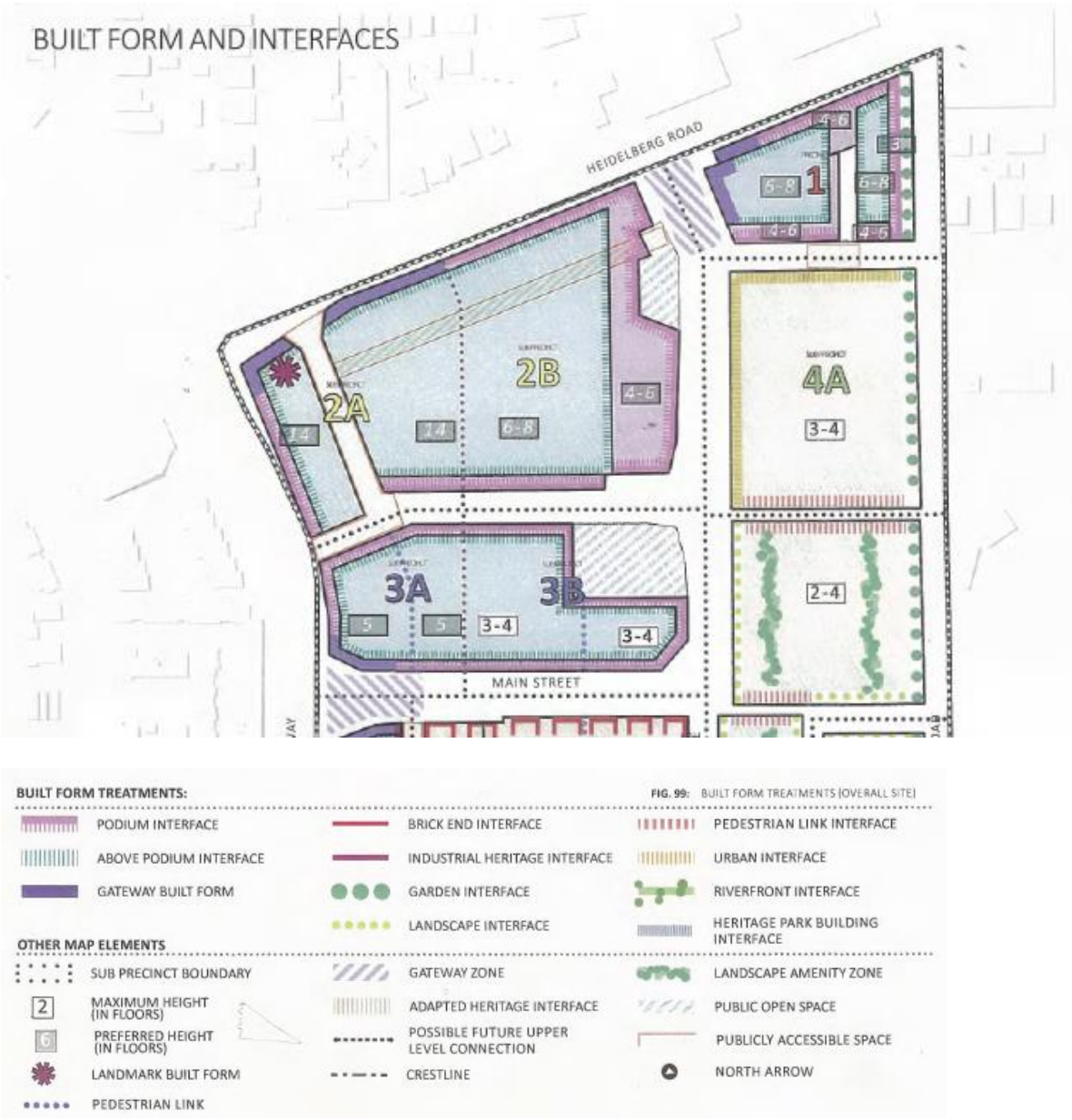


Figure 13: Built Form Treatment Plan (Figure 99) p. 111 of the DP

172. The Built Form and Interfaces Table also calls for a setback greater than 2.2m above the podium along Heidelberg Road, Mills Boulevard and Nelmoore Lane. Notably there is no podium/tower treatment required along the Outer Circle Mews (to the west).

173. The Urban Anchor building facing Heidelberg Road originally proposed a staggered setback from Heidelberg Road, with balcony setbacks at 0.8m at the western end and 2.2m to 3.6m for the remainder, with the exception for an irregular shaped apartment, which consisted of a balcony extending to the building line. The current amendment seeks to modify the design and layout of the tower form, which has resulted in variations to the setbacks. The comparison between the original and the proposed amended tower element is illustrated in the images below. The balcony towards the east will continue to extend to the podium line as per the approved design. While the mid-section of the tower will sit slightly closer to the street (2.5m compared to 3.6m), the western element will be more recessive (set back 2m compared to 0.8m). Overall, the variations to the upper level setbacks will not result in a significant impact to the overall prominence of the development. As will be discussed later in this report, the current amendment is a more resolved design than originally proposed that will contribute positively to the streetscape.

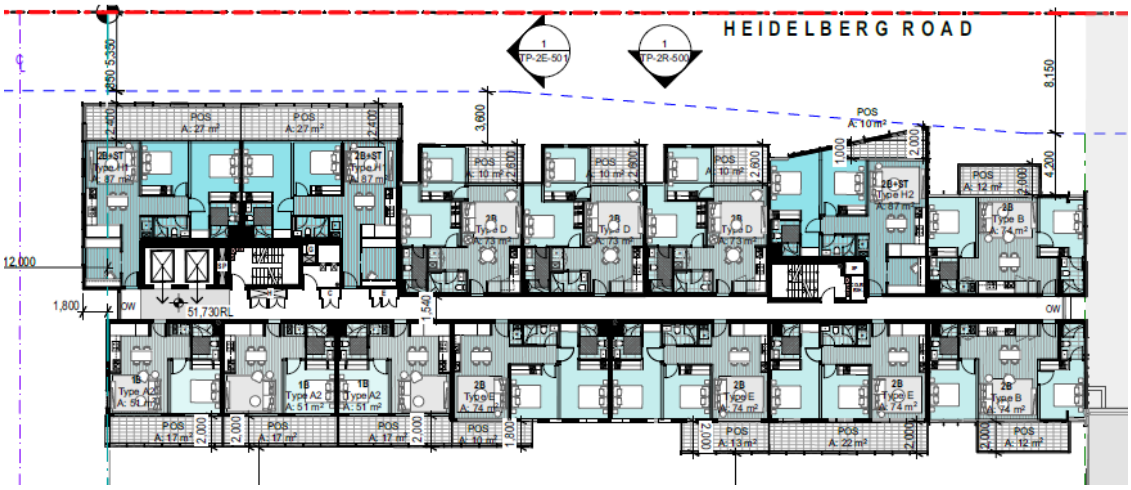


Figure 14: Original Level 5 of Urban Anchor (blue dashed line represents podium)

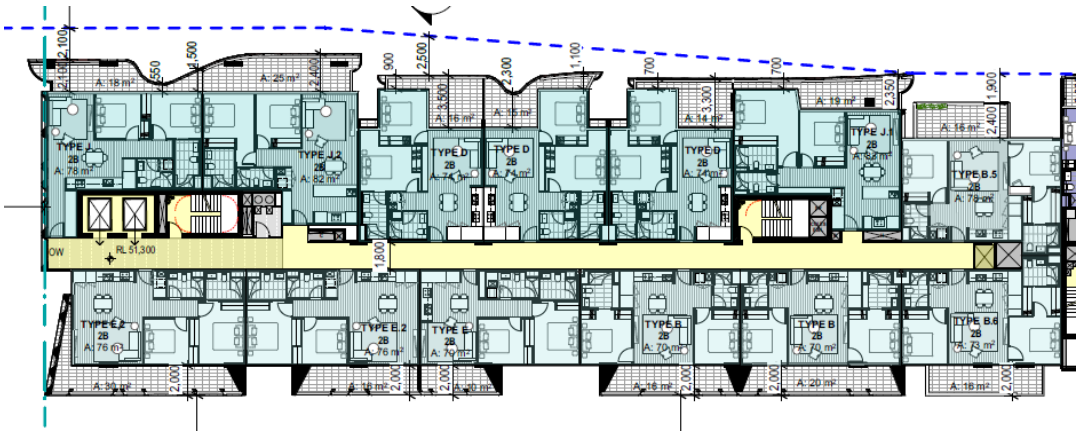


Figure 15: Proposed amended Level 5 of the Urban Anchor

174. In regard to the interface with the Mews, the original proposal sought to cantilever the upper levels of the Urban Anchor 1.8m into the Mews. This projection can be seen to the top left section of the original Level 5 plan above. The potential feeling of enclosure within the Outer Circle Mews was raised with this design and in response, conditions 1(a) and (b) were added to the permit requiring the following:

    (a) *Levels 4 and 5 of the Urban Anchor to be set back a minimum of 2.2m from the western side of the podium; and*

    (b) *Levels 6 and above of the Urban Anchor to project no further west than the podium.*

175. In response to these conditions, the building line of Levels 3 and 4 of the Urban Anchor has been set back 2.2m from the western side of the podium (with the balcony of the north-west apartment on Level 3 extending to the podium). To Levels 5 and above, the building proposes to extend to the lane, with the exception of a small section of the northern balcony which also projects into the laneway. This can be seen in the top left corner of the proposed Level 5 plan above. While the recessive levels have been applied to Levels 3 and 4 rather than 4 and 5, the impact is the same, which was to create a shadow line to distinguish the podium from the upper levels. This is achieved through the current design response and is considered acceptable.

176. The proposed small projection of the northern balcony into the Mews, whilst not strictly meeting condition 1(b) of the original planning permit, is not considered detrimental to the

public realm experience within the laneway with this smaller projecting presenting as an architectural feature creating visual interest without dominating the laneway as raised in the original design. It is further noted that Council's external urban design advisors have also not raised concern with the proposed alternative response to Conditions 1(a) and (b). It is therefore recommended that these conditions are deleted based on the current design proposed.

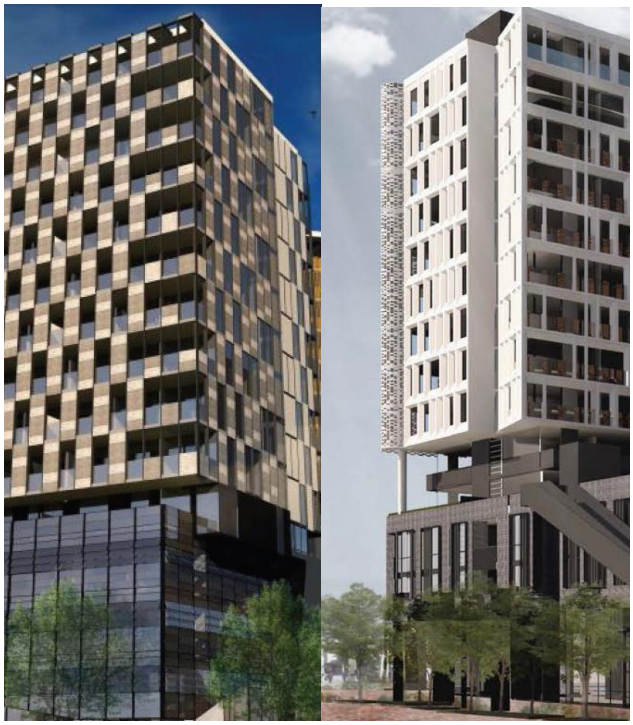


Figure 16: Original proposal (left) viewed from north-west with entire northern section projected over the Outer Circle Mews. Current amended proposal (right) viewed from the south-west with projected to vertical screen along the north-west edge of the building.

177. The Living Matrix building further to the south adjacent to the Outer Circle Mews was approved with a setback between1.8m and 4.2m from the Outer Circle Mews (inclusive of balconies). At level 3, the proposed amendment seeks to reduce the minimum setback marginally to 1.65m to the balcony edge. The minimum setback to the levels above is to be 1.9m to the core and balcony edges and 4.3m to the face of the building. While the setbacks to these levels are marginally greater, the southern portion of the building will appear closer consequent to the introduction of additional balconies. However, the southern portion of the living matrix has been treated with a different material and a greater stepping down to the south, which will mitigate against the appearance of increased visual bulk from this section. The comparison between the approved and proposed amended elevations to the Living Matrix building are illustrated in the images below.

Figure 17: Original Living Matrix Building viewed from the north-west

Figure 18: Proposed Amended Living Matrix Building viewed from the south-west

178. The revised treatment of the Living Matrix is considered acceptable, noting also that there is no requisite upper level setback along the Outer Circle Mews. Furthermore, the modified setbacks of this building have not been raised as a concern by Council's external urban design consultants.

179. As described in the proposal section, the southern setbacks of the Living Matrix are to be reduced from Nelmoore Lane, whilst the southern setbacks to the Sculptural Building are to be increased. The setbacks to both buildings are still significantly greater than the preferred 2.2m setback contemplated within the DP.

180. As mentioned above, the amendment proposes to infill the Heidelberg Road frontage with an 8 storey form. While this complies with the preferred 8 storey height limit in the DP, the building does not provide the preferred 2.2m setback to levels above 6 storeys. Notwithstanding this, it is considered to result in an appropriate design response for the Heidelberg Road streetscape as is also confirmed by Council's external urban design consultant, who stated that:

    (a) *'…setting back the upper two floors 2.2m would achieve little in terms of the visual presence of the overall family of buildings given the substantial width of Heidelberg Road and the scale of neighbouring buildings. Further, it is considered that setting back the upper levels would detract from the coherent architectural quality of the building form and will contribute to an effective transition in scale between its neighbours, as sought by the DP.'*

181. For the reasons put forward by the external urban design consultants, the variation to the preferred upper level setback to this element is considered acceptable. Furthermore, there are no perceivable amenity impacts as a result of this exceedance such as overshadowing or visual bulk. The proposed design is therefore considered acceptable.

182. The proposed school building, relocated to the centre of the site, whilst 7 storeys, does not require upper level setbacks given that the building is proposed to be located centrally within the site, well recessed from the podium level and street boundaries.

Street wall height

183. The design guidelines stipulate a preferred street wall height of up to three storeys for Precinct 2A, which may be higher along Heidelberg Road. The preferred street wall height for Precinct 2B is between 4 and 6 storeys. As identified previously, the Built Form Treatment Plan does not indicate that a podium/tower form is to be provided along the Outer Circle Mews.

184. The podium height within Precinct 2A (western end) along Heidelberg Road is maintained as 3 storeys with a comparable height in metres to the approved scheme. The height of the podium along the Outer Circle Mews and Nelmoore Lane to the south is proposed to be reduced by 1.23m from RL47.23 to RL46. While the original podium height was approved as proposed, the external urban design advice to the original application had recommended that the height of the podium along these elevations be reduced to achieve a more pedestrian scale within the adjacent streetscapes. However this advice was not followed as the original podium height was generally consistent with the DP. Furthermore, it was unclear whether reducing the podium height would increase the dominance of the upper levels and impact the cohesion with the remaining podium along Nelmoore Lane within Precinct 2B. The amended proposal however demonstrates that the changes to the podium height will continue to have a comfortable relationship with the upper levels and the balance of the Nelmoore Lane elevation. On this basis, the lowered podium height is considered an improved outcome along the western and southern streetscapes and is therefore supported.

Floor heights

185. The design guidelines suggest that residential floors should have a minimum 3m floor to floor height and commercial floors should have a minimum 4m floor to floor height. The floor to floor heights of the residential component are unchanged at 3.1m (to achieve a 2.7m high floor to ceiling height). The commercial floors are also unchanged at 3.9m.

186. The ground floor to floor heights have been reduced slightly from 6.2m to 5.8m, however these are still substantially greater than the preferred minimum of 4m. The school proposes floor to floor heights of 4.5m, increased from 4m. On review of the section drawings, this appears to be a result of thicker slab depths between levels. The increase in floor to floor height is considered inconsequential.

187. In the original proposal, the floor to floor heights of the community facilities were 3.4m. Concern was raised with the potential adaptability of these spaces and subsequently a condition was placed on permit required these be increased to a minimum of 3.9m to match the other commercial uses within the development. The current amendment exceeds this condition by increasing the floor to floor height of these spaces to 4m. This condition is no longer needed in reference to the amended plans and can be deleted.

188. The indoor multipurpose court has a triple height ceiling. As the original court was open air, the ceiling height has not previously been considered. The proposed floor to ceiling height is considered typical of an indoor sports court to enable effective use for ball games and the like.

Roof forms

189. The design guidelines encourage consideration of the composition of roof forms to creating a legible and visually appealing silhouette. The amended proposal continues to comprise a collection of buildings of different scales, forms materials and finishes. This creates variation between the buildings, contributing to a legible and visually appealing silhouette as sought by the design guidelines.

Built Form Articulation

190. The design guidelines encourage modulated building forms with vertical and horizontal breaks in the massing. Flat and continuous facades should also be avoided where they repeat the same form without variation or create a single horizontal form.

191. While the original proposal was considered to be generally consistent with this design guideline, concern was raised with the design treatment to the Urban Anchor building. Various permit conditions were added to the permit in order to address these concerns. The current amendment however has made significant improvements with respect to the design treatment and now presents a high quality, well resolved design response. This will be discussed in greater detail later within the report.

Corner lots

192. The design objective encourages façade treatments that address both streets and provide design treatments that emphasis the corner, including building up to the lot line.

193. In the original application, concern was raised in relation to the western elevation of the Urban Anchor facing the Outer Circle Mews. The original proposal featured an extensive textured concrete wall spanning the full height of the upper levels. Given the high visibility of this wall, condition k(iii) was added requiring the replacement of the decorative precast concrete cladding with a high quality material and finish. The amended proposal however has addressed this concern, with this elevation now comprising extensive window glazing sitting within projecting white frames. The improvement to this elevation is illustrated in the original and proposed western elevations of the Urban Anchor provided below.

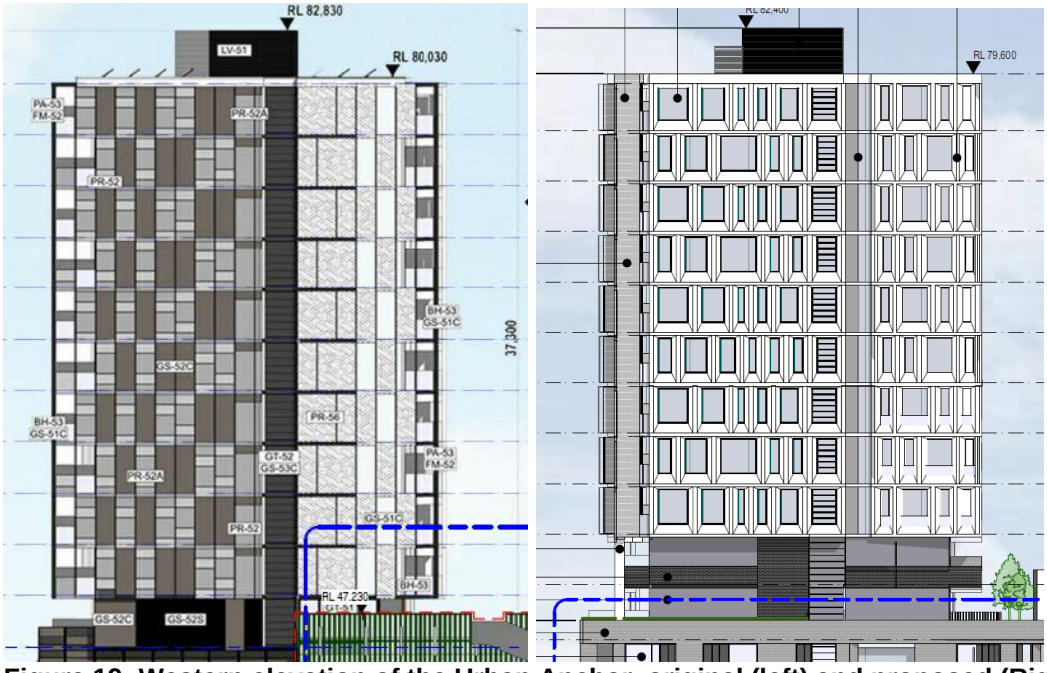


Figure 19: Western elevation of the Urban Anchor, original (left) and proposed (Right)

194. The remaining buildings within the proposed development will continue to provide a well resolved design response to all visible sides to ensure that buildings present 'in the round' and address all street frontages.

Wind protection

195. The design guidelines state that for higher built form, proposals should demonstrate that building forms and articulation will mitigate adverse wind conditions at street level, public spaces, balconies and adjoining properties. A desktop wind assessment was undertaken as part of the original application. This was reviewed by Council's external wind consultants who raised a number of concerns that were subsequently included as conditions of permit for an amended wind assessment report (condition 13).

196. The applicant has submitted a revised wind report in response to condition 13 of the permit and reflecting the proposed amendments. The wind report uses two configurations to test wind study locations, Configuration 1, which represents the proposed development surrounded by existing conditions and Configuration 2, which tests the proposed development and likely future development over the next 5 years.

197. The report has been reviewed by Council's external wind consultants who have indicated that Council officers need to turn their mind to which configuration is to be accepted as the base test, with the results currently showing mixed reliance on both configurations.

198. At the time of writing this report none of the adjacent lots have endorsed plans. As the final design of these sites is still to be confirmed, there is risk associated with relying on the potential future conditions to satisfy minimum comfort criteria. However, equally, it is important that future conditions are considered to ensure wind comfort levels will still be met. Disregarding all future development of the adjoining sites is likely to place an unreasonable burden on future developments to achieve acceptable wind comfort levels. For these reasons, it is recommended that minimum comfort levels are achieved for both configurations. This will be reflected in a revised condition accordingly.

199. In addition to determining which configuration is to be accepted, Council's Wind Consultants have also recommend that the wind tunnel test needs to be updated to address the following:

    (a) Level 1 terrace to achieve sitting criterion where outdoor dining is proposed;

    (b) Level 4 Childcare terrace to achieve areas of standing and sitting criteria, reflecting the type of activities proposed in the various locations within the terrace;

    (c) 'walking' rather than 'fast walking' used as the minimum acceptable criterion; and

    (d) Clarification of the sensor location for Location 3 i.e. whether it was shifted into the recessed entrance.

200. Condition 13 of the permit will be updated to reflect the latest wind report submitted and include the above items which will need to be addressed by way of condition before the development can commence.

Building separation & overshadowing

201. A 12m separation or greater is encouraged in the design guidelines, taking into account orientation, building positioning, solar access, overshadowing, outlook, facade length and alignments between the buildings requiring more distance.

202. As outlined in the proposal description, the building separation distances between the proposed residential towers has decreased slightly, however a minimum separation of 12m will still be met. The only exception to this is the terraces at podium level between the Urban Anchor and the Living Matrix buildings. This was also the case with the original design, which provided a separation of 11.4m. This was considered acceptable on the basis that these

affected apartments were on the podium level only and therefore would not result in any adverse amenity impacts. The current amendment seeks to reduce the separation to 9.5m between balconies. This is still considered a sufficient separation to mitigate potential amenity impacts such as overlooking or loss of daylight, additionally, the adjacent residential apartments have also been offset from one another, further minimising any additional potential impacts from the proximity.

203. As part of the current amendment, the proposed multipurpose court and school will abut the residential podium, extending 17m in height above the podium finished floor level. However, 9.8m of this is comprises a metal chain fence (associated with the school outdoor play area) rather than a solid wall. Nonetheless, this structure is substantially taller than approved netball court and sports pavilion under the original scheme, which extended 1.85m and 5.43m above the podium finished floor level respectively.

204. To mitigate the potential amenity impacts associated with the increase in height, the sculptural building has been shifted to the west, thereby increasing the separation from 3.45m to 11m to the balcony edge at podium level and 11.3m to the levels above. This separation, whilst not quite achieving the preferred 12m distance is sufficient to ameliorate potential amenity impacts such as overshadowing, overlooking and visual bulk.

205. The separation between the school building and the serviced apartments is much more modest with a distance of 6.45m proposed. While this is almost half the preferred separation, it is adequate on the basis that the serviced apartments are intended to be used for temporary accommodation only. Impacts such as overshadowing and overlooking are not as important unlike for dwellings. The separation proposed will provide an adequate level of daylight to the serviced apartments noting also that approximately half of this interface is to the semi permeable mesh fence, which would allow natural light to penetrate through to the south-facing serviced apartments. For these reasons, the separation is considered acceptable.

Connectivity & Interaction;

Public/Private Interaction

206. The design guidelines refer to the Connectivity and Interaction Plan, which is found at pp. 102 and 103 of the Development Plan. Of relevance, this promotes:

    (a) Urban legibility and public access to and through the site;

    (b) Street level interface treatments to contribute to high levels of pedestrian amenity and safety;

    (c) Provide safe and convenient vehicular and pedestrian access;

    (d) Minimise the impact of vehicles on public space where practical; and

    (e) Support the preferred neighbourhood character sought by the site masterplan for each individual precinct and the place as a whole.

207. The pedestrian connectivity plan at Figure 94 of the DP identifies that pedestrian priority routes extend along all sides of the site (refer to image below). There is also an east-west connection that is shown toward the north of the site. This is identified also as a publically accessible space.

Figure 20: Pedestrian Connectivity (Figure 94) p. 102 of the DP

208. The current amendment maintains the pedestrian connectivity through the site. Specifically, the through-connection from Mills Boulevard to the Outer Circle Mews via the podium communal courtyard (the Paper Trail). This is to be publically accessible.

209. In the assessment of the original application, concern was raised in relation to the poor interface treatment along Heidelberg Road at street level contrary to the DP, which directs active uses that contribute to the public realm. To address this concern, condition 1(c) was added to the permit requiring full height glazing along the Heidelberg Road frontage to the supermarket. The applicant has proposed an alternative response to this condition. Rather than providing clear glazing into the supermarket, it is proposed to provide a mixture of glass bricks and display cabinets to increase the activation along this elevation. The original treatment and current proposed amendment are shown in the images below:

Figure 21: Original Heidelberg Road elevation

Figure 22: Proposed amended Heidelberg Road elevation

210. While the treatment to Heidelberg Road is an improvement to the original proposal, it is not considered to sufficiently address the concern in relation to street level activation. The advice from Council's external urban design consultant was that at least 3 of the 5 display cabinets be replaced with full height glazing. This is considered a reasonable compromise and will be reflected in an updated condition.

211. The applicant has submitted a management plan for the display boxes as part of the current amendment. Given that two of the display boxes would be retained, this is still relevant. The management plan was referred to Council's Arts and Culture Department to review. They have recommended that either an art curator is engaged to manage the display boxes or alternatively that the facility partner with a gallery or artist run space. Information also needs to be provided to ensure that there is a sufficient budget allocated to create the works, which will depend on the frequency of the change over time.

212. In the event that a curator is engaged, the following three stage process is recommended:

    (a) A brief to be developed and open for artists' submissions, or by invitation to a group of shortlisted artists;

    (b) The concept design submissions will be assessed by Council's Visual Arts Panel or project specific panel and one artist may be successfully selected to proceed to commission round; and

    (c) The artist may be engaged for a further design stage or proceed straight to commission, however a fixed budget will be established and the artist contracted to deliver the project within this set fee.

213. A condition will be included on the amended permit requiring an updated Art Management Plan to address the above items.

Ground floor level

214. The design guidelines state that the ground floor should be designed to provide convenient access from the adjacent public realm. This design guideline is to be met. The amended proposal continues to provide multiple entrances into the building, contributing to the pedestrian permeability through the site. The majority of entrance points are provided at-grade, contributing to the ease of movement and inclusion through the site.

215. As part of the current amendment, the level of commercial activation to the south-east section of the site is reduced. An opportunity to improve the level of activation to the southern end of Mills Boulevard has been identified by Council's external urban design consultants.

They have suggested providing a commercial lobby entrance to the southern end of Mills Boulevard, noting that the finished floor level of the lift lobby is similar to the natural ground level along Mills Boulevard. While this is likely to result in the loss of car spaces, it is considered that these could be relocated within the lower basement level. Also recommended by the urban design consultants is to provide clear glazing to the bicycle store along Mills Boulevard. The suggestions are reflected in the diagram below as taken from their advice. These suggestions will improve the street level accessibility to the lower ground level and activation consistent with the design guidelines, thereby offsetting the loss of activation from the reduction of the retail floor space to this corner. The recommendations will be reflected through additional conditions.

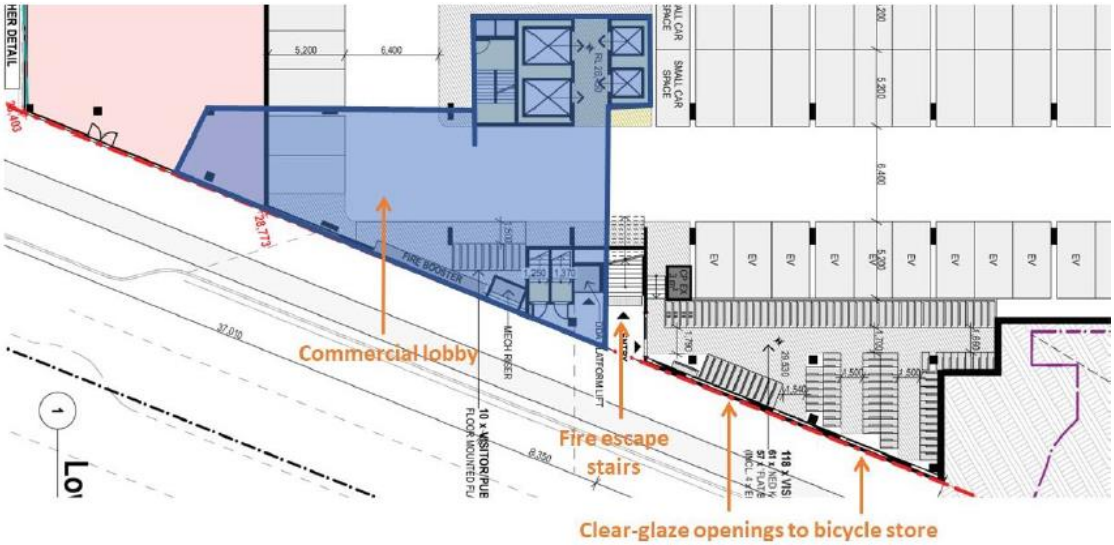


Figure 23: Recommendations from DLA advice for additional activation

216. Council's external urban design consultants queried the intended use of a narrow terrace as shown along the north of the Mill Building adjacent to Heidelberg Road. The applicant has explained that this was to enable to level above to create a 'shadow' above the ground level. However in achieving this design outcome, the proposal creates a poor outcome within the streetscape. The terrace is at a higher level and separated from the footpath by a solid balustrade resulting in a poor interface to the streetscape as illustrated in the images below. A condition is subsequently recommended requiring the glazing line associated with the shop in the north-east corner (the Mill Building) to extent to the line of the building above, subsequently deleting the elevated terrace.

Figure 24: North-west ground level treatment of the Mill Building to Heidelberg Road

Entry definition

217. The design guidelines state that common entrances for apartments should be well lit, transparent and in a visually prominent location. This design guideline continues to be met with the provision for two residential lobby entrances located along the Mews (unchanged as part of the current amendment). The lobbies continue to be generous in size and offer a high level of visibility via full height glazing to the Mews. Public lighting is also proposed to be installed along the Mews, which would assist in illuminating the entrances to the lobbies.

Building layout & Design;

Internal Amenity

218. The design guidelines seek to avoid privacy screening to habitable rooms, particularly main living areas. Borrowed light or ventilation is also to be avoided.

219. The proposed layout and design of the amended proposal continues to minimise the need for privacy screening. All residential buildings exceed a separation distance of 9m, thus meeting the minimum ResCode threshold for overlooking. The only privacy screening required is to the terraces associated with the podium level apartments. All habitable room windows will continue to have an outlook to the internal terraces.

220. All habitable room windows continue to have direct access to natural light, with none relying on borrowed light or ventilation. Condition 1(bb) was included on permit requiring a notation that all habitable rooms are fitted with an operable window. While the apartment layouts on TP-2E-804 have been updated to show operable windows, these appear to only show sliding doors. This has been raised as a concern by Council's ESD advisor. Whilst sliding doors are helpful for ventilation when occupants are home, they are generally cannot be used for when an occupant is not home (in case of break-ins), or in the event of light rain. As such a condition 1(bb) of the original planning permit will be updated to require all habitable windows to be fitted with an operable window (in addition to sliding doors).

Overlooking

221. The design guidelines encourage direct overlooking to habitable rooms and private open space is to be avoided. The amended proposal does not crease any new overlooking opportunities. As discussed above, the separation distances between apartment buildings is sufficient to mitigate unreasonable overlooking opportunities.

222. Planning permit 1(cc) however was added to the original planning permit to require details of screening devices between abutting balconies. A notation has been added to the left hand side of the Apartment Types Plan TP-2E-804 that 1.8m high opaque glass screening devices are proposed between balconies. This will adequately prevent unreasonable overlooking opportunities and addresses the permit condition.

Acoustic Treatments

223. The design guidelines require acoustic treatments to be provided to comply with the Preliminary Acoustic Assessment within Volume 2 of the DP.

224. The Preliminary Acoustic assessment states that acoustic treatments would be required for development within 20m from Heidelberg Road. The recommended design sound levels for houses and apartments near major roads are 35-40L_{Aeq} dB(A) for living areas and 30-40L_{Aeq} dB(A) for sleeping areas near busy roads.

225. An acoustic report was submitted with the original application, however this did not satisfactorily demonstrate that the above targets would be met. At the advice of Council's acoustic consultant, condition 11(e) was added to the permit requiring:
    (a) Targets of 40dBA, Leq16h in living rooms and 35dBA Leq8hr in bedrooms met for traffic noise along Heidelberg Road.

226. A revised report was submitted with the current amendment application addressing this condition. This report has been reviewed by Council's acoustic consultants who confirm that the glazing appears likely to achieve these internal noise targets.

227. Acoustic treatments for noise generated by the specific have been discussed within the assessment of the land uses.

Design Detail

228. The design guidelines suggest that designs should be contemporary and demonstrate design excellence. A distinctive architectural response for landmark built form and within the gateway zone, commensurate with the prominence and scale is also encouraged.

229. Concern was raised with the overly busy and repetitive northern elevation of the Urban Anchor within the original application. Various conditions were added to the planning permit seeking to improve this elevation, including:

    (a) *Decorative screens to the western portion of the northern façade associated with the Urban Anchor applied more irregularly and with variation in sizes, including operable sections. (Condition 1(d)).*

230. The treatment of the Urban Anchor has been redesigned as part of the current amendment, improving its overall treatment to the street. The façade has been simplified and appears substantially less "busy' than the original design. It is proposed to apply a patterned screen to the façade, which is divided into three modules through two vertical rebates. The screen detailing is intended to emulate a hit a miss brick pattern, as illustrated on TP-2E-659. Responding to Condition 1(a), the screen is to be operable, which will contribute toward a dynamic and interesting façade as sought by the condition. As this condition has been met, it is no longer needed on the amended permit.

231. The amended façade has also introduced a slight curvature to the screen, similar to a curtain. The undulation of the screen adds to the visual interest and a complimentary contrast to the more rectilinear forms along the remainder of the Heidelberg Road elevation.

232. The western elevation of the Urban Anchor has also been amended. Rather than repeating the screening along this elevation, the current amendment proposed a more open, but complementary design of glazing with projecting window frames. This treatment extends for the entire western elevation, replacing the pre-cast concrete wall previously proposed for the southern section of this wall. The design response to this elevation complements the northern elevation, however also provides some visual relief and variation. It is further noted that this treatment will be similar in appearance to the 8 storey apartment building currently under construction at the eastern end of the site (Precinct 1B) on the corner of Parkview Avenue and Heidelberg Road. This will assist in tying the overall façade together and is considered an appropriate response to the streetscape.

233. While not required by conditions, the current amendment also seeks to modify the southern portion of the Living Matrix building along the Outer Circle Mews. The approved design involved a sheer form with a sloping roof line toward the south. The elevation was to comprise glazing and timber-look cladding/spandrels. The current amendment proposes a more tiered design, incorporating projecting balconies, and a more noticeable stepping down toward the south. The proposed amended design response to the Living Matrix is considered

well resolved and will also improve the internal amenity of these apartments by increasing the balcony areas.

234. Another notable change within the current amendment is to the podium treatment within Precinct 2A along Heidelberg Road, the Mews and the rear access lane. The approved development proposed a louvered glazed screen to Heidelberg Road and an aluminium batten screen to the Mews and Nelmoore Lane. While the design detail was generally accepted, concern was raised in relation to the level of passive surveillance and activation to the Mews. Condition 1(f) was subsequently added to the permit requiring *the podium carpark to be sleeved with apartments for the full length of the Outer Circle Mews, apartment from the area accommodating the stair well.*

235. The current amendment seeks to provide a more solid and continuous façade treatment to the western end of Heidelberg Road, the Outer Circle Mews and the rear access lane. The façade. This is to comprise of 'midnight blue' brick cladding with inset openings to Heidelberg Road and the Mews and a concrete formliner finish to Nelmoore Lane. The revised treatment of the podium is consistent with the design guidelines which encourage the lower levels to present a more solid street wall with indented balconies. In this regard, the amended proposal is considered to align with the DP.

236. In response to Condition 1(f), the amendment introduces two additional dwellings on both Levels 1 and 2 to the south of the residential lift cores. The remaining sections of the podium are proposed to be treated with a feature screen with climbing plants.

237. While the current amendment increases the level of activation along the laneway, it does not meet the condition. The applicant has advised that extending apartments to the full length of the podium levels has significant implications on the car park layout and would require a substantial number of car spaces to be removed. Council's External Urban Design Consultants have suggested that given that apartment sleeving is of considerable greater value at Level 1 than Level 2, it would be appropriate to relocate that least some of the apartment floor area facing the Mews at Level 2 to Level 1, thereby improvement the activation whilst maintaining the number of car parking spaces. This is considered a reasonable compromise and will be facilitated through an update to Condition 1(f).

238. While the design detail of the commercial/retail precinct (Precinct 2B) was considered acceptable within the original scheme, the current amendment introduces a number of changes driven by the relocation of the school building and introduction of the serviced apartments. The school building will be most prominent along Mills Boulevard between the Mill Building and the Machinery Hall, setback behind the Village Square. The design treatment of this building continues the rectilinear forms of other buildings within the Village Precinct, however presents a lighter-weight façade to Mills Boulevard consistent of curtain glass walls with exposed mullions. The design approach of providing a more light weight form between to largely solid elements is considered well balanced and ensures that the collection of buildings will continue to sit comfortably beside one another.

239. The relocation of the school and the introduction of the serviced apartments has resulted in a substantially more resolved elevation to Heidelberg Road as illustrated in the images below. The revised Heidelberg elevation shows a much greater level of cohesion both in materials and form. Furthermore, whilst not specifically referring to Heidelberg Road, Council's external urban design consultant is satisfied that in the amended design - *'There is a clear and bespoke design intent behind each building, which will give them an individual identity, while the use of thematic materials will tie them together into a coherent precinct.'*

Materials & Finishes

240. The design guidelines encourage high quality materials that will age gracefully, generally in muted tines with large expanses of highly reflective surfaces to be avoided. A material

palette drawn from industrial heritage of the site, including natural concretes and render, face brickwork, steel and unfinished timber is also encouraged.

241. On review of the materials and finishes, Council's Urban Design consultant advised that '*the proposed façade design and materials generally represent an improved response to the DP compared with the approved proposal'* and also *'the proposed materials largely reflect the industrial heritage of the site, but have been used in a contemporary manner*'

242. In the original proposal, concern was raised with the yellow colour proposed to the screen on the Living Matrix building. It was suggested that a more subdued finish such as copper or bronze is required given the subservient location of this building off the main road. This was reflected in condition 1(k)(vi) of the permit. This condition has been addressed with the elevation now proposed to be composed of bronze-coloured screens and glazing. However, the thumbnail on TP-2E-803 has not been updated and still refers to FM-51 as a metal screen 'golden colour or similar'. While Condition 1(k)(vi) has been met, a condition will require FM-51 on TP-2E-803 to be updated accordingly.

243. In the original scheme, concern was raised with the materials and finishes treatment of the Urban Anchor. The colour schedule indicated that the building would be treated with a variety of white and grey finishes, rather than the more 'earthy' tones as depicted in the renders. The extensive use of grey finishes was considered to have a lacklustre appearance, with the latter more aligned with the industrial heritage (e.g. orange brick from the former buildings on the site). The 'checker board' application of the different colours and finishes also considered to contribute to the business of the façade. This resulted in the following two conditions in the permit:

    (a) *Brick snap cladding (PR-53) to the eastern side of the urban anchor be finished in a brown shade similar to shown on the perspective. (condition 1(k)(v)); and*

    (b) *Material FM-53 within the western portion of the Urban Anchor to be a simple cream colour. (Condition 1(k)(vi)).*

244. It should be clarified that the above conditions intended to refer to the eastern and western ends of the northern elevation, rather than the elevations themselves.

245. As previously identified, the current amendment seeks to significantly change the design detailing and material treatment of the Urban Anchor. Now as current proposed, the materials and finishes of the Urban Anchor is consider to present an elegant and visually interesting design response. While the amended proposal would not meet condition 1(k)(v), it is no longer considered necessary when balanced with the mixture of materials proposed to the rest of the Heidelberg Road façade.

Figure 25: Proposed Heidelberg Road elevation – Urban Anchor Building

246. As illustrated in the image above, the provision for a white material will provide a comfortable contrast to the mixture of more 'earthy' materials now proposed along Heidelberg Road, particularly the 'midnight blue' brick cladding to the base and the 'rustic tan' brick cladding to the Mills building on the corner of Latrobe Street. The lighter material also provides an appealing contrast with the bronze material finish proposed to the Living Matrix building to the south.

247. It is appropriate that an off-white (surfmist) rather than a stark white has been used for the Urban Anchor building. This more muted white tone ensures that the building sits comfortably along the streetscape and will complement the material palette and avoids an overly strong contrast to the range of materials within the façade. The 'hit and miss' brick pattern to the screen also contributes to the visual interest of the façade and breaks down the potential solidity of what could otherwise be an overwhelming extent of wall.

248. As discussed above, the proposed podium to the western portion of the site (Precinct 2A) has been amended to provide a more robust base to the building, consistent with the DP. This is also supported by Council's external urban designers who opined that *'the rhythm and use of brickwork in the 'Urban Anchor' podium frontage to Heidelberg Road response better to the DP'* also that '*the architectural treatment of the western and southern edges of the podium car park has been substantially improved, with metal battens replaced by masonry wall clad in brick snaps and with punched openings, achieving the 'street rhythm' sought by the DP.* The only change to materials that has been recommended by the urban design consultants was that PR-56 (concrete with formliner) proposed to the podium levels along Nelmoore Lane be replaced with PR-51 (Midnight blue, stretcher bond, brick snaps) consistent with the Outer Circle Mews podium. This recommendation will ensure a high quality podium treatment is provided to all elevations and will be included as a condition on the amended permit accordingly.

249. The proposed red/copper metal finish to the lower levels of the Machinery Hall has been deleted from the amended proposal. A greater provision of glazing has also been added to the southern end of the eastern elevation at Level 1. The removal of this material is considered inconsequential to the overall design, with an acceptable presentation maintained.

250. Other notable changes to the materials and finishes includes the school building, which as previously identified, proposes a curtain glass wall with exposed spandrels. The materials and finishes of this elevation has similarities to the 1954 boiler house located further to the

south of the site. These visual connections to the heritage elements of the site is consistent with the DP.

251. The serviced apartments to Heidelberg Road present a glass brick façade screen with recessed balcony openings to the rooms. The use of glass bricks to the façade is considered a contemporary take on a typically mid-20th century material. It will also add to an interesting mixture of materials along the Heidelberg Road elevations.

Car Parking and Bikes

252. The design guidelines refer to the Integrated Transport Plan. This plan includes initiatives to encourage sustainable travel behaviours such as:

(a) Provision for bicycle end of trip facilities

(b) Car parking at lower rates; and

(c) Green travel planning.

253. Further discussion regarding the car parking provision is provided later within this report.

254. A Green Travel Plan (GTP) was submitted with the original application, however Council's Strategic Transport Unit and Council's external traffic engineers had recommended further improvements. These were reflected in Condition 74 of the planning permit. An amended GTP was submitted with the current application in response to the amendments and the permit condition. While the GTP was considered generally acceptable, Council's Strategic Transport Unit have recommended a larger provision of employee bicycle parking and end of trip facilities, which should be included in the GTP. This will be conditioned accordingly. Further discussion regarding bicycle parking provision is provided later within this report.

Mail and building services

255. The design guidelines seek to design building services to be visually unobtrusive, screened or located away from active street frontage zones wherever possible. Mail collection points should also be secure, weather protected and close to the main building entrances.

256. The site services are largely unchanged in the current amendment, other than the inclusion of more specific details. The amendment does not create situations where building services would be more visually prominent along the street frontages. As such, the design guidelines for building services will continue to be met.

257. While the mail collection points appear to still be available within the residential lobby areas, the notations have fallen off the amended plan set. To ensure that these are still adequately provided for, a condition will require mail collection points to be clearly depicted on the plans.

Open space and landscape design;

Streets and publically accessible spaces

258. The design guidelines state that the Heidelberg Road frontage should provide for wide footpaths and generous public arrival zones at gateway locations with high quality public space. The guidelines also refer to the Landscape Concept Plan, which is at section 4.0 of Part 1 of the DP.

259. A landscape concept plan was submitted with the original application for all publically accessible areas. This was reviewed by Council's Open Space and Urban Design Units who provided a number of comments and recommendations with respect to each area. These

were translated into permit conditions for a revised landscape plan. A revised landscape plan was submitted with the current application and has been reviewed again by Council's Open Space team. An assessment against the current conditions and any new items is discussed in the following sections.

Heidelberg Road frontage

260. Condition 17(d) of the planning permit required the following amendments to the original design in respect to the Heidelberg Road frontage:

    (a) *Minimum footpath width of 3m;*

    (b) *Remove continuous landscape strip;*

    (c) *Introduce bicycle hoops and seating between street trees;*

    (d) *Retaining wall relocated at the kerb side edge;*

    (e) *Remove brick paving extending from the Outer Circle Mews;*

    (f) *Tree species to consider impact from future location of power lines and infrastructure; and*

    (g) *Ensure/demonstrate the tree within the splitter island adjacent to the vehicle entrance does not impact on sight lines.*

261. Conditions (a), (b), (c), (e) and (g) above have been met in the amended plans. In relation to Condition (d), it appears that this condition is largely redundant due to the change in footpath levels resulting in similar levels between the road and the footpath and thus avoiding the need for retaining walls. However to confirm this, Council's Open Space Unit and Urban Design Unit have requested more comprehensive levels and grading information as well as sections.

262. While Condition (e) has been met, Council's Open Space Unit has identified that there is still a residual garden bed reflective of the Outer Circle Mews style along Heidelberg Road. It is requested that this larger garden bed be removed. This will be included as an updated condition accordingly.

263. In relation to condition (f), while there are notes on the landscape plan reflecting the condition, the location of power lines and other services still needs to be resolved. If power lines are to be underground, the alignment and depth will also need to be known to adequately assess the impact on tree planting, including the details of tree species, soil volumes, tree pit sizes and spacing.

264. Council's urban design unit have included additional items that are not related to the existing permit conditions or the proposed amendments and therefore cannot to be included as conditions are part of the amended plans.

265. Additional garden beds appear to have been introduced along the Heidelberg Road frontage on the architectural plans adjacent the eastern end of the supermarket, the serviced apartment lobby and west of the terrace. No details of this landscaping is included on the landscape plans. Concern is also raised in relation to the durability and maintenance of landscaping in this location. This has also been raised by Council's external urban design consultant. It is recommended that this be removed from the architectural plans, however, in the event that landscaping is desired, greater detail of this landscaping is required to be provided on the landscaping plans, which also addresses the durability and maintenance concerns. This will be reflected in the updated conditions.

Outer Circle Mews

266. Condition 17(e) of the planning permit required the following amendments to the original design in respect to the Outer Circle Mews:

    (i) *The cluster of four trees at each end of the Mews replaced with a single tree;*

    (ii) *Avoid small 'left over' spaces between street furniture and garden beds;*

    (iii) *Small garden beds or vertical garden planting along the eastern edge;*

    (iv) *Greater detail of the windscreens e.g. materials, porosity;*

    (v) *Provision of BMX coping/deterrents to street furniture; and*

    (vi) *Colour variation applied to the brick plinths and pavements.*

267. Council's Open Space Unit were satisfied that Condition (ii) above had been met, in regard to (iv) to (vi), more information is needed to confirm that these conditions are met. In response to Condition (iii), Water sensitive urban design beds have been provided within this location. Council's Open Space Unit have requested further information is proposed on the system and its broader connections. This condition will be updated accordingly.

268. Condition (i) has not been met, the cluster of four trees at either end of the Mews has been retained on the plans. The intent of the condition was to ensure that vegetation can successfully grow in the confined area. To ensure that the intention of the condition is met, Council's Open Space Unit have suggested that more information is provided around the species to confirm whether the area is capable of supporting the four trees as proposed. This will be reflected through an amended condition.
Southern Access Lane (Nelmoore Lane)

269. Condition 17(f) of the planning permit required the following amendments to the original design in respect to Nelmoore Lane:

    (a) *Further tree planting at the north/east edge (triangular space);*

    (b) *Minimum 1.5m planting width for street trees; and*

    (c) *Doors to the Back of House storage area to not open outward onto the footpath.*

270. While Council's Open Space Unit was satisfied that the above conditions had been met, the redesign of this interface has raised additional comments, specifically:

    (a) Concern was raised that sightlines from the mall entrance on the lower ground level west of the shop would be obstructed, however the elevations on T-2E-653 indicate that the adjacent shop will be fitted with clear glazing (GT-03) and therefore this is not anticipated to be an issue;

    (b) Comprehensive levels and grading details are requested. This will be conditioned accordingly;

    (c) Dimension of the pinch point along the footpath is required to demonstrate a minimum 2.5m wide path is provided along Nelmoore Lane. This will be conditioned accordingly;

    (d) Improved landscape treatment within the triangular space to the south-east of the Machinery Hall created by the current amendment, including:

        (i) Provision of furniture to include seating with backs and armrests that can cater for grouping of people;

        (ii) Introduce low planting and garden beds; and

        (iii) Ensure bicycle hoops are a minimum of 900mm from the kerb line (when perpendicular to the road alignment).

Level 1 Terrace

271. Condition 17(g) of the planning permit required the following amendments to the original design in respect to the Level 1 terrace:

    (a) *Provision for medium sized trees in larger planter boxes;*

    (b) *Inclusion of softer materials e.g. timber; and*

    (c) *Seating to be provided in clusters.*

272. Council's Open Space Unit are satisfied that conditions (a) and (b) have been met. Insufficient detail has been provided of the Level 1 terrace to confirm that seating has been provided in clusters and has requested that more information be provided, including seating capacity. Council's Urban design Unit have also requested the following additional details:

    (a) architectural canopies to be shown in plan and section;

    (b) comprehensive levels and grading information;

    (c) a clear drainage strategy (including raised planter);

    (d) Slope of the synthetic grass mount to be correctly referenced as1:3 (rather than 1:20) on section drawing TP-LAN-L1-703 (Rev 3);

    (e) Tree species and available soil volumes nominated; and

    (f) Ensure trees are suitably offset from the edges of planters.

273. The above matters will be addressed through amended conditions.

Paper trail

274. Condition 17(h) of the planning permit required the following amendments to the original design in respect to the Level 1 terrace:

    (a) *Further tree planting along the southern and eastern edge of the residential gardens.*

275. Council's Open Space Unit are satisfied that this condition has been met.

Village Square

276. The applicant has requested that the conditions relating to the Village Square (condition 17(i)) are deleted to allow details to be resolved via a separate process. The landscape architects are working with relevant Council officers to prepare designs for all future public open space areas. It is reasonable that the Village Square follows this same process, however to ensure timely delivery of the park, alternative conditions will be required to ensure that the design concept is prepared prior to the commencement of works and that prior to the occupation, substantial completion of the park is carried out, with bonds or bank guarantees organised for the balance of works and maintenance period. These additional conditions will be included on permit accordingly. The condition will also be updated to reflect the latest round of comments from Council's Open Space and Urban Design Units.

Communal Open Space

277. The design guidelines encourage the provision of communal open space on roof areas. The proposed amendment retains the podium roof communal terrace for the Sculptural Building and the Living Matrix. A new area of communal open space is also proposed to the Level 8 roof top (above the serviced apartments) directly accessible from the Urban Anchor. Landscaping details of this level have not been provided within the landscape plans. This will be included as a condition accordingly.

278. Further discussion regarding the communal open space areas is provided within the assessment of clause 58 later in this report.

Private Open Space

279. The design guidelines recommend private open space in accordance with Clause 55 of the Scheme. At the time the DP was prepared, the open space requirements in Clause 55 were for an 8sqm balcony with a minimum dimension of 1.6m. Since the DP controls were created, Clause 55.07 (apartment developments of 4 storeys or less), and Clause 58 (apartment developments of 5 storeys or more) was introduced. It is noted that the private open space requirements are the same in both clauses and are as follow:

Dwelling Size	**Min area**	**Min dimensions**
Studio/1 bedroom	8sqm	1.8m
2 bedroom	8sqm	2m
3 or more bedroom	12sqm	2.4m

280. In the original application however, the private open space areas were erroneously assessed against the requirements for the Gateway Precinct, which require a minimum 6sqm for one or two bedroom dwellings and minimum 10sqm for three or more bedroom dwellings. This is preferably to have a northern orientation and 2m minimum internal dimension. As can be seen, assessment against these guidelines increased the expectations for minimum dimensions for single bedrooms but reduced the minimum expectations for balcony area.

281. In the original application, the balcony sizes were considered generally acceptable, however it was recommended that south and north facing balconies to the Urban Anchor achieve a minimum dimension of 2m. This was reflected in the permit conditions 1(dd) and (ee) respectively. The amended plans have met condition 1(dd), however condition 1(ee) is not met for all apartments on the northern side of the Urban Anchor, specifically those within the podium 1 and 2. It is noted however those none compliant apartments are associated with one bedroom dwellings.

282. Having regard to Clause 55.07/Clause 58 and also that additional communal open space has been provided for the Urban Anchor apartments on Level 8, it is considered reasonable that condition 1(ee) be amended to allow balconies associated with one bedroom dwellings to achieve a minimum dimension of 1.8m to a minimum area of 8sqm. This will be updated in the condition accordingly.

Environmentally Sustainable Design;

Material re-use

283. As discussed within the original application, the proposed development does not propose to re-use existing materials on site noting also the existing buildings on the site have already been demolished and removed from the site.

284. As an alternative, Council's ESD advisor recommended that recycled materials be used. This was to be reflected in an amended SMP pursuant to Condition 9(h)(i) and (l) which required in turn:

(a) *Use of recycled materials e.g. insulation;*

(b) *Recycled content for concrete and steel; and*

(c) *FSC certified sustainable or recycled timber for all timber uses where ever possible on site.*

285. An amended SMP was submitted with the application, however this has not satisfactorily addressed these conditions as confirmed by Council's ESD Advisor.

286. In relation to Condition 9(h), the revised SMP only commits to the use of one recycled material. Given the magnitude of the proposal and the volume of materials to be used, commitment to recycled materials for several of the more significant items is sought as outlined subsequently in conditions 9(i) and (l).

287. Commitments to use recycled concrete and steel need to be substantiated to satisfactorily address condition 9(i). This condition will subsequently be retained on the amended permit.

288. While the SMP notes engineering timber will be certified, given the project appears likely to be constructed in reinforced concrete, there is no commitment to utilise the timber as per the intent of the condition. As such, this condition will also be retained on the amended permit accordingly.

Solar access and passive energy efficiency

289. The design guidelines seek to minimise the number of indoor and outdoor living areas with a southerly orientation. The layout of the apartment buildings is largely unchanged, however as a result of reconfiguration of apartment layouts and an increased setback from the western boundary, there is now three less south-facing apartment than the original proposal. As such, the current amendment reflects a slight improvement to the original design.

290. The guidelines also require that ESD compliance is achieved at planning application stage through to architectural and landscape designs consistent with or exceeding the requirements of the ESD technical reports. The endorsed ESD strategy within Part 2 of the DP relies heavily on the UDIA EnviroDevelpment tool. The endorsed report commits to meeting all UDIA EnviroDevelopemt Criteria and all SDAPP best practice standards.

291. In the original application, concern was raised with the heat gain from exposed north, east and west glazing. This was sought to be addressed via Condition 1(g) which calls for external shading devices to be provided. This condition has not been satisfactorily met within the revised proposal. Council's ESD advisor has recommended that further testing be undertaken to demonstrate the effectiveness of shading at the summer solstice for north-facing glazing at noon, east-facing glazing at 10am and west-facing glazing at 2pm. This will be reflected through amended conditions.

292. Council's ESD advisor also made a number of recommendations to the original proposal, the following of which were subsequently translated into permit conditions:

(a) *Separate water metering for all major common area uses, tenancies and dwellings (Condition 9(e));*

(b) *Comprehensive commissioning and tunning of all major appliances and building services (condition 9(f)); and*

(c) *Environmental Management Plan Monitor and control activities undertaken during construction (condition 9(g))*.

293. The above conditions have been subsequently met within the amended proposal. This has also been confirmed by Council's ESD advisor.

294. On review of the amended SMP, Council's ESD advisor has made note of additional matters that will need to be addressed by way of conditions, these can be summarised as follows:

(a) 'Published' BESS Report required for endorsement;

(b) All *'items to be marked on floorplans'* within the BESS report need to be clearly shown on the drawings including clotheslines;

(c) Preliminary Section J/NABERS energy modelling referenced in the BESS report to be submitted; and

(d) Lighting power density should be provided to minimum 2019 NCC standards.

Water Cycle Management

295. The design guidelines refer to the Water Cycle Management section of the ESD and services technical reports. The guidelines also encourage green roofs for areas exceeding 100sqm.

296. In the original application, concern was raised that the MUSIC model provided heavily relied on proprietary SPEL stormwater product filtering runoff from approximately 14,180sqm of roof, road and paved areas as well as 8,072sqm of roof connected to 110kL of rainwater storage for toilet flushing. Council's ESD advisor was not supportive of this approach as it cannot ensure that urban stormwater quality objectives of best practice can be met. It was subsequently requested that evidence be provided that these products are effective in local Victoria conditions, or alternatively a different approach is used. This was to be addressed in an amended SMP report pursuant to Condition 9(d) of the permit. No information has been provided and as such this condition remains outstanding and will be retained on the amended permit.

297. The original planning permit also identified a discrepancy in the size of the rainwater storage between the SMP and MUSIC models. This has been satisfactorily addressed, with the SMP now correctly referencing the rainwater storage as 100kL.

298. Condition 9(k) of the planning permit also requires the provision for stormwater retention within open space areas. Council's ESD advisor has advised that this has not been sufficiently addressed. While the landscape plans indicate raingardens within the Village Square and Level 3 Podium, additional details (including cross-sectional diagrams) are still required.

Heritage Interpretation

299. A Wayfinding and Interpretation Strategy was submitted with the original application. While this was largely supported, Condition 21 sought the following amendments to be made:

(a) *Heritage interpretation signage within the Paper Trail for the metal inlay; and*

(b) *Provision for further details regarding the heritage interpretation and wayfinding elements e.g. steel paving inlay to vertical element transition*.

300. These condition have not yet been met and will be retained on the amended permit accordingly.

Apartment Specific Guidelines

Design treatment for common areas

301. The design guidelines encourage external lighting and seek to minimise concealment points. In response to this, condition 25 of permit requires a detailed lighting plan to be provided, which includes provision for lighting of residential entrances. This will be retained on the amended permit. The proposed amendments otherwise do not create any new concealment points or areas of safety concern.

302. The design guidelines also seek to minimise the length of common area internal corridors and encourage natural light and ventilation. In the original scheme concern was raised in relation to the narrowness of the internal corridors, which was to be addressed by Condition 1(ff) by requiring common corridor widths of the commercial buildings to achieve a minimum width of 1.8m. This has been achieved within the current amendment and as such the condition is no longer required and will be deleted. The internal corridors will also continue to receive access to natural light and ventilation.

Parking and driveways

303. The design guidelines encourage car parking within basements, or otherwise it should be sleeved with habitable or active uses. Car park entrances should be visually recessive and located generally in accordance with site guidelines.

304. The location of car parking within the site is largely unchanged, situated within both basement, ground and podium levels. The 'sleeving' of the car parking along the Mews has been discussed earlier within this report and subsequent a condition is recommended that greater provision for apartments on Level 1 is accommodated through a condition of permit.

305. The amended plans extend the carparking within Level 1 further to the east, which has caused an increased visibility of the carparking along the Nelmoore Lane in lieu of commercial floor area. The external urban design advice has suggested extending the commercial area further to the west to sleeve the eastern section of the car park from Nelmoore Lane. This however is not considered necessary as outlined in red in the image below, the area of the visible car park sits two storeys above the street level at this point so would not be noticeable at street level.

Figure 26: Machinery Hall building southern elevation (car park area in red)

306. While it might be visible from the Artisan park on the southern side of Nelmoore Lane, given that the levels below and above provide activate interfaces, this level of car parking would not have a significant impact on the appearance of the building from this distance. On this basis, no further conditions have been recommended.

307. The access from Heidelberg Road is maintained as per the original application. The access points of Nelmoore Lane have shifted slightly to reduce potential conflicts, however continue to be generally consistent with the preferred access points. Access arrangements are discussed in greater detail with the traffic and car parking assessment later within the report.

Waste management and loading areas

308. The amendment does not propose to alter the waste management and loading bay arrangements. These were considered under the original application and were generally considered satisfactory. An updated Waste Management Plan has been prepared reflecting the amendments to the proposal. This has been reviewed by Council's City Works Unit who deem this to be acceptable. The conditions will be updated to reference the latest report.

309. Given the extensive loading bay activity anticipated from the proposed uses on the site, condition 70 of the existing permit requires a loading bay management plan to be submitted prior to occupation of the building. This condition will be retained on the amended permit.

Clause 58 (Apartment Developments)

310. These guidelines apply to apartment developments of 5 storeys or greater.

Standard D1 – Urban Context

311. Matters relating to urban context have been covered within the assessment of the DP earlier in the report.

Standard D2 – Residential Policies

312. The amended proposal continues to be consistent with the applicable residential policies as covered earlier in this report.

Standard D3 – Dwelling diversity

313. The proposed amendment maintains a mix of dwelling types and sizes. While the amendment seeks to further increase the proportion of 2 bedroom dwellings to 83% (previously 58%), this continues to be acceptable on the basis that the wider Amcor site is to contain predominately 3 and 4 bedroom townhouses. Also, the layout and design of the apartments would facilitate consolidation of apartments in the event that there was a demand for larger dwelling types. Overall this standard continues to be met.

Standard D4 - Infrastructure

314. The proposed amendments would not further impact upon the existing infrastructure. Previously approved building services, such as a substation and rainwater tanks continue to be shown on the plans.

Standard D5 – Integration with the street

315. Integration with the abutting streetscapes has been discussed within the DP assessment earlier within this report.

Standard D6 – Energy Efficiency

316. The proposed amendments do not have a noticeable impact on the energy efficiency of the approved development as previously assessed. However, Condition 1(g) of the approved development required additional external shading system to be applied to all east, west and north facing facades of the Urban Anchor and Living Matrix. This condition has not been satisfactorily met within the amended proposal. Council's ESD advisor has advised that the shading continues to be lacking and not obviously effective. To further assess the effectiveness of the glazing, Council's ESD advisor has requested typical façade details indicating the effectiveness of the shading at the Summer Solstice for east-facing glazing at 10am, north-facing glazing at noon and west-facing glazing at 3pm. It is recommended that this further testing be carried out within an amended SMP report, this will be added to the amended permit.

317. An amended SMP was required pursuant to Condition 9 of the permit to include a sample of dwellings demonstrating that NatHERS annual cooling loads do not exceed the 21MJ/MJ threshold (Moorabbin area). This detail has been provided within the SMP submitted with the current amendment and deemed acceptable by Council's ESD Advisor.

318. Further discussion regarding the energy efficiency of the development was provided within the DP assessment.

Standard D7 - Communal open space

319. This standard requires developments with greater than 40 dwellings to provide a minimum of 2.5sqm of communal open space per dwelling or 250sqm, whichever the lesser. In the case of the subject site, the lesser is 250sqm. The original proposal comfortably met this

requirement with a communal open space area of approximately 1,250sqm above the podium. However it was identified that this was not readily accessible to the Urban Anchor Building with condition 1(rr) of the issued permit requiring *'access to the communal podium terrace provided to all residents of the development (i.e. including the urban anchor)'.* In response to this condition, the current amendment has introduced a separate communal roof garden to service the Urban Anchor building. This is located on Level 8 above the serviced apartments and is directly accessible from the common corridor at Level 8 of the Urban Anchor. The roof top garden is approximately 540sqm, also meeting the minimum communal open space requirements.

320. The location and design of the communal open space to the podium was assessed under the original application. While the width of this area has reduced from 20.65m to 15.2m, it continues to be a usable area and appropriately located. To address potential overlooking into the podium level apartments, Condition 1(gg) was added to the permit requiring '*Fencing to podium level apartments to be 1.7m high wand a minimum of 25% transparency.'* Material notation BH-60 has been added to the plans and elevations which indicates the fencing to these apartments is to be 1.7m high timber fence with maximum 25% transparency. This satisfactorily meets this condition and therefore this condition is no longer required.

321. The location and design of the communal roof terrace that has been introduced for the Urban Anchor building is consistent with Standard B7. Passive surveillance will be provided to the terrace from the east-facing windows of the Urban Anchor from Levels 9 to 13. To protect the privacy of the adjacent apartments on Level 8, the communal terrace provides generous planter areas adjacent to the east-facing windows to facilitate both a visual and physical separation from these windows. The landscape plans submitted however do not include this area. A condition will be added to the amended permit requiring landscaping details of the Level 8 communal terrace to be provided.

Standard D8 – Solar Access to communal open space

322. The standard encourages communal outdoor open space to be located on the northern side of a building if appropriate. It also seeks to ensure that at least 50 per cent, or 125sqm, whichever the lesser, of the primary outdoor open space area receives a minimum two hours of sunlight a day between 9am and 3pm on 21 June.

323. This was comfortably met in the original application, with solar access between 12pm and 2pm ranging between 232sqm to 569sqm as illustrated in the images below.

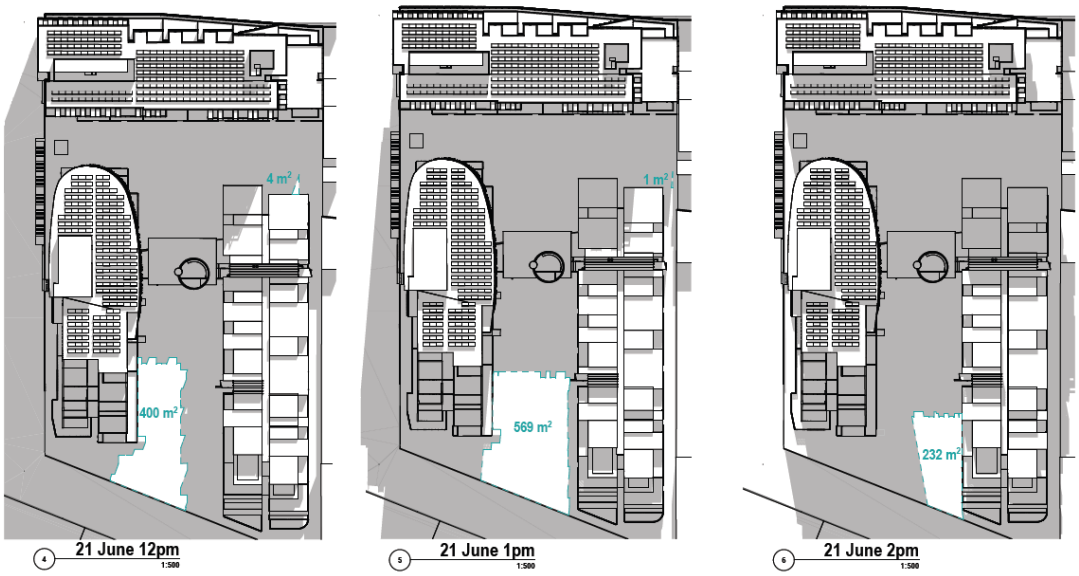


Figure 27: original proposal solar access

324. The amount of solar access will not be reduced under the current amendment, however the areas of solar access will be shared between the east and west sides of the Sculptural building due to the relocation of the Sculptural building further to the west. As illustrated in

the images below, the Standard continues to be met with between 252sqm and 441sqm of solar access maintained between 12pm and 2pm on the podium terrace.

Figure 28: Amended proposal solar access

325. The Level 8 terrace introduced as part of the current amendment provides a high level of solar access between 9am and 2pm at the Winter solstice, with a minimum area of 487sqm available with solar access.

Standard D9 - Safety

326. The proposed amendments do not affect the safety and security of residents and properties as previously assessed. However, as discussed earlier, additional conditions are recommended to the amended proposal to further improve the passive surveillance at street level.

Standard D10 – Landscaping

327. The proposed amendments seek to increase the provision of landscaping on the site. This has been further assessed within the landscaping discussion within the DP.

Standard D11 - Access

328. The access arrangements are discussed within the assessment of the DP as well as the car parking section below.

Standard D12 – Parking location

329. This standard continues to be met. The amendments maintain a similar level of accessibility to the car parking areas as the approved development. This is further discussed within the car parking section below.

Standard D13 – Integrated water and stormwater management

330. These matters have been discussed previously within the DP assessment of Water Cycle Management.

Standard D14 – Building Setbacks

331. The DP contains specific setback requirements, which have been discussed earlier within the report.

Standard D15 – Internal Views

332. Internal views have been discussed within the DP assessment previously.

Standard D16 – Noise impacts

333. As identified in the assessment of the original application, the proposed development is not located in proximity to noise generating areas as listed under this standard. However, a revised acoustic report has been provided in accordance with the DP requirements as has been discussed earlier within this report.

Standard D17 – Accessibility Objective

334. This standard requires at least 50 percent of dwellings to have:

    (a) *Clear opening width of at least 850mm at the entrance to the dwelling and main bedroom;*

    (b) *Clear path with a minimum width of 1.2m connecting a dwelling entry to the main bedroom, an adaptable bathroom and living area;*

    (c) *Main bedroom with access to an adaptable bathroom; and*

    (d) *At least one adaptable bathroom meeting Design A and B within Table D4 contained within the Standard.*

335. A revised clause 58 compliance table was provided with the amendment application confirming that the accessibility standard has been met for 94% of dwellings within the development, comfortably exceeding the requirement for 50% compliance.

Standard B18 – Building entry and circulation

336. This standard encourages visible and identifiable entrances, safe, functional and efficient layout of internal areas and internal communal areas with adequate access to daylight and ventilation. These matters have all been discussed under the relevant design guidelines within the DP assessment.

Standard D19 – Private Open space

337. Private open space has been discussed with the DP assessment earlier within this report.

Standard D20 - Storage

338. The standard encourages each dwelling to have convenient access to usable and secure storage space in accordance with Table D6 (below).

Table D6 Storage

Dwelling type	Total minimum storage volume	Minimum storage volume within the dwelling
Studio	8 cubic metres	5 cubic metres
1 bedroom dwelling	10 cubic metres	6 cubic metres
2 bedroom dwelling	14 cubic metres	9 cubic metres
3 or more bedroom dwelling	18 cubic metres	12 cubic metres

339. The original proposal provided 281 individual storage cages within the residential car parking area. These have been deleted as part of the current amendment. Notwithstanding this, the storage requirements continue to be met for each apartment. As illustrated in the Clause 58 compliance table submitted with the amendment application, the majority of apartments will achieve or exceed the minimum storage requirements. This is with the exception of Apartment Type B3, which while providing 9.5sqm of storage within the apartment, provides a total of 12.7sqm storage. This affects two apartments within the development. While only a small non-compliance, to ensure the minimum storage expectations for all dwellings are met, a condition will be added to the amended permit requiring Standard D20 to be met for all dwellings within the development.

Standard D21 – Common Property

340. This standard states that developments should clearly delineate public, communal and private areas. Common property should also be functional and capable of efficient management.

341. The common property areas within the development continue to meet this objective as per the original application.

Standard D22 – Site services

342. Site services and mailbox locations have been discussed earlier within the assessment of the DP design guidelines.

Standard D23 – Waste and Recycling

343. These matters have previously been discussed under the DP Design Guidelines.

Standard D24 – Functional Layout

Bedrooms

344. Table D7 within Standard D24 states that the main bedroom should have minimum dimensions of 3.4m x 3m with remaining bedrooms of 3m x 3m. The clause 58 compliance table and the annotations on the apartment layouts continue to demonstrate compliance with these standards.

Living areas

345. Table D8 within Standard D24 specifies a minimum area of 10sqm and width of 3.3m be provided for single bedroom dwellings, and for two or more bedroom dwellings; a minimum area of 12sqm and minimum width of 3.6m. This is to exclude kitchen and dining areas. The original application indicated that this standard would be met for all apartment types, however this was not shown on the individual apartment layouts. Based on officer calculations, it appeared that Apartment Types E, G, H and J would fail to achieve the minimum width and area requirements. This was subsequently addressed through Condition

1(hh) of the planning permit which required these apartment types to demonstrate compliance.

346. The living room layouts have been amended in the current amendment, with revised apartment layouts demonstrating that all apartments will meet the minimum area requirements. However, these do not clearly show that the minimum widths will also be met. Condition 1(hh) will therefore be amended to require this to be confirmed on the apartment layout types.

Standard D25 – Room depth

347. This Standard discourages single aspect rooms exceeding a room depth of 2.5m times the ceiling height. The floor to ceiling heights to living rooms are 2.7m, thus room depths should not exceed 6.75m.The standard states however, that this can be increased to a depth of 9m for open plan habitable rooms, provided that the kitchen is the furthest from the window and the ceiling is at least 2.7m.

348. The amended plans continue to meet this standard. The Clause 58 table indicates that the majority of the living room depths range from 4.6m to 6.5m with the exception of apartment Types D (7.3m), J1 and J2 (both 8.2m). In these cases however, the kitchen is located the furthest from the window, and therefore the room depth achieves the standard (i.e. less than 9m).

Standard D26 – Windows

349. This standard requires all habitable room windows to have a window to an external wall of a building. This continues to be the case for all bedrooms and main living spaces. In the original application, there was concern raised in relation to Apartment Type H, which contained 'study nooks' receiving only borrowed light from the corridor of the main living area. Given the limited natural light that would penetrate these areas, and the small living areas provided for these dwellings, it was considered that this area would be more beneficial to the internal amenity if accommodated as part of the larger open plan living, kitchen and dining area. This was to be addressed by Condition 1(ii) of the permit.

350. The amended proposal however no longer proposes this layout type. The individual layout types now clearly demonstrate direct access to a window for all habitable rooms. While apartment Type A.6 will provide a small study nook, this is much more integrated with the main living area and will receive an acceptable level of daylight.

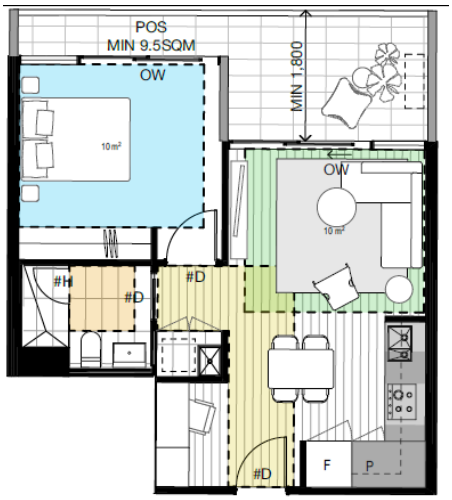


Figure 29: Apt Type A.6

351. Two of the new apartment types (Type D & L) however include a second bedroom that receives daylight from a smaller area. Standard D26 states that this secondary area should be a minimum width of 1.2m and a maximum depth of 1.5 times the width, measured from the external surface of the window. In both cases this standard is achieved, with the smaller area of the bedroom to Type D having a width of 1.2m and a depth measuring at 1.3m (1.8m allowed) and the smaller area for the bedroom of Type L having a width measuring at 1.5m and a depth measuring at 1m.

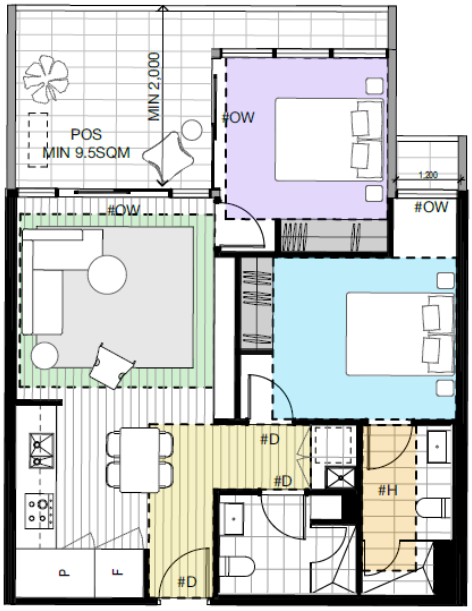


Figure 30: Apt Type D

Standard D27 – Natural ventilation

352. This standard encourages that at least 40 per cent of dwelling provide effective cross ventilation that has:

    (a) A maximum breeze path through the dwelling of 18m;

    (b) Minimum breeze path through the dwelling of 5m; and

    (c) Ventilation openings with approximately the same area.

353. The original application indicated 46% of apartments will received cross-ventilation, however the cross-ventilation paths were not clearly demonstrated on the plans. This was to be addressed via Condition 1(jj), which required cross-ventilation opportunities to be clearly demonstrated in accordance with the standard. This condition has been met, with cross ventilation opportunities demonstrated for 136 (43%) apartments. Whilst this is slightly less than indicated in the original application, it will still exceed the minimum requirement of 40%.

Car parking, bicycle facilities and traffic generation

354. As a consequence of the amendments, the statutory car parking requirement has increased from 1,114 spaces to 1,326 spaces. To compensate, the number of car spaces on site has also increased from 900 spaces to 1018 spaces. Taking into account the additional car parking spaces, the gross reduction in the statutory rate has increased from 214 spaces to 265 spaces, thus an increased overall reduction by 51 spaces.

355. As outlined in the report for the original application, the DP anticipates a variation to some of the statutory rates, referencing the endorsed Traffic Management Plan within Volume 2 of the DP, which requires the following rates:

Table 5.7: Summary of Recommended Car Parking Rates

Land Use	Category	Recommended Parking Rate
Residential	One Bedroom Dwelling	1 space per dwelling
	Two Bedroom Dwelling	1 space per dwelling
	Three Bedroom Dwelling	2 spaces per dwelling
	Visitor (Low Density) [1]	0.5 car spaces per dwelling
	Visitor (Medium Density) [1]	0.15 car spaces per dwelling
	Visitor (High Density) [1]	0.12 car spaces per dwelling
	Affordable Housing	0 spaces per dwelling
Specialty Retail [1]	Staff / Employee	0.5 spaces per 100sqm
	Visitor	1.8 spaces per 100sqm
Supermarket [1]	Staff / Employee	0.9 spaces per 100sqm
	Visitor	3.6 spaces per 100sqm
Office [1]	Staff / Employee	3.15 carspaces per 100sqm
	Visitor	0.35 carspaces per 100sqm
Community Use [1]	Childcare Centre	0.19 carspaces per child

[1] Where a "shared" parking pool is determined to be appropriate the recommended design rates are to be used together with use specific temporal activity profiles. Any variations to these rates would be subject to Council approval.

Dwellings

356. The applicant is seeking to revert back to the originally sought rate for residential car parking, of 0.5 spaces for one bedroom dwellings, 0.7 spaces for two bedroom dwellings and 1 space for three bedroom dwellings. Overall this generates a rate of 0.69 car spaces per dwelling. No further justification was provided by the applicant to support this reduction than supplied to Council with the original proposal. The rates proposed are derived from the Victoria Street East Precinct at clause 37.06 of the Scheme. However, as outlined in the original report, this is a very different context, particularly in respect to public transport access. In particular, the subject site has a 'good' transit score of 50, whereas Victoria Gardens has an 'excellent' transit score of 73 per cent. The difference in the public transport accessibility, shops and services affects the reliance on private vehicles.

357. Also of relevance, since the original application, the statutory car parking provisions at clause 52.06 of the Scheme were amended to allow for lower rates for sites within the Principal Public Transport Network. This includes the Victoria Gardens area, however it does not include the subject site. This reinforces the different contexts of the two areas.

358. In the original report, Council officers relied on the advice of its external traffic engineers who suggested that an overall rate of 0.93 spaces per dwelling would be acceptable having regard to the empirically lower car ownership in apartment-style dwellings and the access to public transport in this location. Also, reflecting the DP reduced rates table above, the recommendation was that the affordable housing component would be excluded from providing on-site parking. However, the resolution at the Council meeting was to increase the car parking provision to 1 space per dwelling, including the affordable housing component.

359. The internal engineering advice on the current amendment continues to support the reduced car parking rates sought by the permit applicant, as they had done in the original application. This was based on the broad scale of the development and the proximity to public transport. The external traffic engineering advice was more conservative, reiterating their previous advice that this site had more in common with a 'middle suburb' in terms of accessibility and car parking demand. They also opined however that there are no strong traffic impact reasons to require lower parking rates and that residents without car parking would not have alternative parking opportunities given that public parking would be highly restricted. However, the latter observation would in turn support a lower parking provision. Their advice concludes that it is ultimately a strategic decision for Council as to whether to accept the

lower rate. They however do advise that they would not support a reduced supply of visitor or employee car parking to facilitate additional residential car parking at a later date.

360. While there are various policies within the Scheme encouraging sustainable transport and a reduced reliance on private vehicles, the reasonable car parking demands as relevant to the particular area also need to be met, as is reflected in clause 18.02-4S, which states:

> *Allocate or require land to be set aside for car parking subject to the existing and potential modes of access including public transport, the demand for off-street car parking, road capacity and the potential for demand management of car parking*.

361. Given that there have not been any changes in policy or context that would suggest an alternative outcome, Council officers do not recommend a variation to the approved rates within the current planning permit. It is considered that the additional car parking could be readily provided through an expansion of the lower basement level.

Residential visitors

362. The TIA submitted with the current amendment continues to propose the lower car parking rate for visitors of 0.1 spaces. In the original assessment and based on advice from Council's external traffic engineers, it was recommended that a rate of 0.12 spaces per visitor should be maintained as per the DP table. This position is maintained.

Office

363. While the office floor area is to be increased as part of the current amendment, the car parking for the office uses is maintained at a rate of 2.5 spaces per 100sqm, consistent with the existing planning permit condition 66(a)(ii). This continues to be acceptable.

Childcare

364. The GTA traffic impact assessment submitted with the application maintains the previously recommended rate of 0.04 employee spaces per child, generating a requirement for 4 staff spaces. However, in line with Condition 66(a)(iii), the car parking management plan also submitted with the amendment application indicated that a minimum of 10 spaces will be allocated for staff. As the childcare children numbers are unchanged, the car parking allocation continues to be acceptable.

Primary School

365. The student and staff numbers associated with the primary school are not proposed to be changed. As outlined in the car park management plan submitted with the application, car parking for the primary school is to be provided in accordance with 66(iv).

Supermarket

366. The floor areas of the supermarkets are largely unchanged. The existing planning permit does not specify a minimum rate for the supermarket employees or staff. The original application sought to adopt the DP rates for the supermarket, however sought a lower percentage of staff for one of the supermarkets. This was supported by Council's external traffic engineering consultants in the original application. The current amendment seeks to apply the reduced staff parking rate to both supermarkets. This is considered acceptable given that the majority of supermarket staff are often below driving age and also live locally to the area.

Food and drink premises/shops

367. The floor area for the food and drink premises has been dramatically been reduced, with many of these premises reallocated as 'shops', given the same statutory rate was applied to both uses (4 spaces per 100sqm), the change of use will have a negligible impact upon the car parking demand/allocation. The car parking allocation for these uses is unchanged from the original application and continues to be acceptable.

Gym

368. The floor area of the gym is slightly reduced, however the car parking rate of 3 spaces per 100sqm has been carried over by the applicant's traffic engineers in the amended TIA. Council's external traffic engineering consultants found this to be a conservative estimate in the initial review and maintain this position in their latest review, expecting that the demand would be approximately half this (i.e. 24 spaces). Nonetheless, the car parking provision continues to be acceptable.

Community facilities (community centre, sports court and pavilion;

369. The original application assumed a demand of 90 spaces for the proposed community facilities, based upon advice that these have been classified as a 'place of assembly' given that these areas have slightly reduced in area, the anticipated demand of 90 spaces continues to be appropriate under the current amendment.

Serviced apartments

370. This is a new use that has been introduced as part of the current amendment application. There is no specified rate in the Scheme or the DP for serviced apartments. The TIA and Car Parking Management Plan puts these in the category of 'dwellings' thus apply a rate of 0.5 spaces per serviced apartments. Council's external traffic engineering consultants advised that recommended rates for serviced apartments vary from 0 spaces in the CBD to 1 space per apartment in outer suburban or rural areas. The proposed rate of 0.5 spaces for the Alphington area was considered satisfactory. While a rate of 0.5 spaces is not acceptable for dwellings, it is appropriate for serviced apartments on the basis that a portion of guests would likely not have vehicles.

Allocation of spaces

371. It was identified in the original report that the visitor car parking within the development is to be shared across the uses. The original application proposed a minimum of 452 spaces for visitors. Condition 1(t) and 60(a)(v) of the planning permit required this allocation to be increased to a minimum of 497 spaces, accounting for an addition 45 car spaces needed to meet the demand for the community centre. The current amendment has allocated 461 spaces for public/visitors. Based on the amended proposal, Council's external traffic engineers anticipate a maximum visitor demand of 533 spaces. However acknowledge that the peak parking demand for all uses is unlikely to occur at the same time. The 16% variation between the maximum demand and the allocation parking for visitors was accepted by Council's external traffic engineers on that basis. It is therefore no longer considered necessary for additional visitor parking to be provided.

Car parking Management Plan

372. A car park management plan was required pursuant to Condition 66 of the original planning permit. In addition to stipulating the car parking rates, it also required details to be provided for the management of the car park. A car park management plan prepared by GTA and dated 7 February 2019 was submitted with the current amendment. This largely addresses the required information, with the exception for a schedule of the proposed signage within the car parking areas and the required car parking rate for dwellings as discussed earlier. Condition 66 of the original permit will be updated to refer to the Car Parking Management Plan submitted with the amendment application, with a requirement that this be amended to include details of signage and also reflect the residential car parking provision as discussed previously.

<u>Car parking design and layout</u>

373. While the car parking areas are within a similar location of the development, the layout and design of the parking area has been amended. This has subsequently been revised by Council's internal Engineering Services Unit in addition to Council's external traffic engineering consultants.

374. Council's internal Engineering Services Unit has reviewed the drawings and has not raised any concern with the design, however they have requested dimensions of the development entrances and internal ramped accessways. These items will be addressed through new conditions on the amended planning permit.

375. Council's external traffic engineering consultants were also generally comfortable with the layout and access arrangements, however they have identified a concern with the width of the employee and resident spaces on the upper levels. The width of these spaces has been reduced from 2.6m to 2.4m in the current amendment thereby bringing these spaces into non-compliance with the design guidelines under Clause 52.06 of the Scheme. The lesser dimension, while compliant with the minimum Australian Standard AS2890.6-2009, results in car spaces that would be inconvenient for staff and residents and would only be acceptable for a small number of spaces in exceptional circumstances. A new condition will therefore require the car parking spaces to be redesigned in accordance with Clause 52.06 of the Scheme. This is likely to result in a reduced provision of car spaces on these levels. However it is considered that the resultant loss of car parking on these levels could be accommodated by increasing the size of the lower basement level.

376. In the assessment of the original application, concerns were raised in relation to the access arrangements from the southern access lane (Nelmoore Lane) and the potential conflict between vehicles, cyclists and pedestrians. A condition of permit required a Road Safety Audit (RSA) to be prepared to analyse these potential conflict points. While an RSA audit has been submitted, it does not address the southern access arrangements. Notwithstanding this, the access arrangements have been redesigned as part of the current amendment to mitigate the potential conflicts. The access points from the lane have been separated and shifted away from the western corner of the site. A separate bicycle entrance has also been provided. Council's external traffic engineering consultants have advised that based on the redesigned layout, an RSA is no longer required for the southern access arrangement. This condition will be amended accordingly.

377. The RSA was also required to address the safety of the Heidelberg Road vehicle access arrangements. The RSA submitted has been reviewed by Council's external traffic engineering consultants. Council's external traffic engineering consultants did not find the RSA submitted adequately addressed the potential conflict issues associated with the shared path priority. They are of the view that this is a 'high' risk and that the shared path priority needs to be clear to drivers, riders and pedestrians. A revised RSA report will be requested through an amended condition to provide further assessment on this item.

378. A number of changes have also been recommended in the RSA that have not been shown on the amended plans, including:

    (a) Signage, line marking and pavement changes to highlight the vehicle truck travel paths;

    (b) Gates across the truck access point to further delineate travel paths;

    (c) Realignment of the warning tactile ground surface indicators (TGSI) on the shared path crossing;

    (d) An energy absorbing bollard in front of the basement ramp wall; and

    (e) Sightlines to the wall between the trucks and cars demonstrating 50% permeability.

379. These recommendations will need to be shown on the plans to address existing condition 1(xx) of the existing planning permit, which will be retained on the amended permit (renumbered accordingly).

Traffic Generation

380. Traffic generation as part of the current amendment is expected to be comparable to the approved development. A traffic generation analysis was carried out as part of the original application confirming that the traffic generation would be expected to be either similar or slightly less than anticipated in the DP. Council's external traffic engineers were comfortable

with this assumption but had requested evidence to confirm its accuracy. This was provided as part of the original application and confirmed to accurately reflect the assumptions. In the latest review, Council's external traffic engineers again requested that evidence of the traffic generation calculations be provided. Subsequently the traffic generation calculations for the original application were provided to the external consultants who confirmed that this was satisfactory and no further calculations were required noting *'the differences are not substantial and the traffic impacts of the changes are acceptable'.*

Bicycle Facilities

381. The original application proposed to provide a total of 484 bicycle spaces, including 282 resident spaces, 62 school spaces, 60 employee spaces and 80 visitor spaces. Based on an assessment of the demand, condition 1(s) was placed on permit requiring the visitor bicycle spaces to be increased to a minimum of 190 spaces.

382. The amended application has increased the total bicycle space provision by 143 spaces to a total of 627 spaces, with 313 residential spaces (increase of 31 spaces), 38 school spaces (decrease of 24 spaces), 56 employee spaces (decrease of 4 spaces), 216 visitor spaces (increase of 136 spaces) and 4 spaces to be allocated to the serviced apartments.

383. Council's Strategic Transport officer has identified that only 72 bicycle spaces appear to be shown on the ground floor plan, whilst the plans and the Green Travel Plan (GTP) indicate that there will be 88 spaces. The additional 16 bicycle spaces are to be provided to the south-east corner of the site, however this section of the site is cut off from the architectural plans. The full extent (including the bicycle parking) is however shown on the landscape plans. A new condition will be added to any amended permit issued requiring that the full extent of the site is shown on the plans.

384. While the number of student bicycle spaces has been reduced, Council's strategic transport officer is satisfied that the reduced bicycle allocation is sufficient. Furthermore, in the event of overflow bicycle parking demand for the school, it would be possible for this to be accommodated within the publically accessible bicycle spaces along Mills Boulevard and other adjoining streets.

385. While the staff bicycle parking was initial considered acceptable, the current amendment seeks to increase the floor area and as a consequence a greater provision of bicycle parking is required. Council's Strategic Transport officer recommends a rate of 1 space to each 100sqm of office floor space in accordance with best practice (i.e. 92 bicycle spaces). In addition to the other commercial uses on the site (excluding the services apartments and school), a total of 115 employee spaces are recommended. This will be conditioned accordingly.

386. It is further recommended that the number of end of trip facilities is increased to reflect the increase in employee bicycle parking. Based on the rate within Table 2 and 3 to Clause 52.34-5 of the Scheme, end of trip facilities should be provided at the following rates:

    (a) 1 shower to the first 5 employee bicycles and 1 to each ten after that; and

    (b) 1 change room (or direct access to a communal change room) to each shower.

387. Based upon the above rates, a minimum of 12 showers/change room facilities should be provided. With 8 showers and communal change areas current shown, a condition will require an additional 4 showers/change room facilities.

Community Facilities

388. In the Council Resolution of December 2015, it was resolved that the applicant would provide (to be vested with Council) a community space (not less than 300sqm "fitted out") and a floor area of not less than 1,400sqm "warm shell" in the activity centre with a single roof top, multi-purpose court (netball standard) with associated sports pavilion and store (approx. 300sqm) to the satisfaction of the Responsible Authority.

389. These requirements were met in the original application, however as a result of the current amendments, these would no longer be met. This was foreshadowed at the Council meeting on 2 October 2018 as summarised within the background section of this report.

390. As outlined in the proposal, it is now proposed to provide two community spaces, of 938sqm and 432sqm each and an indoor multi-purpose court of 820sqm. These areas are based upon the more detailed Architectus plans. Slightly different figures are provided on Level 1 of the plan set. However as Architectus are designing the community facilities, it is understood that their plans are more accurate. These also provide a much greater level of detail than the Level 1 Plan in the plan set. To ensure consistency, a condition will be added to require the NH Architecture/BDLC set to be updated to reflect the Architectus plans.

391. While the latest plans for the community facilities do not meet the Council resolution of December 2015, it does result in a number of improvements to the original design as discussed below.

392. Replacing the rooftop sports court with an indoor multipurpose court, whilst not consistent with the resolution for a 'roof top court', will deliver the following benefits:

    (a) An indoor facility would allow for all-weather activity;

    (b) Noise and light spill amenity impacts to the adjacent apartments are significantly reduced by inclosing the court; and

    (c) The indoor multipurpose court could also be used for a variety of other uses, including school concerts and presentation nights.

393. The larger of the community spaces is proposed to be reduced in area, falling short of the December 2015 resolution by 462sqm. However, the indoor multipurpose court would also now be able to accommodate a wider range of activities such as concerts and presentation nights as previously mentioned. This increased functionality of the multipurpose court is considered to offset the loss in area from the community space. Additionally the smaller community space area is proposed to be increased from the Council resolution from 300sqm to 432sqm, thereby increasing the potential capacity of this area.

394. The amended layout of the community activities also results in other improvements to the original design. In particularly the larger community space has been relocated from centrally within the site, with limited access to windows for daylight and outlook. The proposed relocation to the Heidelberg Road elevation will substantially improve the daylight and outlook to this space. Furthermore, the smaller community space is now to extend lengthways adjacent to the Level 1 podium landscape area, this will also enhance the outlook and daylight opportunities to this space.

395. The amended proposal also significantly improves the connectivity and accessibility of the spaces. Previously the community spaces were split across two levels. Redesigning these facilities to all be on the first floor ensures that they are better connected and accessible. It also enables the spaces to be used all together or separately as required.

396. The amended layout of the community spaces has been reviewed internally by Council's City Works and Assets with input from the following branches of Council; Community Wellbeing, Leisure and Recreation, and Corporate Performance Branch. They have made a variety of requests regarding the design and layout of the community spaces as contained within their advice attached to this report. These requests are largely internal and are inconsequential to the larger development. These items will replace conditions 1(ll) to (rr), which related to the original design and are no longer applicable.

397. As outlined in the background section, at its meeting on 2 October 2018, Council advised that it broadly supported the reconfiguration subject to further modifications. Most of these

have been addressed in the design, or will be via the amendments by Council's internal departments. A response to each of the modifications is provided below:

(a) *the community space would need to be a minimum of 300 m2 gross floor area (fitted out) with associated facilities including accessible storage distinct from the court storage to enable a nett space of appropriate dimensions of not less than 230 m2;*

(i) This is met. The gross floor area for the community space ("flexible space") is 432sqm, with a net space of 253.54sqm proposed;

(b) *users of the community space to have access to gender neutral toilets/changerooms (not the toilets for the courts) without having to enter the 'warm shell' floor space;*

(i) separate toilet facilities have been provided for the community facility; this includes a unisex toilet;

(c) *the multi-purpose court needs to have a separate public entrance from the entrance to the community space, so that both could be operated independent of each other;*

(i) partition walls are shown between the "flexible space" and the foyer, which then connects to the multi-purpose court. This would enable these areas to be used separately of each other;

(d) *the areas abutting the multi-purpose court (community space, amenities and school entry) be provided with suitably acoustic treatment as part of the build to ensure they can operate without disturbance and be protected from noise from the court area;*

(i) This is to be addressed via a revised acoustic report;

(e) *the community space and the proposed school entry be separated with an acoustically treated operable wall so that a larger space could be created and used via an agreed joint use agreement with the abutting occupier;*

(i) This has not been shown on the drawings. The plans of the school show a staircase adjacent to the shared wall which would make it difficult for this space to be shared with the community space;

(f) *the wall between the community space and the multi-purpose court be designed with an acoustically treated operable wall to enable viewing of the court when required and screened when not required or desired by users of the space;*

(i) The current layout makes achieving this modification unfeasible. It is proposed to accommodate necessary facilities within these two spaces in addition to a stage for the multi-purpose-court;

(g) *that the orientation of the kitchen/kiosk serve the intended purpose of supporting the community space and the multipurpose court and be able to be used without disruption to the warm shell floor space;*

(i) This will be achieved via the additional conditions as requested by Council's internal Departments by swapping the Female WC 15 with the Kitchen 11;

(h) *that the proposed play area of the school (at level 2) above the multi-purpose court, be designed to be able to contain sufficient depth of soil for some treed landscaping to enable a pleasant area;*

(i) Section E on TP-2E-602 depicts a thicker slab level between the multipurpose court and the school outdoor play. It is expected that this will be sufficient to support any future planter beds within the school playground, however limited detail of the landscape treatment is current provided and will be conditioned accordingly;

(i) *that the area allocated for the school to have necessary provision for toilets as required by the Victoria School Building Authority and that these toilets are not allocated in the areas allocated to be vested in Council:*

(i) Details of toilet facilities within the school have not been shown on the plans, however given that the community facilities will be detached from the school, it is unlikely that the school building would be expecting to rely on these;

(j) *that the multi-purpose court allocation have sufficient area for the inclusion of gender neutral toilets/change rooms (including showers) and sufficient storage to accommodate the increased range of uses that this facility will now experience, including chairs, high ball game associated equipment and related materials. This storage should be distinct from the storage for the community space;*

(i) unisex toilet and change room facilities have been provided for the multipurpose court, which will be accessible from the foyer area. A storage facility (18) has been provided for the multipurpose court, however access to this is not clearly shown. A condition will require a roller door to be shown connecting Storage room 18 to the court.

(k) *that the other floorspace allocated for future community space (or as determined by the Council in the future), be provided:*

(i) *as a warm shell of either not less than 1,000 m2 gross, but including sufficient area, dimensions and logistics so that it could be fitted out with a kitchenette, separate male and female toilet and facilities appropriate for future community facility spaces;*

a. The current plans show the gross area of the 'warm shell' as 938sqm, is slightly less than the 1,000sqm. A condition has been added to the amended planning permit requiring this to be enlarged to a minimum gross floor area of 1,000sqm to maintain consistency with the earlier Council resolution;

b. The plans have shown male, female and unisex toilets in addition to two store rooms. A condition will also require Storeroom 12 to be enlarged. If additional storage is not required, this could potentially be reconfigured into a kitchenette or office;

(ii) *with a separate entrance from a public place and not relying on access through the 300 m2 community space.*

a. The 'warm shell' is provided with direct access from the Level 1 terrace;

(iii) *that the forecourt terrace area have no skylights or café area to maintain full flexibility, functionality and public amenity; and*

a. the Level 1 terrace/forecourt area adjacent to the community spaces is sufficient in area and unobstructed by café seating. While a food and drink premise is maintained on this level, it is to be located to the south of the school building and therefore would not obstruct patrons entering or exiting the community facilities; and

(iv) *that the school play area be to the satisfaction of the Victorian School Building Authority;*

a. While no detail has been provided, it is understood that the school building will ultimately need to be to the satisfaction of the Victorian School Building Authority. Any non-compliances in the current design could be resolved via a further amendment.

Staging of the proposal

398. As outlined in the proposal section, the permit applicant is requesting various amendments to the existing planning permit conditions to enable the proposed development to be staged. Given the scale of the proposed development, it is considered reasonable that some staging of the development occur. To ensure that the stages are clearly defined and considered, this

also requires the submission of staging plans. This will be added to the permit conditions accordingly.

External Consultation

399. None as advised earlier, the application is exempt from the notice and appeal provision of the *Planning and Environment Act 1987.*

Internal Consultation (One Yarra)

400. A number of internal departments were referred the application and their comments form part of this report.

Financial Implications

401. None at this stage. However, there is a risk for a challenge of any decision Council makes at the Victorian Civil and Administrative Tribunal.

Economic Implications

402. The proposal will facilitate economic growth through the construction of a new shopping centre and introduction of additional residents to the area.

Sustainability Implications

403. Sustainability has been considered as part of the assessment of the application.

Social Implications

404. No particular social implications are known.

Human Rights Implications

405. No Human Rights implications are known.

Communications with CALD Communities Implications

406. No CALD community implications are known.

Council Plan, Strategy and Policy Implications

407. All relevant policies have been referenced within the report.

Legal Implications

408. None.

Conclusion

409. Based on the above report and subject to the conditions discussed throughout, the proposal is considered to substantially comply with the relevant planning policy and specifically the aspirations of the Development Plan for the Village Precinct.

410. The application has been assessed all relevant provisions of the planning scheme and against the Alphington Paper Mill Development Plan December 2016, and subject to conditions, the application shows a high degree of consistency with the DP.

411. The proposal is an acceptable outcome and will introduce the commercial and community aspects to the broader Amcor development site.

412. Subject to the conditions outlined within the recommendation section below, Council should support the application and issue an amended planning permit for:

'Use and development of the land for a mixed use development containing dwellings, supermarkets, shops, food and drink premises, office, restricted recreation facility (gym), childcare centre, education centre (primary school), serviced apartments and place of assembly and a reduction in the car parking requirements and creating access to a Road Zone Category 1 Road generally in accordance with the Development Plan, generally in accordance with the plans and reports noted previously as the "decision plans".'

RECOMMENDATION

1. Before the development commences, amended plans to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plans will be endorsed and will then form part of this permit. The plans must be drawn to scale with dimensions and three copies must be provided. The plans must be generally in accordance with the decision plans prepared by NH Architects and Bird de la Coeur dated 30 January 2019 (Received 1 February 2019) but modified to show:

   Design

   (a) At least three of the display cabinets replaced with clear glazed windows along the Heidelberg Road frontage to the supermarket;

   (b) Level 1 of the podium car park be sleeved with apartments for the full length of the Outer Circle Mews, apart from the area accommodating the stairwell, with the option to relocate apartments from Level 2;

   (c) Extend the northern wall of the shop of the Mill Building to the building line (Heidelberg Road) above, subsequently removing the terrace area setback;

   ESD

   (d) Additional external shading systems applied on all east, west and north facing facades of the Urban Anchor and Living Matrix as required by the additional heat load testing pursuant to Condition 10(a);

   (e) location and size of the water tank;

   (f) roof plan showing location of all solar panels;

   (g) provision and location of a minimum of 40 electric vehicle charging points;

   Materials

   (h) an updated schedule of external colours and materials, including samples (where appropriate). The schedule must show:

      (i) thumb nail sketches of key elements of the façade for all buildings;

      (ii) coloured elevations of all buildings including coloured perspectives for all key interfaces reflective of the proposed colours and materials;

      (iii) Colour schedule on TP-2E-803 updated to reference the colour of FM-51 as bronze;

      (iv) Podium to the western end of Nelmoore Lane to be composed of brick snap (PR-51) rather than concrete formliner (PR-56);

      (v) Bicycle storage area on the lower ground level to provide clear glazing to Mills Boulevard;

      (vi) Graffiti proof materials to all ground floor publically accessible areas;

   Bike and Car Parking

   (i) A minimum of 20% of spaces within any secure bicycle facility provided as horizontal rails in accordance with AS2890.3;

   (j) Staff bicycle parking increased to 115 spaces;

   (k) End of trip facilities to provide a minimum of 12 showers;

   (l) Width of the vehicle entrances to Nelmoore Lane;

   (m) Dimensions of internal vehicle ramps;

   (n) Ramp grades for the first 5m from Heidelberg Road to be specified for the vehicle access ways from Heidelberg Road;

(o) Car space dimensions to comply with the design guidelines within clause 52.06-9 of the Yarra Planning Scheme;

(p) Lower ground basement to be extended to accommodate any additional car parking as a result of a loss of car parking elsewhere;

General

(q) Location of mail collection areas to be clearly shown;

(r) Provision of a commercial lobby area with clear glazing and entry from Mills Boulevard at the Lower Ground level toward the southern end, north of the shop tenancy;

(s) Sections of the mesh fence to the school playground within 9m of the balconies associated with the Urban Anchor building to provide a maximum transparency of 25% to a height of 1.7m above the finished floor level of the school playground;

(t) Full extent of the site to be shown i.e. south-east corner of Nelmoore Lane, including the 16 bicycle spaces;

(u) Notation confirming all habitable rooms are fitted with an operable window (in addition to sliding doors);

(v) Balconies to the north-facing apartments within the Urban Anchor building to achieve an average width of 1.8m for single bedroom dwellings and 2m for any two bedroom dwellings; without reducing the northern setback;

(w) Minimum widths of living areas to be shown in accordance with Standard D24 of Clause 58 of the Yarra Planning Scheme;

(x) Standard D20 (storage) of Clause 58 of the Yarra Planning Scheme to be met for all dwellings;

(y) Remove reference to the landscaping along the building line fronting Heidelberg Road;

Community Facilities

(z) Community Facilities on Level 1 to be shown in accordance with the Architectus Plan Drawing DA1010 dated 18 October 2018 but further modified to show/include:

  (i) Gross Floor Area of the ‘Community 3’ space (“warm shell”) increased to a minimum of 1,000sqm;

  (ii) Roller door provided from ‘Hall Store 18’ to the stadium (‘MPC 1);

  (iii) Rename the ‘Community 3’ space as ‘Warm Shell’ and ‘Flexible Space 4’ as ‘Community space’;

  (iv) Extend the northern wall of ‘Store 12’ to the column to the north (i.e. to align with Kitchen 11);

  (v) ‘Store 12’ divided to serve both the ‘Community 3’, and the ‘Flexible Space 4’, including provision for a door to the foyer and a dividing wall;

  (vi) Delete the first door from the ‘flexible space’ into the restrooms;

  (vii) A minimum of 1 shower to each WC/changing room 5, 13 and 14;

  (viii) Swap the location of the ‘Kitchen 11’ with the ‘F WC Changing 13’ and provide serving counters to the kitchen to face both the foyer area and the ‘Flexible space 4’;

  (ix) Provision for a partition to the ‘Flexible Space 4’ along Section Line S7;

  (x) Photovoltaic array associated with the community facilities within the unused roof area of the school building;

Reports

(aa) any amendments as require by the endorsed landscape plan pursuant to condition 17

to be shown on plans;

(bb) any requirements as a result of the endorsed Sustainable Management Plan report pursuant to condition 10 to be shown on plans;

(cc) any requirements as a result of the endorsed acoustic report pursuant to condition 12 to be shown on plans;

(dd) any requirements as a result of the endorsed wind assessment report pursuant to condition 15 to be shown on plans;

(ee) Any amendments as required by the Road Safety Audit pursuant to Condition 70; and

(ff) Any requirements as a result of the endorsed Car Parking Management Plan pursuant to condition 64 to be shown on plans;

Ongoing Architect Involvement

2. As part of the ongoing consultant team, NH Architects and Bird de la Coeur or an architectural firm to the satisfaction of the Responsible Authority must be engaged to:

   (a) oversee design and construction of the development; and

   (b) ensure the design quality and appearance of the development is realised as shown in the endorsed plans or otherwise to the satisfaction of the Responsible Authority.

Staging Plan

3. Before the development starts, a Staging plan must be submitted to and be approved to the satisfaction of the Responsible Authority. The Staging Plan must include, but not limited to, plans and information detailing any public realm works, proposed temporary treatment and use of vacant land. The development must proceed in order of the stages as shown on the endorsed plan(s), unless otherwise agreed to in writing by the Responsible Authority.

General

4. The development and uses as shown on the endorsed plans must not be altered (unless the Yarra Planning Scheme specifies that a permit is not required) without the prior written consent of the Responsible Authority.

5. Finished floor levels shown on the endorsed plans must not be altered or modified without the prior written consent of the Responsible Authority.

6. Before the buildings within a stage are occupied, or by such later date as approved in writing by the Responsible Authority, all new on-boundary walls within the applicable stage must be cleaned and finished to the satisfaction of the Responsible Authority.

7. All buildings and works must be maintained in good order and appearance to the satisfaction of the Responsible Authority.

8. All pipes, fixtures, fittings and vents servicing any building on the land must be concealed in service ducts or otherwise hidden from view to the satisfaction of the Responsible Authority.

9. Before the buildings are occupied within a stage, any wall located on a boundary facing public property within the applicable stage must be treated with a graffiti proof finish to the satisfaction of the Responsible Authority.

Sustainable Management Plan

10. Before the development commences, an amended Sustainable Management Plan (SMP) to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Sustainable Management Plan will be endorsed and will form part of this permit. The amended SMP must be generally in accordance with the Sustainable Management Plan prepared by Norman Disney Young and dated 21 November 2018, but modified to include or show:

    (a) Heat load testing to demonstrate the effectiveness of shading at the summer solstice for north-facing glazing at noon, east-facing glazing at 10am and west-facing glazing at

2pm to affected habitable rooms;

(b) The following improvements in relation to the community facilities:

(i) Thermal envelope with a minimum 20% improvement on NCC insulation requirements and double-glazing to windows;

(ii) Provision for effective external shading to sun-exposed glazing;

(iii) Operable windows to all areas, including remote window operation for highlight windows (e.g. to the multi-purpose court);

(iv) Provision for ceiling fans including high-volume, low-speed fans (HVLS) within the multi-purpose court;

(v) Confirmation that captured rainwater will be utilised for toilet flushing in the community facilities;

(vi) Hot water to be solar-boosted gas, with minimum 60% boost; and

(vii) Photovoltaic array associated with the community facilities within the unused roof area of the school building;

(c) Bicycle numbers updated to reflect Condition 1 endorsed plans;

(d) Evidence to demonstrate that SPEL proprietary products are effective in local Victorian conditions or provide a different approach for managing stormwater;

(e) Use of recycled materials e.g. insulation;

(f) Recycled content of concrete and steel;

(g) Greater details of stormwater retention systems within open space areas, including cross sections (as relevant);

(h) FSC certified sustainable or recycled timber for all timber uses where ever possible on site;

(i) BESS Report as 'Published' i.e. not draft;

(j) All 'items to be marked on floor plans' within the BESS report to be clearly shown;

(k) Preliminary Section J/NABERS energy modelling as referenced in the BESS report Lighting power density provided to minimum 2019 NCC standards; and

(l) Testing of the heat loads to a sample of affected habitable rooms to demonstrate the effectiveness of shading devices at the summer solstice to for north-facing glazing at noon, east-facing glazing at 10am and west-facing glazing at 2pm.

11. The provisions, recommendations and requirements of the endorsed Sustainable Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

Acoustic Report

12. Before the development commences, an amended Acoustic Report to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Acoustic Report will be endorsed and will form part of this permit. The amended Acoustic Report must be generally in accordance with the Acoustic Report prepared by Norman Disney Young Pty Ltd and dated 21 November 2018, but modified to include (or show, or address):

(a) Acoustic specifications of the external walls to the multi-purpose court to achieve reasonable external noise levels on adjacent apartment balconies;

(b) Structure borne noise from ball bouncing within the multipurpose court and measure to address potential impacts on commercial uses below, offices on Level 2 and the school building;

(c) Consider structure borne sound from the indoor recreational facility on surrounding

commercial premises;

(d) Lmax assessments of truck noise of delivery vehicles proposed to utilise the loading bay entrances; and

(e) Provide adequate acoustic treatment to the community spaces and multipurpose court to enable live music/performance to protect the adjacent residential uses and the school building.

13. The provisions, recommendations and requirements of the endorsed Acoustic Report must be implemented and complied with to the satisfaction of the Responsible Authority.

Post commencement Acoustic Report

14. Within 3 months of completion of the development or at a later date to the satisfaction of the Responsible Authority, an Acoustic Report to the satisfaction of the Responsible Authority must be prepared by a suitably qualified acoustic engineer and must be submitted to and approved by the Responsible Authority. When approved, the Acoustic Report will be endorsed and will form part of this permit. The Acoustic Report must assess the following:

(a) Noise impacts from the loading bay activity on the dwellings within the podium along Heidelberg Road;

(b) Noise impacts from the mechanical equipment to be measured the most affected sensitive receivers locations (i.e. dwellings); and

(c) The acoustic report must assess the compliance of the use and, where necessary, make recommendations to limit the noise impacts in accordance with the State Environment Protection Policy (Control of noise from industry, commerce and trade) No. N-1 (SEPP N-1) or any other requirement to the satisfaction of the Responsible Authority.

Wind Assessment Report

15. Before the development commences, an amended Wind Tunnel Test to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Wind Tunnel Test will be endorsed and will form part of this permit. The amended Wind Tunnel Test must be generally in accordance with the Wind Tunnel Test prepared by Vipac Engineers and Scientists and dated 25 October 2018, but modified to include (or show):

(a) Assessment of the amended plans pursuant to Condition 1 of this permit;

(b) 'Walking' rather than 'fast walking' used as the minimum acceptable criterion;

(c) Level 1 terrace to achieve sitting criterion where outdoor dining is proposed;

(d) Level 4 childcare terrace to achieve areas of standing and siting criteria;

(e) Clarification of the sensor location for Location 3 i.e. whether it was shifted into the recessed entrance; and

(f) Minimum acceptable criterion achieved for both Configurations 1 and 2 at all locations excluding vegetation.

16. The provisions, recommendations and requirements of the endorsed Wind Assessment Report must be implemented and complied with to the satisfaction of the Responsible Authority.

Landscaping

17. Before the development commences, an amended Landscape Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Landscape Plan will be endorsed and will form part of this permit. The amended Landscape Plan must be generally in accordance with the Landscape Plan prepared by Aspect Studios and dated 3 December 2018, but modified to include (or show):

(a) Consistency with the architectural drawings pursuant to Condition 1;

(b) Landscaping details of the Level 8 communal terrace;

(c) Landscaping details of the school playground;

(d) Remove landscape details for the Village Square;

(e) Greater detail of the vertical planting proposed to the Living Edge and the podium along the Outer Circle Mews regarding plant species type, irrigation and maintenance details;

(f) Greater detail of the steel inserts, including cross sections, demonstrating that they will not be a tripping or slipping hazard, or alternatively removal of this feature;

(g) To Heidelberg Road:

  (i) Retaining wall relocated at the kerb side edge;

  (ii) Remove planter box adjacent to the Outer Circle Mews, maintaining a consistent avenue of trees;

  (iii) Tree species to consider impact from future location of power lines and infrastructure; and

  (iv) Details of any landscaping proposed along the building line, including details to confirm durability and maintenance;

(h) To the Outer Circle Mews:

  (i) The cluster of four trees at each end of the Mews replaced with a single tree or alternatively greater detail regarding the capability of the planter supporting the density of planting;

  (ii) Avoid small ‘left over’ spaces between street furniture and garden beds;

  (iii) Greater detail of the Water Sensitive Urban Design beds including type of system and their broader connection;

  (iv) Greater detail of the windscreens e.g. materials, porosity;

  (v) Provision of BMX coping/deterrents to street furniture; and

  (vi) Colour variation applied to the brick plinths and pavements;

(i) To Nelmoore Lane:

  (i) Comprehensive levels and grading details;

  (ii) Pinch point along the footpath to achieve a minimum width of 2.5m between the building and the kerb;

  (iii) Improved landscape treatment within the triangular space to the south-east of the Machinery Hall created by the current amendment, including:

    a. Provision of furniture to include seating with backs and armrests that can cater for grouping of people;

    b. Introduce low planting and garden beds;

    c. bicycle hoops set back minimum of 900mm from the kerb line;

(j) To the Level 1 terrace:

  (i) Seating to be provided in clusters including details of seating capacity;

  (ii) Architectural canopies to be shown in plan and section;

  (iii) comprehensive levels and grading information;

  (iv) Clear drainage strategy (including raised planter);

  (v) Slope of the synthetic grass mount to be correctly referenced as1:3 (rather than

1:20) on section drawing TP-LAN-L1-703 (Rev 3);

(vi) Tree species and available soil volumes nominated; and

(vii) Ensure trees are suitably offset from the edges of planters.

18. Before the plans are endorsed, an Irrigation Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Irrigation Management Plan will be endorsed and will form part of this permit. The Irrigation Management Plan must make recommendations for:

    (a) differential demands of the vegetation within the site complying with the provisions, recommendations and requirements of the endorsed Landscape Plan; and

    (b) programmed maintenance for the irrigation system including flushing, checking systems integrity, monitoring sensors and calibration settings.

19. Before the buildings within a stage are occupied, or such later date as is approved by the Responsible Authority, the landscaping works shown on the endorsed plans relating to the applicable stage must be carried out and completed to the satisfaction of the Responsible Authority.

20. The landscaping shown on the endorsed plans must be maintained by:

    (a) implementing and complying with the provisions, recommendations and requirements of the endorsed Landscape Plan;

    (b) not using the areas set aside on the endorsed Landscape Plan for landscaping for any other purpose; and

    (c) replacing any dead, diseased, dying or damaged plants,

    all to the satisfaction of the Responsible Authority.

<u>Village Square</u>

21. Before the development commences, or otherwise approved by the Responsible Authority, a landscape concept plan must be submitted to and approved by the Responsible Authority. When approved, the Village Square will be endorsed and will form part of this permit. The Village Square must be generally in accordance with the landscape concept plans prepared by Aspect Studios date 3 December 2018, plan Ref. TP-LAN-0G-101 but updated to include or show:

    (a) Further information to demonstrate that significant change in levels between the square and Mills Boulevard have been avoided;

    (b) Incorporate landscaping on the eastern edge of the square that will supplement the Main Street tree planting;

    (c) Greater detail of corton steel elements including how they will be incidentally used and complement the space and how graffiti will be deterred;

    (d) More information to confirm that the added entrance will align with the Mills Boulevard crossing;

    (e) More information regarding custom seating and whether this will allow for groups to gather and interact;

    (f) Additional detail provided to conform that bicycle hoops, drinking fountains and bins to Council's Standards or otherwise to the satisfaction of the Responsible Authority;

    (g) Indicate location of signage to be consistent with the 'Wayfinding signage and Interpretation Strategy report' pursuant to Condition 23;

    (h) Greater detail to confirm that double sided timber benches include backs and armrests;

    (i) More information to confirm that there will be a clear demarcation between public and private areas, including the location of assets; and

(j) Details of a clear drainage strategy.

Section 173 Agreement – Village Square

22. Unless otherwise agreed by the Responsible Authority, prior commencement of the development authorised by this permit, the owner (or another person in anticipation of becoming the owner) must enter into an agreement with the Responsible Authority under section 173 of the *Planning and Environment Act* 1987, which provides for the following:

(a) Before the occupation of the development approved by this permit, or at a later date to the satisfaction of the Responsible Authority, the Village Square must be substantial completed to the satisfaction of the Responsible Authority;

(b) The cost of any incomplete works (including any associated labour and maintenance) at time of occupation of the development to be reserved as bonds, bank guarantees or similar to the satisfaction of the responsible authority;

(c) Prior to the occupation of the development approved by this permit, or at a later date to the satisfaction of the Responsible Authority, the Village Square is to be vested with Council; and

(d) The cost of the design and construction of Village Square, including all landscape works, any park furniture/equipment and drainage is to be borne by the permit applicant.

The owner, or other person in anticipation of becoming the owner, must meet all of the expenses of the preparation and registration of the agreement, including the Responsible Authority's costs and expenses (including legal expenses) incidental to the preparation, registration and enforcement of the agreement.

Wayfinding and Interpretation Strategy

23. Before the use commences, an amended Wayfinding and Interpretation Strategy to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Wayfinding and Interpretation Strategy will be endorsed and will form part of this permit. The amended Wayfinding and Interpretation Strategy must be generally in accordance with the Wayfinding and Interpretation Strategy prepared by Urban & Public and Aspect Studios and dated August 2017, but modified to include or show:

(a) Heritage interpretation signage within the Paper Trail for the metal inlay; and

(b) Provision of further details regarding the heritage interpretation/wayfinding elements e.g. steel paving inlay to vertical element transition.

Public Art Management Plan

24. Within 6 months of commencement of the development, a Public Art Management Plan for the display cabinets along Heidelberg Road to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Public Art Management Plan will be endorsed and will then form part of this permit. The Public Art Management Plan must include, but not be limited to:

(a) Details of who is to manage the display cabinets, this is to be one of the following:

(i) Art curator;

(ii) Art gallery;

(iii) Artist run space;

(b) Funding arrangements to maintain the space;

(c) Frequency that the display boxes are to be changed;

(d) In the event that an art curator is engaged, details of display creation process to include;

(i) A brief to be developed and open for artists' submissions, or by invitation to a group of shortlisted artists;

(ii) The concept design submissions will be assessed by Council's Visual Arts Panel or project specific panel and one artist may be successfully selected to proceed to commission round; and

(iii) The artist may be engaged for a further design stage or proceed straight to commission, however a fixed budget will be established and the artist contracted to deliver the project within this set fee.

25. Before the buildings within the stage that includes the public art are occupied, or by such later date as approved in writing by the Responsible Authority, the approved public art within the applicable stage must be completed. Once completed, the public art must be maintained in accordance with the endorsed Public Art Management Plan to the satisfaction of the Responsible Authority.

Lighting Plan Design

26. Before the buildings within a stage are occupied, or by such later date as approved in writing by the Responsible Authority, external lighting capable of illuminating pedestrian walkways and dwelling entrances relating to the applicable stage must be provided. Lighting must be:

(a) located;

(b) directed;

(c) shielded; and

(d) of limited intensity,

to the satisfaction of the Responsible Authority.

27. Before the development commences, a Lighting Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. The Lighting Plan must address lighting within the internal streets and other publicly accessible areas and the entrances to the approved dwellings. When approved, the Lighting Plan will be endorsed and will form part of this permit. The Lighting Plan must provide for:

(a) A lighting scheme designed for new open roads within the curtilage of the property that complies with uniformity requirements as per standard AS1158.3.1;

(b) The control of light spillage into the windows of existing and proposed residences to comply with the requirements of AS 4282 – 1997," Control of the obtrusive effects of outdoor lighting";

(c) The locations of any new light poles so as not to obstruct access into private garages/off and on street parking places;

(d) Lighting to all primary pedestrian access points to a residential property to satisfy at least level P4 as per AS 1158.3.1;

(e) A maintenance regime for the lighting scheme within the curtilage of the property; and

(f) The use of energy efficient luminaries and/or solar lighting technologies to reduce carbon emission if possible.

28. The provisions, recommendations and requirements of the endorsed Lighting Plan must be implemented and complied with at no cost to Council and to the satisfaction of the Responsible Authority.

Waste Management Plan

29. The provisions, recommendations and requirements of the endorsed Waste Management Plan generally in accordance with the Waste Management Plan prepared by SALT and dated 20 November 2018 must be implemented and complied with to the satisfaction of the Responsible Authority.

Community Facilities – Section 173 Agreement

30. Before the development starts, the owner (or other person in anticipation of becoming the owner) must enter into an agreement with the Responsible Authority under section 173 of the Planning and Environment Act 1987 (Act). The agreement must provide the following:

    (a) the minimum, located on Level 1:

        (i) 432sqm community space inclusive of foyer;

        (ii) 1000sqm community centre activity space ("warm shell");

        (iii) 820sqm multi-purpose court,

        All shown on the endorsed plans must be subdivided and gifted to the Responsible Authority at no cost to the Responsible Authority before the development authorised by this permit is occupied;

    (b) the owner will undertake the:

        (i) fit out of the internal 432sqm community space including kitchen, toilets and storage (to include floor covering, ceiling, wall partitioning, lighting and air conditioning);

        (ii) Delivery of a "warm shell" of 1,000sqm gross floor area, toilet facilities and storage;

        (iii) Delivery of the multi-purpose court to netball standard, including associated toilet/change room facilities and storage rooms; and

        (iv) Delivery of ESD initiatives as detailed within condition 10(b) of this planning permit;

    (c) before they are gifted to the Responsible Authority, all fit outs must be in a manner to be agreed by the owner and the Responsible Authority before the internal and where relevant external works commence for all fit outs, all at no cost to the Responsible Authority; and

    (d) the owner (or other person in anticipation of becoming the owner) must meet all of the expenses of preparing, reviewing, executing and registering the agreement, including the Responsible Authority's costs and expenses (including legal expenses) incidental to preparing, reviewing, executing, registering and enforcing the agreement.

Use Conditions

Primary School

31. Except with the prior written consent of the Responsible Authority, no more than 300 children are permitted on the land at any one time.

32. Except with the prior written consent of the Responsible Authority, no more than 12 EFT teachers are permitted on the land at any one time.

33. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Sports Court / Pavilion

34. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Childcare

35. Except with the prior written consent of the Responsible Authority, no more than 120 children are permitted on the land at any one time.

36. Except with the prior written consent of the Responsible Authority, no more than 10 EFT Childcare teaching staff are permitted on the land at any one time.

37. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Office

38. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Retail/Shop

39. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Supermarket

40. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 12midnight.

Food and Drink Premises

41. Except with the prior written consent of the Responsible Authority, no more than 170 patrons (distributed across all food and drink premises) are permitted on the land at any one time.

42. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Community Space - Place of Assembly

43. Except with the prior written consent of the Responsible Authority, no more than 300 patrons are permitted on the land at any one time.

44. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Gym

45. Except with the prior written consent of the Responsible Authority, no more than 386 patrons are permitted on the land at any one time.

46. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) 24 hrs per day.

47. Before the restricted recreation facility (gym) use commences, an operation management plan must be submitted and approved by the Responsible Authority. When approved, the operation management plan will be endorsed and will form part of this permit. The operation management plan must include:

    (a) Hours that staff will be present on site;

    (b) Details of after-hours access by members; and

    (c) Details of security/safety measures/emergency contact when facility is unstaffed.

48. The provisions, recommendations and requirements of the endorsed Operation Management

Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

Serviced Apartments

49. Before the use of the serviced apartments operates, an operation management plan must be submitted and approved by the Responsible Authority. When approved, the operation management plan will be endorsed and will form part of this permit. The operation management plan must include:

    (a) Hours that staff will be present on site;

    (b) Details of after-hours access by members; and

    (c) Details of security/safety measures/emergency contact when facility is unstaffed.

50. Unless otherwise agreed by the Responsible Authority, prior commencement of the development authorised by this permit, the owner (or another person in anticipation of becoming the owner) must enter into an agreement with the Responsible Authority under section 173 of the *Planning and Environment Act* 1987, which provides for the following:

    (a) Serviced apartments to be restricted to temporary accommodation away from normal place of residence; and

    (b) Serviced apartments must be managed by a single operator and not disposed of as individual lots.

General Use Conditions

51. The provision of music and entertainment on the land must be at a background noise level excluding the community spaces unless with the prior written consent of the Responsible Authority.

52. The use and development must comply at all times with the State Environment Protection Policy – Control of Noise from Commerce, Industry and Trade (SEPP N-1).

53. The use and development must comply at all times with the State Environment Protection Policy – Control of Music Noise from Public Premises (SEPP N-2).

54. The amenity of the area must not be detrimentally affected by the development and uses including through:

    (a) The transport of materials, goods or commodities to or from the land;

    (b) The appearance of any buildings, works or materials;

    (c) The emission of noise, artificial light, vibration, smell fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil or

    (d) The presence of vermin,

    to the satisfaction of the Responsible Authority.

Road works – Section 173 Agreement

55. Unless otherwise agreed by the Responsible Authority, prior commencement of the development authorised by this permit, the owner (or another person in anticipation of becoming the owner) must enter into an agreement with the Responsible Authority under section 173 of the *Planning and Environment Act* 1987, which provides for the following:

    (a) Before the occupation of the development approved by this permit, Heidelberg Road along the site frontage must be substantially completed to the satisfaction of the Responsible Authority, including appropriate connections to the adjoining sections of Heidelberg Road;

    (b) Sections of the Heidelberg Road and Latrobe Avenue footpath that lie outside the building envelope but within the title boundaries to be vested with Council unless otherwise agreed and acceptably delineated;

    (c) Before occupation of the development approved by this permit, the sections of

Heidelberg Road and Latrobe Avenue adjacent to the title boundaries must be substantially completed to the satisfaction of the Responsibility;

(d) The cost of the design and carrying out these works to be borne by the owner of the land;

(e) Publicly accessible pedestrian links (Paper Trail, Outer Circle Mews and Nelmoore Lane) to remain unobstructed and maintained in good order to the satisfaction of the Responsible Authority';

(f) Paper Trail access (connecting the Village Square to the Outer Circle Mews) to be publicly accessible between 6am and 12midnight; and

(g) 24-hour public access provided to the Outer Circle Mews and the access road to the south.

The owner, or other person in anticipation of becoming the owner, must meet all the expenses of the preparation and registration of the agreement, including the Responsible Authority's costs and expenses (including legal expenses) incidental to the preparation, registration and enforcement of the agreement.

Road Infrastructure

56. Before the development commences, or by such later date as approved in writing by the Responsible Authority, the applicant must prepare and submit a 1 in 20 scale cross sectional drawing of the development's vehicular entrance, showing the actual reduced levels to three decimal places (not interpolated levels from the application drawings). The required levels include the building line level, top of kerb level, invert level, lip level and road pavement levels. The applicant must demonstrate by way of a ground clearance check using the B99 design vehicle that cars can traverse the new vehicle crossing without scraping or bottoming out. The 1 in 20 scale cross sectional drawing must be submitted to Council's Construction Management branch for assessment and approval.

57. Before the buildings within a stage are occupied, or by such later date as approved in writing by the Responsible Authority, any new vehicle crossing within the applicable stage must be constructed:

    (a) in accordance with any requirements or conditions imposed by Council;

    (b) at the permit holder's cost; and

    (c) to the satisfaction of the Responsible Authority.

58. Before the buildings within a stage are occupied, or by such later date as approved in writing by the Responsible Authority, any redundant vehicular crossing within the applicable stage must be demolished and re-instated as standard footpath and kerb and channel:

    (a) at the permit holder's cost; and

    (b) to the satisfaction of the Responsible Authority.

59. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, any damaged roads, footpaths and other road related infrastructure adjacent to the development site as a result of the construction works, including trenching and excavation for utility service connections, must be reconstructed:

    (a) at the permit holder's cost; and

    (b) to the satisfaction of the Responsible Authority.

60. Prior to the commencement of works, specifications for the proposed surface materials to be used for Council's assets are to be submitted to Council's Civil Engineering Unit for assessment and approval.

61. Before the buildings within a stage are occupied, the footpaths, kerbs, channels and roadways adjacent to the applicable stage are to be constructed to the satisfaction of the Responsible Authority.

62. Before the buildings within a stage are occupied, redundant pits/services within the applicable stage are to be removed and Council assets reinstated.

63. Prior to the commencement of works, existing Council stormwater drainage and sewerage infrastructure within the site to be relocated to the satisfaction of the Responsible Authority.

Car parking

64. Before the commencement of the development, an amended Car Park Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Car Park Management Plan will be endorsed and will form part of this permit. The amended Car Park Management Plan must be generally in accordance with the Car Park Management Plan prepared by GTA and dated 7 February 2019, but modified to include:

    (a) Any changes as required pursuant to condition 1

    (b) A schedule of all proposed signage including directional arrows and signage, informative signs indicating the location of disabled bays and bicycle parking, exits, restrictions and pay parking systems etc.;

    (c) The number and location of car parking spaces allocated to each use including:

        (i) residential spaces provided at a minimum rate of 1 space per dwelling (including the affordable housing component);

    to the satisfaction of the Responsible Authority.

65. The provisions, recommendations and requirements of the endorsed Car Park Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

66. Before the buildings within a stage are occupied, or by such later date as approved in writing by the Responsible Authority, a notice showing the location of car parking relating to the applicable stage must be placed in a clearly visible position near the entry to the land. The notice must be maintained thereafter to the satisfaction of the Responsible Authority.

Loading Bay Management Plan

67. Before the buildings are occupied, a Loading Bay Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Loading Bay Management Plan will be endorsed and will form part of this permit. The Loading Bay Management Plan must address, but not be limited to, the following:

    (a) details of the frequency, hours and type of deliveries to occur;

    (b) access management into the loading bay e.g. manual/swipe/pin code;

    (c) collection of waste and garbage including the separate collection of organic waste and recyclables and medical waste which must be in accordance with the Waste Management Plan required by Condition 29; and

    (d) loading hours and operations to be consistent with recommendations in the acoustic report pursuant to Condition 12, including that doors are to remain shut while loading and unloading.

68. The provisions, recommendations and requirements of the endorsed Loading Bay Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

69. The loading and unloading of vehicles and the delivery of goods to and from the land must be conducted entirely within the land to the satisfaction of the Responsible Authority.

Road Safety Audit

70. Prior to the endorsement of plans, an amended Road Safety Audit is to be undertaken generally in accordance with the Road Safety Audit Ref. RSA-05937 dated 25 July 2017 but

amended to include:

(a) Shared path priority to be identified as a 'high risk' rating; and

(b) Further analysis and recommendations to resolve the shared path priority including to ensure that the shared path priority is clear to drivers, riders and pedestrians.

Green Travel Plan

71. Before the use commences, an amended Green Travel Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Green Travel Plan will be endorsed and will form part of this permit. The amended Green Travel Plan must be generally in accordance with the Green Travel Plan prepared by GTA Consultants and dated 7 February 2019, but modified to include or show:

    (a) Greater provision for staff bicycle parking and end of trip facilities as outlined in condition 1.

72. The provisions, recommendations and requirements of the endorsed Green Travel Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

Public Transport Victoria

73. The permit holder must take all reasonable steps to ensure that disruption to bus operation along Heidelberg Road is kept to a minimum during the construction of the development. Foreseen disruptions to bus operations during construction and mitigation measures must be communicated to Public Transport Victoria fourteen (14) days prior.

VicRoads Conditions (74 to 77)

74. Before the development starts functional layout plans for the intersection of Heidelberg Road and the accessway to the Village (at the north west) and the intersection of Heidelberg Road and Latrobe Avenue, must be submitted to and approved by the Roads Corporation. When approved by the Roads Corporation, the plans may be endorsed by the Responsible Authority and will then form part of the permit. The plans must be drawn to scale with dimensions and two copies submitted with the application (by GTA consulting, Heidelberg Road Frontage Alphington, Functional Layout, reference: 16M192300-05 Issue F7). The Functional Layout Plans must also incorporate the recommendations of the Road Safety Audit, Reference RSA – 05937 by Road Safety Audits).

75. Prior to the commencement of the use or the occupation of the buildings or works hereby approved, the access lanes, driveway, crossovers and associated works must be provided and available for use and be:

    (a) formed to such levels and drained so that they can be used in accordance with the plan; and

    (b) treated with an all-weather seal or some other durable surface.

76. The crossover and driveway must be constructed to the satisfaction of the Roads Corporation and the Responsible Authority and at no cost to the Roads Corporation prior to the commencement of the use or the occupation of the works hereby approved

77. Driveways must be maintained in a fit and proper state so as not to compromise the ability of vehicles to enter and exit the site in a safe manner or compromise operation efficiency of the road or public safety.

Construction Management

78. Before the development commences, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be endorsed and will form part of this permit. The plan must provide for:

    (a) a pre-conditions survey (dilapidation report) of the land and all adjacent Council roads

frontages and nearby road infrastructure;

(b) works necessary to protect road and other infrastructure;

(c) remediation of any damage to road and other infrastructure;

(d) containment of dust, dirt and mud within the land and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the land;

(e) facilities for vehicle washing, which must be located on the land;

(f) the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;

(g) site security;

(h) management of any environmental hazards including, but not limited to,:

  (i) contaminated soil;

  (ii) materials and waste;

  (iii) dust;

  (iv) stormwater contamination from run-off and wash-waters;

  (v) sediment from the land on roads;

  (vi) washing of concrete trucks and other vehicles and machinery; and

  (vii) spillage from refuelling cranes and other vehicles and machinery;

(i) the construction program;

(j) preferred arrangements for trucks delivering to the land, including delivery and unloading points and expected duration and frequency;

(k) parking facilities for construction workers;

(l) measures to ensure that all work on the land will be carried out in accordance with the Construction Management Plan;

(m) an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

(n) measures to maintain the access and integrity of the continuous bike path along Heidelberg Road;

(o) an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced;

(p) the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads;

(q) a Noise and Vibration Management Plan showing methods to minimise noise and vibration impacts on nearby properties and to demonstrate compliance with Noise Control Guideline 12 for Construction (Publication 1254) as issued by the Environment Protection Authority in October 2008. The Noise and Vibration Management Plan must be prepared to the satisfaction of the Responsible Authority. In preparing the Noise and Vibration Management Plan, consideration must be given to:

  (i) using lower noise work practice and equipment;

  (ii) the suitability of the land for the use of an electric crane;

  (iii) silencing all mechanical plant by the best practical means using current technology;

  (iv) fitting pneumatic tools with an effective silencer;

(v) other relevant considerations; and

(r) any site-specific requirements.

During the construction:

(s) any stormwater discharged into the stormwater drainage system must be in compliance with Environment Protection Authority guidelines;

(t) stormwater drainage system protection measures must be installed as required to ensure that no solid waste, sediment, sand, soil, clay or stones from the land enters the stormwater drainage system;

(u) vehicle borne material must not accumulate on the roads abutting the land;

(v) the cleaning of machinery and equipment must take place on the land and not on adjacent footpaths or roads; and

(w) all litter (including items such as cement bags, food packaging and plastic strapping) must be disposed of responsibly.

79. If required, the Construction Management Plan may be approved in stages. Construction of each stage must not commence until a Construction Management Plan has been endorsed for that stage, to the satisfaction of the Responsible Authority.

80. The provisions, recommendations and requirements of the endorsed Construction Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

81. Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:

(a) Monday-Friday (excluding public holidays) before 7 am or after 6 pm;

(b) Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or

(c) Sundays, ANZAC Day, Christmas Day and Good Friday at any time.

Time Expiry

82. This permit will expire if:

(a) the development is not commenced within two years of the date of this permit; or

(b) the development is not completed within four years of the date of this permit; or

(c) the uses have not commenced within five years of the date of this permit.

The Responsible Authority may extend the periods referred to if a request is made in writing before the permit expires or within six months afterwards for commencement or within twelve months afterwards for completion.

Notes:

Provision must be made for drainage of the site to a legal point of discharge. Please contact Council's Building Services on 9205 5585 for further information.

A building permit may be required before development is commenced. Please contact Council's Building Services on 9205 5585 to confirm.

A local law permit (e.g. Asset Protection Permit, Road Occupation Permit) may be required before development is commenced. Please contact Council's Construction Management Branch on Ph. 9205 5585 to confirm.

The site is located within an Environmental Audit Overlay. Pursuant to Clause 45.03 of the Yarra Planning Scheme, the requirements of the Environmental Audit Overlay must be met prior to the commencement of development permitted under the permit.

The permit holder must obtain approval from the relevant authorities to remove and/or build over the easement(s).

All future property owners and residents, within the development approved under this permit will not be permitted to obtain resident or visitor parking permits.

A vehicle crossing permit is required for the construction of the vehicle crossing(s). Please contact Council's Construction Management Branch on 9205 5585 for further information.

Provision must be made for drainage of the site to a legal point of discharge. Please contact Council's Building Services on 9205 5585 for further information.

A building permit may be required before development is commenced. Please contact Council's Building Services on 9205 5585 to confirm.

A local law permit (e.g. Asset Protection Permit, Road Occupation Permit) may be required before development is commenced. Please contact Council's Construction Management Branch on Ph. 9205 5585 to confirm.

The site is located within an Environmental Audit Overlay. Pursuant to Clause 45.03 of the Yarra Planning Scheme, the requirements of the Environmental Audit Overlay must be met prior to the commencement of development permitted under the permit.

The permit holder must obtain approval from the relevant authorities to remove and/or build over the easement(s).

All future property owners, occupiers, employees, students or visitors, within the development approved under this permit will not be permitted to obtain business employee, resident or visitor parking permits.

A vehicle crossing permit is required for the construction of the vehicle crossing(s). Please contact Council's Construction Management Branch on 9205 5585 for further information.

VicRoads Notes:

Separate approval under the Road Management Act may be required from VicRoads (the Roads Corporation). Please contact VicRoads prior to commencing any works.

CONTACT OFFICER: **Amy Hodgen**
TITLE: **Coordinator Statutory Planning**
TEL: **9205 5330**

Attachments

1⇩ Planning Permit
2⇩ Community Facilities - Architectus Plan
3⇩ VicRoads Referral Comments
4⇩ Transport for Victoria (formally PTV) Referral Comments
5⇩ Open Space Unit Referral Comments
6⇩ Internal Urban Design Unit Referral Comments (streetscape design)
7⇩ Internal Urban Design Unit Comments (Village Square)
8⇩ ESD Referral Response
9⇩ Engineering Services Unit Referral Comments
10⇩ Strategic Transport Unit Referral Comments
11⇩ City Works (Waste Management)Referral Comments
12⇩ City Works & Assets (Community Facilities)
13⇩ External Urban Design Referral Comments (DLA)
14⇩ Arts & Culture Referral Comments
15⇩ External Traffic Engineering Peer Review (Traffix Group)
16⇩ External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)
17⇩ Acoustic Engineers (SLR) Referral Comments
18⇩ Wind Consultants (MEL) Peer Review
19⇩ Landscape Plans
20⇩ Decision Plans

Attachment 1 - Planning Permit

Helping you understand your planning needs

PLANNING PERMIT (Corrected)

Permit No: PLN17/0703

Planning Scheme: Yarra

Responsible Authority: City Of Yarra

ADDRESS OF THE LAND:

626 Heidelberg Rd Alphington VIC 3078

THE PERMIT ALLOWS:

Use and development of the land for a mixed use development containing dwellings, supermarket, shops, food and drink premises, office (including medical centres), restricted recreational facility (gym), childcare centre, education centre (primary school) and a place of assembly and a reduction in the car parking requirements and creating access to a Road Zone Category 1 road

THE FOLLOWING CONDITIONS APPLY TO THIS PERMIT:

1. Before the development commences, amended plans to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plans will be endorsed and will then form part of this permit. The plans must be drawn to scale with dimensions and three copies must be provided. The plans must be generally in accordance with the decision plans prepared by NH Architects and Bird de la Coeur dated 20 February 2017 (Received 27 February 2017) but modified to show:

   Design

   (a) Levels 4 and 5 of the Urban Anchor to be set back a minimum of 2.2m from western side of the podium;
   (b) Levels 6 and above of the Urban Anchor to project no further west than the podium;
   (c) Full height glazing along the Heidelberg frontage to the supermarket;
   (d) Decorative screens to the western portion of the northern façade associated with the Urban Anchor applied more irregularly and with variation in sizes, including operability to sections;
   (e) Greater detail (design/openings) of the screen facing Heidelberg Road associated with the school;
   (f) The podium carpark be sleeved with apartments for the full length of the Outer Circle Mews, apart from the area accommodating the stairwell;

   ESD

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

For more information call 9205 5555 or visit **www.yarracity.vic.gov.au**

Attachment 1 - Planning Permit

(g) Additional external shading systems applied on all east, west and north facing facades of the Urban Anchor and Living Matrix;
(h) location and size of the water tank;
(i) roof plan showing location of all solar panels;
(j) provision and location of a minimum of 40 electric vehicle charging points;

Materials

(k) an update schedule of external colours and materials, including samples (where appropriate). The schedule must show:
  (i) thumb nail sketches of key elements of the façade for all buildings;
  (ii) coloured elevations of all buildings including coloured perspectives for all key interfaces reflective of the proposed colours and materials;
  (iii) Replacement of the decorative precast concrete cladding with a higher quality material and finish;
  (iv) More subdued colour finish applied to the Living Matrix screen, such as copper or bronze;
  (v) Brick snap cladding (PR-53) to the eastern side of the Urban Anchor be finished in a brown shade similar to shown on the perspective;
  (vi) Material FM-53 within the western portion of the urban Anchor to be a single cream colour;
  (vii) Loading bay entrance door to be of an impervious material.
  (viii) Graffiti proof materials to all ground floor publically accessible areas;

Bike and Car Parking

(l) A minimum of 20% of spaces within any secure bicycle facility provided as horizontal rails in accordance with AS2890.3;
(m) Direct access between adjacent bicycle facilities;
(n) Relocation of bicycle storage facilities (and end of trip facilities) to the east of the car park on the lower ground floor, closer to the entrance to the commercial uses;
(o) Dimensions of bicycle storage spaces, and relevant access ways to comply with AS2890.3 or be to the satisfaction of the Responsible Authority;
(p) Provision of conveniently located power point for charging e-bikes;
(q) Bicycle ramp from the access way to have a maximum gradient of 1:12;
(r) Clearance of bike spaces to walls to be shown at a minimum of 500mm.
(s) Increase in the number of visitor bike space to a minimum of 190, additional spaces should be located:
  (i) On the Heidelberg Road footpath, near the pedestrian entrance to the retail and shop uses;
  (ii) Near the corner of Latrobe Avenue and the access lane; and
  (iii) Near elevators serving the commercial uses within the lower-ground floor car park;
(t) Provision for an additional 45 car spaces within the public car parking area;
(u) Include wheel ramps adjacent stairs from ground to Level 1;
(v) Bollards to be provided within shared areas associated with accessible parking spaces in accordance with AS/NZS 2890.6:2009;
(w) Column depths dimensioned on the drawings, consistent with Diagram 1 within Clause 52.06-9 of the Yarra Planning Scheme;
(x) Clearances of car spaces to walls needs to be shown at a minimum of 300mm;

General

(y) Roof plans showing location of all plant and equipment;
(z) Details of outdoor court lights to be shown, with a notation that lighting will be baffled to prevent light spill;

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(aa) Floor to floor heights for the community facilities on Level 1 to be increased to a minimum of 3.9m;
(bb) Notation confirming all habitable rooms are fitted with an operable window;
(cc) Details of screening devices between abutting balconies to prevent overlooking;
(dd) Balconies to south-facing apartments within the Urban Anchor to achieve a minimum width of 2m;
(ee) Balconies to the north-facing apartments within the Urban Anchor to achieve an average width of 2m; without reducing the northern setback;
(ff) Common corridor widths within the apartment buildings to be increased to a minimum of 1.8m;
(gg) Fencing to podium level apartments to be 1.7m high and a maximum of 25% transparency;
(hh) Internal reconfiguration of living areas of Apartment Types E, G, H and J to accurately demonstrate compliance the minimum width and area requirements of Standard D8 of Clause 58 of the Yarra Planning Scheme;
(ii) Study nooks in Apartment Type H to be deleted with subsequent increase in the living/kitchen/dining area;
(jj) Clearly demonstrate cross-ventilation opportunities in accordance with Standard D27 of Clause 58 of the Yarra Planning Scheme;
(kk) Northern wall to the 300sqm community facility to be glazed;
(ll) Direct lift access to be provided to the 300sqm community facility or alternatively a door into the community space adjacent to the lift;
(mm) Deletion of the L-shape within the 1400sqm community facility area;
(nn) Provision of a small canopy extending from the southern side of the sports pavilion over the multi-purpose court;
(oo) Lift access to be provided directly to the court;
(pp) Separate access to the court independent of the sports pavilion;
(qq) A secondary entrance provided to the 1400sqm area to enable the potential division of the internal space;
(rr) Access to the communal podium terrace provided to all residents of the development (i.e. including the urban anchor);

Reports

(ss) any amendments as require by the endorsed landscape plan pursuant to condition 17 to be shown on plans;
(tt) any requirements as a result of the endorsed Sustainable Management Plan report pursuant to condition 9 to be shown on plans;
(uu) any requirements as a result of the endorsed acoustic report pursuant to condition 11 to be shown on plans;
(vv) any requirements as a result of the endorsed wind assessment report pursuant to condition 13 to be shown on plans;
(ww) Any amendments as required by the road safety audit pursuant to Condition 73; and
(xx) Any requirements as a result of the endorsed Car parking management plan pursuant to condition 66 to be shown on plans;
(yy) Any amendments as a result of the air quality testing pursuant to condition 15; and
(zz) Any requirements as a result of the endorsed Waste Management Plan pursuant to condition 28 to be shown on the plans.

Ongoing Architect Involvement

2. As part of the ongoing consultant team, NH Architects and Bird de la Coeur or an architectural firm to the satisfaction of the Responsible Authority must be engaged to:
   (a) oversee design and construction of the development; and

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(b) ensure the design quality and appearance of the development is realised as shown in the endorsed plans or otherwise to the satisfaction of the Responsible Authority.

General

3. The development and uses as shown on the endorsed plans must not be altered (unless the Yarra Planning Scheme specifies that a permit is not required) without the prior written consent of the Responsible Authority.

4. Finished floor levels shown on the endorsed plans must not be altered or modified without the prior written consent of the Responsible Authority.

5. Before the buildings are occupied, or by such later date as approved in writing by the Responsible Authority, all new on-boundary walls must be cleaned and finished to the satisfaction of the Responsible Authority.

6. All buildings and works must be maintained in good order and appearance to the satisfaction of the Responsible Authority.

7. All pipes, fixtures, fittings and vents servicing any building on the land must be concealed in service ducts or otherwise hidden from view to the satisfaction of the Responsible Authority.

8. Before the buildings are occupied, any wall located on a boundary facing public property must be treated with a graffiti proof finish to the satisfaction of the Responsible Authority.

Sustainable Management Plan

9. Before the development commences, an amended Sustainable Management Plan (SMP) to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Sustainable Management Plan will be endorsed and will form part of this permit. The amended SMP must be generally in accordance with the Sustainable Management Plan prepared by Norman Disney Young and dated 14 February 2018, but modified to include or show:
   (a) Bicycle numbers updated to reflect the plans i.e. 484 bicycle spaces;
   (b) All car parking areas with the potential to be electrically wired to be 'EV ready', with a minimum 40A single phase electrical sub circuit installed to the each of these areas;
   (c) Size of the rainwater tank described consistently within the SMP;
   (d) Evidence to demonstrate that SPEL proprietary products are effective in local Victorian conditions or provide a different approach for managing stormwater;
   (e) Separate water metering for all major common area uses, tenancies and dwellings;
   (f) Comprehensive commissioning and tuning of all major appliances and building services;
   (g) Environmental Management Plan Monitor and control activities undertaken during construction;
   (h) Use of recycled materials e.g. insulation;
   (i) Recycled content of concrete and steel; and
   (j) A sample of dwellings demonstrating that NatHERS annual cooling loads do not exceed the 21MJ/M2 threshold (Moorabbin area);
   (k) Provision for stormwater retention within open space areas;
   (l) FSC certified sustainable or recycled timber for all timber uses where ever possible on site; and
   (m) Provision of a facilities for organic residential waste collection.

10. The provisions, recommendations and requirements of the endorsed Sustainable Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Attachment 1 - Planning Permit

Acoustic Report

11. Before the development commences, an amended Acoustic Report to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Acoustic Report will be endorsed and will form part of this permit. The amended Acoustic Report must be generally in accordance with the Acoustic Report prepared by Norman Disney Young Pty Ltd and dated 21 February 2018, but modified to include (or show, or address):
    (a) Apartments in close proximity to the netball court to achieve the following targets:
        (i) 35dBA Leq and 50dBA Lmax in habitable rooms during the day and evening and
        (ii) 30dBA Leq and 45 dBA Lmax in bedrooms at night.
    (b) Noise from ball bouncing within the sport courts and measure to address potential impacts on nearby residential uses and the community space below the court;
    (c) Consider structure borne sound from the indoor recreational facility on surrounding commercial premises;
    (d) Lmax targets met for apartments above the loading bay entrances in the event of evening and night time deliveries and/or recommendations for restricted delivery and collection times;
    (e) Targets of 40dBA, Leq16h in living rooms and 35dBA Leq8hr in bedrooms met for traffic noise along Heidelberg Road; and
    (f) Provide adequate acoustic treatment to the community spaces to enable live music/performance and protect the abutting residences.
12. The provisions, recommendations and requirements of the endorsed Acoustic Report must be implemented and complied with to the satisfaction of the Responsible Authority.

Wind Assessment Report

13. Before the development commences, an amended Wind Assessment Report to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Wind Assessment Report will be endorsed and will form part of this permit. The amended Wind Assessment Report must be generally in accordance with the Wind Assessment Report prepared by Vipac Engineers and Scientists and dated 23 November 2017, but modified to include (or show):
    (a) Assessment of the amended plans pursuant to Condition 1 of this permit;
    (b) 'Walking' rather than 'fast walking' used as the minimum acceptable criterion;
    (c) Existing configuration data to be included;
    (d) Clarification whether other wind mitigation strategies have been included to achieve the wind conditions at Location 2;
    (e) Testing of wind conditions to the ends of screens proximate to Locations 5 and 6;
    (f) Walking comfort achieved for Location 31;
    (g) Testing undertaken to the southwest and northwest corners of the 14 storey buildings; and
    (h) Minimum acceptable criterion achieved at all locations excluding vegetation.

14. The provisions, recommendations and requirements of the endorsed Wind Assessment Report must be implemented and complied with to the satisfaction of the Responsible Authority

Air Testing

15. Before the development commences, an Air Quality Report to the satisfaction of the Responsible Authority must be prepared by a suitably qualified person and must be submitted

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

to and approved by the Responsible Authority. When approved, the Air Quality Report will be endorsed and will form part of this permit. The Air Quality Report must assess the following:

(a) predicted air pollution levels within the first floor school playground;

(b) acceptable air quality/pollutant levels for the school playground activities; and

(c) suggestions/recommendations to achieve acceptable air quality levels

16. The provisions, recommendations and requirements of the endorsed Air Quality Report must be implemented and complied with to the satisfaction of the Responsible Authority.

Landscaping

17. Before the development commences, an amended Landscape Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Landscape Plan will be endorsed and will form part of this permit. The amended Landscape Plan must be generally in accordance with the Landscape Plan prepared by Aspect Studios and dated 20 February 2018, but modified to include (or show):
    (a) Consistency with the architectural drawings pursuant to Condition 1;
    (b) Greater detail of the vertical planting proposed to the Living Edge regarding plant species type, irrigation and maintenance details;
    (c) Greater detail of the steel inserts, including cross sections, demonstrating that they will not be a tripping or slipping hazard, or alternatively removal of this feature.
    (d) To Heidelberg Road:
        (i) Minimum footpath width of 3m;
        (ii) Remove continuous landscape strip;
        (iii) Introduce bicycle hoops and seating between street trees;
        (iv) Retaining wall relocated at the kerb side edge;
        (v) Remove brick paving extending from the Outer Circle Mews;
        (vi) Tree species to consider impact from future location of power lines and infrastructure;
        (vii) Ensure/demonstrate the tree within the splitter island adjacent to the vehicle entrance does not impact on sight lines.
    (e) To the Outer Circle Mews:
        (i) The cluster of four trees at each end of the Mews replaced with a single tree;
        (ii) Avoid small 'left over' spaces between street furniture and garden beds;
        (iii) Small garden beds or vertical garden planting along the eastern edge;
        (iv) Greater detail of the windscreens e.g. materials, porosity;
        (v) Provision of BMX coping/deterrents to street furniture;
        (vi) Colour variation applied to the brick plinths and pavements;
    (f) To the southern access lane:
        (i) Further tree planting at the north/east edge (triangular space);
        (ii) Minimum 1.5m planting width for street trees;
        (iii) Doors to the Back of House storage area to not open outward onto the footpath;
    (g) To the Level 1 terrace:
        (i) Provision for medium sized trees in larger planter boxes;
        (ii) Inclusion of softer materials e.g. timber;
        (iii) Seating to be provided in clusters;
    (h) To the Residential Gardens/Paper Trail:
        (i) Further tree planting along the southern and eastern edge of the residential gardens;
    (i) To the Village Square:
        (i) Redesign to avoid significant change in level between the square and Latrobe Avenue;

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Attachment 1 - Planning Permit

(ii) Provision of large trees along the western side that will allow light to penetrate at ground level;
(iii) Incorporate landscaping on the eastern edge of the square that will supplement the Main Street tree planting;
(iv) Replace corten steel with an alternative graffiti resistant material to the satisfaction of the Responsible Authority;
(v) Additional entrance that aligns with the Latrobe Avenue crossing;
(vi) Deletion of ground water jets;
(vii) Consider custom seating that allows for groups to gather and interact;
(viii) Lawn area to be raised to two sides to deter cross traffic movements;
(ix) Bicycle hoops, drinking fountains and bins to Council's Standards or otherwise to the satisfaction of the Responsible Authority;
(x) Provision of clear wayfinding signage for access to Level 1;
(xi) Double sided timber benches to include backs and armrests; and
(xii) Clear demarcation between public and private areas, including the location of assets.

18. Before the plans are endorsed, an Irrigation Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Irrigation Management Plan will be endorsed and will form part of this permit. The Irrigation Management Plan must make recommendations for:
    (a) differential demands of the vegetation within the site complying with the provisions, recommendations and requirements of the endorsed Landscape Plan; and
    (b) programmed maintenance for the irrigation system including flushing, checking systems integrity, monitoring sensors and calibration settings.
19. Before the building is occupied, or such later date as is approved by the Responsible Authority, the landscaping works shown on the endorsed plans must be carried out and completed to the satisfaction of the Responsible Authority.

20. The landscaping shown on the endorsed plans must be maintained by:
    (a) implementing and complying with the provisions, recommendations and requirements of the endorsed Landscape Plan;
    (b) not using the areas set aside on the endorsed Landscape Plan for landscaping for any other purpose; and
    (c) replacing any dead, diseased, dying or damaged plants,

    all to the satisfaction of the Responsible Authority.

Wayfinding and Interpretation Strategy

21. Before the use commences, an amended Wayfinding and Interpretation Strategy to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Wayfinding and Interpretation Strategy will be endorsed and will form part of this permit. The amended Wayfinding and Interpretation Strategy must be generally in accordance with the Wayfinding and Interpretation Strategy prepared by Urban & Public and Aspect Studios and dated August 2017, but modified to include or show:
    (a) Heritage interpretation signage within the Paper Trail for the metal inlay; and
    (b) Provision of further details regarding the heritage interpretation/wayfinding elements e.g. steel paving inlay to vertical element transition.

Public Art Management Plan

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

22. Within 6 months of commencement of the development, a Public Art Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Public Art Management Plan will be endorsed and will then form part of this permit. The Public Art Management Plan must include, but not be limited to:
    (a) Details of the commissioned artist(s);
    (b) Description of art work, including:
        (i) materials;
        (ii) colours;
        (iii) dimensions;
        (iv) content;
        (v) special features (e.g. lighting);
        (vi) details of the installation process; and
        (vii) details of art work maintenance schedule.
23. Before the buildings are occupied, or by such later date as approved in writing by the Responsible Authority, the approved public art must be completed. Once completed, the public art must be maintained in accordance with the endorsed Public Art Management Plan to the satisfaction of the Responsible Authority.

Lighting Plan Design

24. Before the buildings are occupied, or by such later date as approved in writing by the Responsible Authority, external lighting capable of illuminating pedestrian walkways and dwelling entrances must be provided. Lighting must be:
    (a) located;
    (b) directed;
    (c) shielded; and
    (d) of limited intensity,

    to the satisfaction of the Responsible Authority.
25. Before the development commences, a Lighting Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. The Lighting Plan must address lighting within the internal streets and other publicly accessible areas and the entrances to the approved dwellings. When approved, the Lighting Plan will be endorsed and will form part of this permit. The Lighting Plan must provide for:
    (a) A lighting scheme designed for new open roads within the curtilage of the property that complies with uniformity requirements as per standard AS1158.3.1;
    (b) The control of light spillage into the windows of existing and proposed residences to comply with the requirements of AS 4282 – 1997," Control of the obtrusive effects of outdoor lighting";
    (c) The locations of any new light poles so as not to obstruct access into private garages/off and on street parking places;
    (d) Lighting to all primary pedestrian access points to a residential property to satisfy at least level P4 as per AS 1158.3.1;
    (e) A maintenance regime for the lighting scheme within the curtilage of the property; and

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(f) The use of energy efficient luminaries and/or solar lighting technologies to reduce carbon emission if possible.

26. The provisions, recommendations and requirements of the endorsed Lighting Plan must be implemented and complied with at no cost to Council and to the satisfaction of the Responsible Authority.

Sports Court Lights

27. Before the development commences, or by such a later date as approved by the Responsible Authority details of the sports court lights including:
    (a) Lux Levels; and
    (b) Baffling details.

Waste Management Plan

28. Before the use and/or development commences, an amended Waste Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Waste Management Plan will be endorsed and will form part of this permit. The amended Waste Management Plan must be generally in accordance with the Waste Management Plan prepared by SALT and dated 11 April 2018, but modified to include:
    (a) Provision of facilities for the collection of organic residential waste.

29. The provisions, recommendations and requirements of the endorsed Waste Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

Community Facilities – Section 173 Agreement

30. Before the development starts, the owner (or other person in anticipation of becoming the owner) must enter into an agreement with the Responsible Authority under section 173 of the Planning and Environment Act 1987 (Act). The agreement must provide the following:
    (a) the minimum:
        (i) 300sqm community space located at level 1;
        (ii) 1400sqm community centre Activity space including terrace area located at level 1;
        (iii) 300sqm sports pavilion located at Level 2; and
        (iv) Roof top outdoor sports court located at Level 2,

        All shown on the endorsed plans must be subdivided and gifted to the Responsible Authority at no cost to the Responsible Authority before the development authorised by this permit is occupied;

    (b) the owner will undertake the:
        (i) fit out of the internal 300sqm community space (to include floor covering, ceiling, lighting and air conditioning);
        (ii) Delivery of a "warm shell" of the 1,400sqm area; and
        (iii) Delivery of the roof-top multi-purpose court to netball standard, including lighting with associated 300sqm sports pavilion and store,

        before they are gifted to the Responsible Authority. All fit outs must be in a manner to be agreed by the owner and the Responsible Authority before the internal and where relevant external works commence for all fit outs, all at no cost to the Responsible Authority; and

    (c) the owner (or other person in anticipation of becoming the owner) must meet all of the expenses of preparing, reviewing, executing and registering the agreement, including the

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

Responsible Authority's costs and expenses (including legal expenses) incidental to preparing, reviewing, executing, registering and enforcing the agreement.

Use Conditions

Primary School

31. Except with the prior written consent of the Responsible Authority, no more than 300 children are permitted on the land at any one time.

32. Except with the prior written consent of the Responsible Authority, no more than 12 EFT teachers are permitted on the land at any one time.

33. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:
    (a) Monday to Sunday 6.00am to 10.00pm.

Sports Court / Pavilion

34. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:
    (a) Monday to Sunday 6.00am to 10.00pm.

35. All outdoor court lighting to be baffled to prevent light spill to the apartments to the west.

Childcare

36. Except with the prior written consent of the Responsible Authority, no more than 120 children are permitted on the land at any one time.

37. Except with the prior written consent of the Responsible Authority, no more than 10 EFT Childcare teaching staff are permitted on the land at any one time.

38. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:
    (a) Monday to Sunday 6.00am to 10.00pm.

Office

39. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:
    (a) Monday to Sunday 6.00am to 10.00pm.

Medical Centre

40. No more than fifteen (15) practitioners are permitted to operate from the land at any one time.

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

41. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

42. All infectious waste must be removed by a commercial waste contractor which holds an appropriate commercial waste licence to the satisfaction of the Responsible Authority.

Retail/Shop

43. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Food and Drink Premises

44. Except with the prior written consent of the Responsible Authority, no more than 1,143 patrons (distributed across all food and drink premises) are permitted on the land at any one time.

45. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Community Space - Place of Assembly

46. Except with the prior written consent of the Responsible Authority, no more than 300 patrons are permitted on the land at any one time.

47. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) Monday to Sunday 6.00am to 10.00pm.

Gym

48. Except with the prior written consent of the Responsible Authority, no more than 386 patrons are permitted on the land at any one time.

49. Except with the prior written consent of the Responsible Authority, the use authorised by this permit may only operate between the following hours:

    (a) 24 hrs per day.

50. Before the restricted recreation facility (gym) use commences, an operation management plan must be submitted and approved by the Responsible Authority. When approved, the operation management plan will be endorsed and will form part of this permit. The operation management plan must include:

    (a) Hours that staff will be present on site;

    (b) Details of after-hours access by members; and

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(c) Details of security/safety measures/emergency contact when facility is unstaffed.

51. The provisions, recommendations and requirements of the endorsed Operation Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

General Use Conditions

52. The provision of music and entertainment on the land must be at a background noise level excluding the community spaces unless with the prior written consent of the Responsible Authority.

53. The use and development must comply at all times with the State Environment Protection Policy – Control of Noise from Commerce, Industry and Trade (SEPP N-1).

54. The use and development must comply at all times with the State Environment Protection Policy – Control of Music Noise from Public Premises (SEPP N-2).

55. The amenity of the area must not be detrimentally affected by the development and uses including through:

(a) The transport of materials, goods or commodities to or from the land;

(b) The appearance of any buildings, works or materials;

(c) The emission of noise, artificial light, vibration, smell fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil or

(d) The presence of vermin,

to the satisfaction of the Responsible Authority.

Road works – Section 173 Agreement

56. Unless otherwise agreed by the Responsible Authority, prior commencement of the development authorised by this permit, the owner (or another person in anticipation of becoming the owner) must enter into an agreement with the Responsible Authority under section 173 of the *Planning and Environment Act* 1987, which provides for the following:

(a) Before the occupation of the development approved by this permit, Heidelberg Road along the site frontage must be substantially completed to the satisfaction of the Responsible Authority, including appropriate connections to the adjoining sections of Heidelberg Road;

(b) Sections of the Heidelberg Road and Latrobe Avenue footpath that lie outside the building envelope but within the title boundaries to be vested with Council;

(c) Before occupation of the development approved by this permit, the sections of Heidelberg Road and Latrobe Avenue adjacent to the title boundaries must be substantially completed to the satisfaction of the Responsibility;

(d) The cost of the design and carrying out these works to be borne by the owner of the land;

(e) Publicly accessible pedestrian links (Paper Trail, Outer Circle Mews and southern access road) to remain unobstructed and maintained in good order to the satisfaction of the Responsible Authority';

(f) Paper Trail access (connecting the Village Square to the Outer Circle Mews) to be publicly accessible between 6am and 12midnight; and

(g) 24-hour public access provided to the Outer Circle Mews and the access road to the south.

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

The owner, or other person in anticipation of becoming the owner, must meet all the expenses of the preparation and registration of the agreement, including the Responsible Authority's costs and expenses (including legal expenses) incidental to the preparation, registration and enforcement of the agreement.

Road Infrastructure

57. Before the development commences, or by such later date as approved in writing by the Responsible Authority, the applicant must prepare and submit a 1 in 20 scale cross sectional drawing of the development's vehicular entrance, showing the actual reduced levels to three decimal places (not interpolated levels from the application drawings). The required levels include the building line level, top of kerb level, invert level, lip level and road pavement levels. The applicant must demonstrate by way of a ground clearance check using the B99 design vehicle that cars can traverse the new vehicle crossing without scraping or bottoming out. The 1 in 20 scale cross sectional drawing must be submitted to Council's Construction Management branch for assessment and approval.
58. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, any new vehicle crossing must be constructed:
    (a) in accordance with any requirements or conditions imposed by Council;
    (b) at the permit holder's cost; and
    (c) to the satisfaction of the Responsible Authority.
59. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, any redundant vehicular crossing must be demolished and re-instated as standard footpath and kerb and channel:
    (a) at the permit holder's cost; and
    (b) to the satisfaction of the Responsible Authority.
60. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, any damaged roads, footpaths and other road related infrastructure adjacent to the development site as a result of the construction works, including trenching and excavation for utility service connections, must be reconstructed:
    (a) at the permit holder's cost; and
    (b) to the satisfaction of the Responsible Authority.
61. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the development must be reinstated:
    (a) at the permit holder's cost; and
    (b) to the satisfaction of the Responsible Authority.
62. Prior to the commencement of works, specifications for the proposed surface materials to be used for Council's assets are to be submitted to Council's Civil Engineering Unit for assessment and approval.
63. Before the buildings are occupied, the footpaths, kerbs, channels and roadways adjacent to the site are to be constructed to the satisfaction of the Responsible Authority.
64. Before the buildings are occupied, redundant pits/services are to be removed and Council assets reinstated.
65. Prior to the commencement of works, existing Council stormwater drainage and sewerage infrastructure within the site to be relocated to the satisfaction of the Responsible Authority.

Car parking

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

66. Before the buildings are occupied, a Car Park Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Car Park Management Plan will be endorsed and will form part of this permit. The Car Park Management Plan must address, but not be limited to, the following:
    (a) the number and location of car parking spaces allocated to each use including:
        (i) residential spaces provided at a minimum rate of 1 space per dwelling (including the affordable housing component);
        (ii) office employee car parking provided at a rate of 2.5 spaces per 100sqm of office space;
        (iii) 10 staff car spaces for the childcare;
        (iv) 15 staff car spaces for the school; and
        (v) minimum 497 car spaces for visitors;
    (b) location of a minimum of 14 disabled car spaces;
    (c) any tandem parking spaces allocated to a single tenancy;
    (d) location of a minimum of two car share spaces, including time of shared use;
    (e) the management of visitor car parking spaces and security arrangements for occupants of the development, including details on how residential visitors are to access car parking;
    (f) details of way-finding, cleaning and security of end of trip bicycle facilities;
    (g) the number and allocation of storage spaces;
    (h) policing arrangements and formal agreements;
    (i) a schedule of all proposed signage including directional arrows and signage, informative signs indicating location of disabled bays and bicycle parking, exits, restrictions, pay parking system etc.;
    (j) management of drop off and pick up for the school and childcare centre; and
    (k) provision of conveniently located power points for charging e-bikes.
67. The provisions, recommendations and requirements of the endorsed Car Park Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.
68. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, the area set aside on the endorsed plans for the car parking spaces, access lanes, driveways and associated works must be:
    (a) constructed and available for use in accordance with the endorsed plans;
    (b) formed to such levels and drained so that they can be used in accordance with the endorsed plans;
    (c) treated with an all-weather seal or some other durable surface; and
    (d) line-marked or provided with some adequate means of showing the car parking spaces;

    to the satisfaction of the Responsible Authority.

69. Before the building is occupied, or by such later date as approved in writing by the Responsible Authority, a notice showing the location of car parking must be placed in a clearly visible position near the entry to the land. The notice must be maintained thereafter to the satisfaction of the Responsible Authority.

Loading Bay Management Plan

70. Before the buildings are occupied, a Loading Bay Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Loading Bay Management Plan will be endorsed and will form part of this permit. The Loading Bay Management Plan must address, but not be limited to, the following:
    (a) details of the frequency, hours and type of deliveries to occur;

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(b) access management into the loading bay e.g. manual/swipe/pin code;

(c) collection of waste and garbage including the separate collection of organic waste and recyclables and medical waste which must be in accordance with the Waste Management Plan required by Condition 28; and

(d) loading hours and operations to be consistent with recommendations in the acoustic report pursuant to Condition 11, including that doors are to remain shut while loading and unloading.

71. The provisions, recommendations and requirements of the endorsed Loading Bay Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

72. The loading and unloading of vehicles and the delivery of goods to and from the land must be conducted entirely within the land to the satisfaction of the Responsible Authority.

Road Safety Audit

73. Prior to the endorsement of plans, a road safety audit is to be undertaken to assess the Heidelberg Road access, including the left-in, left-out access and the left turn lane from Heidelberg Road into Chandler Highway and the layout, design and line markings of the private road to the south having regard to bicycle/vehicle conflicts and through-traffic to the west.

Green Travel Plan

74. Before the use commences, an amended Green Travel Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Green Travel Plan will be endorsed and will form part of this permit. The amended Green Travel Plan must be generally in accordance with the Green Travel Plan prepared by GTA Consultants and dated 25 September 2017, but modified to include or show:
    (a) employee and resident welcome packs (e.g. provision of Myki/transport ticketing);
    (b) the provision of real time passenger information displays for nearby stops within each main lobby;
    (c) security arrangements to access the resident and employee bicycle storage spaces;
    (d) signage and wayfinding information for bicycle facilities and pedestrians pursuant to Australian Standard AS2890.3, including access to rail and bus services;
    (e) Reference to a minimum 40A single phase electrical sub circuit should be installed to the car park areas for 'EV readiness';
    (f) Support for carpooling;
    (g) Support for the car share vehicles proposed;
    (h) Clarification on references to employee permit parking; and
    (i) Confirmation who will be the Green Travel Plan Coordinator.
75. The provisions, recommendations and requirements of the endorsed Green Travel Plan must be implemented and complied with to the satisfaction of the Responsible Authority.

Public Transport Victoria

76. The permit holder must take all reasonable steps to ensure that disruption to bus operation along Heidelberg Road is kept to a minimum during the construction of the development.

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Attachment 1 - Planning Permit

Foreseen disruptions to bus operations during construction and mitigation measures must be communicated to Public Transport Victoria fourteen (14) days prior.

VicRoads Conditions (77 to 80)

77. Before the development starts functional layout plans for the intersection of Heidelberg Road and the accessway to the Village (at the north west) and the intersection of Heidelberg Road and Latrobe Avenue, must be submitted to and approved by the Roads Corporation. When approved by the Roads Corporation, the plans may be endorsed by the Responsible Authority and will then form part of the permit. The plans must be drawn to scale with dimensions and two copies submitted with the application (by GTA consulting, Heidelberg Road Frontage Alphington, SIGHT TRIANGLES, reference: 16M192300-SK05 & swept Path Assessment 1-2 and 12. The Functional Layout Plans must also incorporate the recommendations of the Road Safety Audit, Reference RSA – 05937 submitted with the application.
78. Prior to the commencement of the use or the occupation of the buildings or works hereby approved, the access lanes, driveway, crossovers and associated works must be provided and available for use and be:
    (a) formed to such levels and drained so that they can be used in accordance with the plan; and
    (b) treated with an all-weather seal or some other durable surface.
79. The crossover and driveway must be constructed to the satisfaction of the Roads Corporation and the Responsible Authority and at no cost to the Roads Corporation prior to the commencement of the use or the occupation of the works hereby approved
80. Driveways must be maintained in a fit and proper state so as not to compromise the ability of vehicles to enter and exit the site in a safe manner or compromise operation efficiency of the road or public safety.

Construction Management

81. Before the development commences, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be endorsed and will form part of this permit. The plan must provide for:
    (a) a pre-conditions survey (dilapidation report) of the land and all adjacent Council roads frontages and nearby road infrastructure;
    (b) works necessary to protect road and other infrastructure;
    (c) remediation of any damage to road and other infrastructure;
    (d) containment of dust, dirt and mud within the land and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the land;
    (e) facilities for vehicle washing, which must be located on the land;
    (f) the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;
    (g) site security;
    (h) management of any environmental hazards including, but not limited to,:
        (i) contaminated soil;
        (ii) materials and waste;
        (iii) dust;
        (iv) stormwater contamination from run-off and wash-waters;

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(v) sediment from the land on roads;
(vi) washing of concrete trucks and other vehicles and machinery; and
(vii) spillage from refuelling cranes and other vehicles and machinery;

(i) the construction program;
(j) preferred arrangements for trucks delivering to the land, including delivery and unloading points and expected duration and frequency;
(k) parking facilities for construction workers;
(l) measures to ensure that all work on the land will be carried out in accordance with the Construction Management Plan;
(m) an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;
(n) measures to maintain the access and integrity of the continuous bike path along Heidelberg Road;
(o) an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced;
(p) the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads;
(q) a Noise and Vibration Management Plan showing methods to minimise noise and vibration impacts on nearby properties and to demonstrate compliance with Noise Control Guideline 12 for Construction (Publication 1254) as issued by the Environment Protection Authority in October 2008. The Noise and Vibration Management Plan must be prepared to the satisfaction of the Responsible Authority. In preparing the Noise and Vibration Management Plan, consideration must be given to:
(i) using lower noise work practice and equipment;
(ii) the suitability of the land for the use of an electric crane;
(iii) silencing all mechanical plant by the best practical means using current technology;
(iv) fitting pneumatic tools with an effective silencer;
(v) other relevant considerations; and
(r) any site-specific requirements.

<u>During the construction</u>:

(s) any stormwater discharged into the stormwater drainage system must be in compliance with Environment Protection Authority guidelines;
(t) stormwater drainage system protection measures must be installed as required to ensure that no solid waste, sediment, sand, soil, clay or stones from the land enters the stormwater drainage system;
(u) vehicle borne material must not accumulate on the roads abutting the land;
(v) the cleaning of machinery and equipment must take place on the land and not on adjacent footpaths or roads; and
(w) all litter (including items such as cement bags, food packaging and plastic strapping) must be disposed of responsibly.

82. If required, the Construction Management Plan may be approved in stages. Construction of each stage must not commence until a Construction Management Plan has been endorsed for that stage, to the satisfaction of the Responsible Authority.
83. The provisions, recommendations and requirements of the endorsed Construction Management Plan must be implemented and complied with to the satisfaction of the Responsible Authority.
84. Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:

(a) Monday-Friday (excluding public holidays) before 7 am or after 6 pm;

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

(b) Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or

(c) Sundays, ANZAC Day, Christmas Day and Good Friday at any time.

Time Expiry

85. This permit will expire if:

(a) the development is not commenced within two years of the date of this permit; or
(b) the development is not completed within four years of the date of this permit; or
(c) the uses have not commenced within five years of the date of this permit.

The Responsible Authority may extend the periods referred to if a request is made in writing before the permit expires or within six months afterwards for commencement or within twelve months afterwards for completion.

Notes:

Provision must be made for drainage of the site to a legal point of discharge. Please contact Council's Building Services on 9205 5585 for further information.

A building permit may be required before development is commenced. Please contact Council's Building Services on 9205 5585 to confirm.

A local law permit (e.g. Asset Protection Permit, Road Occupation Permit) may be required before development is commenced. Please contact Council's Construction Management Branch on Ph. 9205 5585 to confirm.

The site is located within an Environmental Audit Overlay. Pursuant to Clause 45.03 of the Yarra Planning Scheme, the requirements of the Environmental Audit Overlay must be met prior to the commencement of development permitted under the permit.

The permit holder must obtain approval from the relevant authorities to remove and/or build over the easement(s).

All future property owners and residents, within the development approved under this permit will not be permitted to obtain resident or visitor parking permits.

A vehicle crossing permit is required for the construction of the vehicle crossing(s). Please contact Council's Construction Management Branch on 9205 5585 for further information.

Provision must be made for drainage of the site to a legal point of discharge. Please contact Council's Building Services on 9205 5585 for further information.

A building permit may be required before development is commenced. Please contact Council's Building Services on 9205 5585 to confirm.

A local law permit (e.g. Asset Protection Permit, Road Occupation Permit) may be required before development is commenced. Please contact Council's Construction Management Branch on Ph. 9205 5585 to confirm.

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

The site is located within an Environmental Audit Overlay. Pursuant to Clause 45.03 of the Yarra Planning Scheme, the requirements of the Environmental Audit Overlay must be met prior to the commencement of development permitted under the permit.

The permit holder must obtain approval from the relevant authorities to remove and/or build over the easement(s).

All future property owners, occupiers, employees, students or visitors, within the development approved under this permit will not be permitted to obtain business employee, resident or visitor parking permits.

Separate approval under the Road Management Act may be required from VicRoads (the Roads Corporation). Please contact VicRoads prior to commencing any works.

A vehicle crossing permit is required for the construction of the vehicle crossing(s). Please contact Council's Construction Management Branch on 9205 5585 for further information.

VicRoads Notes:
Separate approval under the Road Management Act may be required from VicRoads (the Roads Corporation). Please contact VicRoads prior to commencing any works.

THIS PERMIT HAS BEEN CORRECTED AS FOLLOWS:

Date corrected	Brief description of correction
28 December 2018	Pursuant to Section 71 of the *Planning and Environment Act* 1987, correct condition 1 to refer to the accurate decision plans and correct condition 79 to '*The*' rather than '*e*'

Date: 05 June 2018

Amy Hodgen
Signature for the Responsible Authority

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64 64A and 86

Attachment 1 - Planning Permit

PLANNING PERMIT

IMPORTANT INFORMATION ABOUT THIS PERMIT

WHAT HAS BEEN DECIDED?

The Responsible Authority has issued a permit.

(Note: This is not a permit granted under Division 5 or 6 of Part 4 of the **Planning and Environment Act 1987.**)

WHEN DOES A PERMIT BEGIN?

A permit operates:

- from the date specified in the permit; or
- if no date is specified, from—
  - (i) the date of the decision of the Victorian Civil and Administrative Tribunal, if the permit was issued at the direction of the Tribunal; or
  - (ii) the date on which it was issued, in any other case.

WHEN DOES A PERMIT EXPIRE?

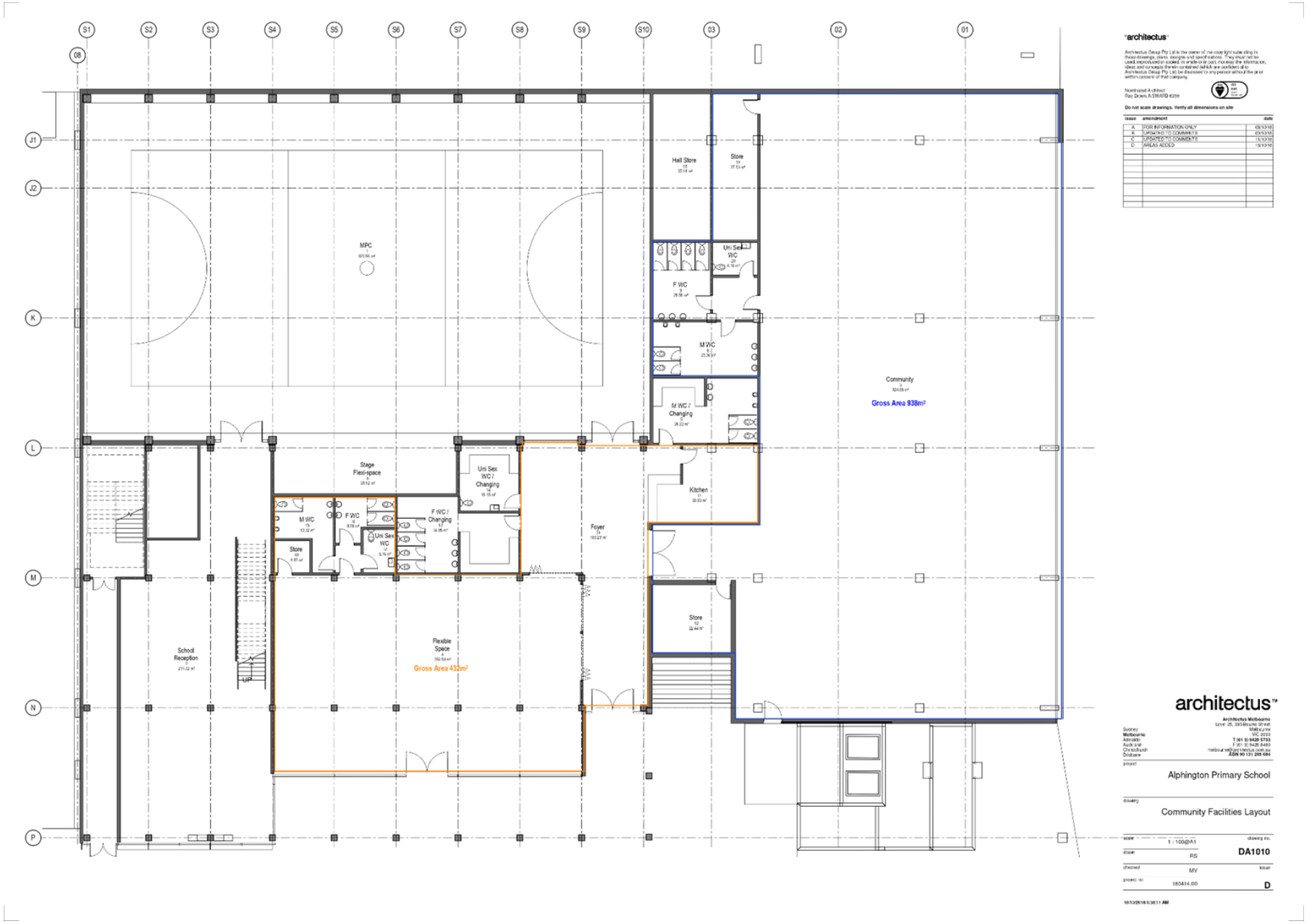
1. A permit for the development of land expires if—
   - the development or any stage of it does not start within the time specified in the permit; or
   - the development requires the certification of a plan of subdivision or consolidation under the Subdivision Act 1988 and the plan is not certified within two years of the issue of the permit, unless the permit contains a different provision; or
   - the development or any stage is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit or in the case of a subdivision or consolidation within 5 years of the certification of the plan of subdivision or consolidation under the **Subdivision Act 1988.**
2. A permit for the use of land expires if—
   - the use does not start within the time specified in the permit, or if no time is specified, within two years after the issue of the permit; or
   - the use is discontinued for a period of two years.
3. A permit for the development and use of land expires if—
   - the development or any stage of it does not start within the time specified in the permit; or
   - the development or any stage of it is not completed within the time specified in the permit, or, if no time is specified, within two years after the issue of the permit; or
   - the use does not start within the time specified in the permit, or, if no time is specified, within two years after the completion of the development; or
   - the use is discontinued for a period of two years.
4. If a permit for the use of land or the development and use of land or relating to any of the circumstances mentioned in section 6A(2) of the **Planning and Environment Act 1987,** or to any combination of use, development or any of those circumstances requires the certification of a plan under the **Subdivision Act 1988,** unless the permit contains a different provision—
   - the use or development of any stage is to be taken to have started when the plan is certified; and
   - the permit expires if the plan is not certified within two years of the issue of the permit.
5. The expiry of a permit does not affect the validity of anything done under that permit before the expiry.

WHAT ABOUT REVIEWS?

- The person who applied for the permit may apply for a review of any condition in the permit unless it was granted at the direction of the Victorian Civil and Administrative Tribunal, in which case no right of review exists.
- An application for review must be lodged within 60 days after the permit was issued, unless a notice of decision to grant a permit has been issued previously, in which case the application for review must be lodged within 60 days after the giving of that notice.
- An application for review is lodged with the Victorian Civil and Administrative Tribunal.
- An application for review must be made on relevant form which can be obtained from the Victorian Civil and Administrative Tribunal, and be accompanied by the applicable fee.
- An application for review must state the grounds upon which it is based.
- A copy of an application for review must be served on the responsible authority.
- Details about applications for review and the fees payable can be obtained from the Victorian Civil and Administrative Tribunal.

Planning and Environment Regulations 2015 No. 33/2015 Form 4 Sections 63, 64, 64A and 86

Attachment 2 - Community Facilities - Architectus Plan



Attachment 3 - VicRoads Referral Comments

vicroads
ABN 61 760 960 480

Yarra City Council
PO Box 168
RICHMOND VIC 3121
Attention: Amy Hodgen

25 March 2019

Dear Amy Hodgen

PLANNING APPLICATION NO.: **PLN17/0703.01**
VICROADS REFERENCE NO: **24817/18**
PROPERTY ADDRESS: **626 HEIDELBERG ROAD, ALPHINGTON**

Section 55 – No objection subject to conditions

Thank you for your letter dated 20 February 2019 referring details of the above application to the Roads Corporation (VicRoads) pursuant to Section 55 of the Planning and Environment Act 1987.

The permit allows mixed-use development with reduction in car parking and creation of access to Road Zone Category 1. VicRoads has considered the proposed amendments to the permit and has no objection to the proposal subject to amended conditions.

If Council regards the proposed development favourably, VicRoads would require that the following conditions be included in any planning permit issued:

1) Before the development starts functional layout plans for the intersection of Heidelberg Road and the accessway to the Village (at the north west) and the intersection of Heidelberg Road and Latrobe Avenue, must be submitted to and approved by the Roads Corporation. When approved by the Roads Corporation, the plans may be endorsed by the Responsible Authority and will then form part of the permit. The plans must be drawn to scale with dimensions and two copies must be provided. The plans must be generally in accordance with the plans submitted with the application (by GTA Consulting, Heidelberg Road Frontage Alphington, Functional Layout, Reference: 16M1923000-05 Issue F7). The Functional Layout Plans must also incorporate the recommendations of the Road Safety Audit Report, Reference RSA – 05937 by Road Safety Audits).

2) Prior to the commencement of the use or the occupation of the buildings or works hereby approved, the access lanes, driveways, crossovers and associated works must be provided and available for use and be:

   i. Formed to such levels and drained so that they can be used in accordance with the plan.
   ii. Treated with an all-weather seal or some other durable surface.

3) The crossover and driveway must be constructed to the satisfaction of the Roads Corporation and the Responsible Authority and at no cost to the Roads Corporation prior to the commencement of the use or the occupation of the works hereby approved.

4) Driveways must be maintained in a fit and proper state so as not to compromise the ability of vehicles to enter and exit the site in a safe manner or compromise operational efficiency of the road or public safety.

Attachment 3 - VicRoads Referral Comments

vicroads
ABN 61 760 960 480

NOTE

- Separate approval under the Road Management Act may be required from VicRoads (the Roads Corporation). Please contact VicRoads prior to commencing any works.

Once Council makes its decision, please forward a copy of the decision to VicRoads as required under Section 66 of the Planning and Environment Act 1987.

Should you have any enquiries regarding this matter, please contact Kojo Adjei on (03) 9313 1171 or Kojo.Adjei@roads.vic.gov.au

Yours sincerely

KOJO ADJEI
TRAFFIC AND PLANNING
Cc: Permit Applicant

Attachment 4 - Transport for Victoria (formally PTV) Referral Comments

Department of Transport

GPO Box 2392
Melbourne, VIC 3001 Australia
Telephone: +61 3 9651 9999
www.transport.vic.gov.au
DX 201292

File: FOL/15/20353
Ref: HTFV2019/0078

Amy Hodgen
Statutory Planning
City of Yarra
PO Box 168
Richmond VIC 3121

Dear Amy,

YARRA PLANNING SCHEME
PLANNING APPLICATION NO: PLN17/0703.01
PROPOSAL: VILLAGE PRECINCT APARTMENTS/MIXED USE
ADDRESS: 626 HEIDELBERG ROAD ALPHINGTON

Thank you for your email dated 20 February 2019 referring the above application to the Head, Transport for Victoria pursuant to Section 55 of the *Planning and Environment Act 1987*.

TfV notes that the amendment to the previous permit includes several changes. As TfV's (then Public Transport Victoria) condition 76 is not amongst those being altered, the Head, Transport for Victoria, pursuant to Section 56(1) of the *Planning and Environment Act 1987* **does not object** to the grant of a planning permit subject to the previous condition being retained in any future permits issued.

Should you require any further clarification, please feel free to contact Nick Collins on telephone 03 8392 9057 or email nick.collins@ecodev.vic.gov.au.

Yours sincerely,

MARK BURTON
Manager Place Planning & Referrals
Delegate of the Head, Transport for Victoria

25 / 02 / 2019.

cc: slinke@contour.net.au

VICTORIA State Government

Attachment 5 - Open Space Unit Referral Comments

Memo

To:	**Amy Hodgen**
Cc:	
From:	**Julia Mardjuki**
Date:	**31 January 2019**
Subject:	**PLN170703 – 626 Heidelberg Road (Village) – Section 72 Application – Open Space Referral**

Dear Amy

I have reviewed the plans provided for the amended application for the Village Precinct within the Amcor Development, provided on 4/1/2019. Please find my comments below on the permit conditions related to landscaping.

Landscaping

17. Before the development commences, an amended Landscape Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Landscape Plan will be endorsed and will form part of this permit. The amended Landscape Plan must be generally in accordance with the Landscape Plan prepared by Aspect Studios and dated 20 February 2018, but modified to include (or show):

No.	Permit condition	Notes
(a)	Consistency with the architectural drawings pursuant to Condition 1	Provide latest architectural drawings on all landscape plans.
(b)	Greater detail of the vertical planting proposed to the Living Edge regarding plant species type, irrigation and maintenance details;	This condition has been addressed with the drawing from Bird de la Coeur architects and consultant advice note from Aspect dated 21/01/2019.
(c)	Greater detail of the steel inserts, including cross sections, demonstrating that they will not be a tripping or slipping hazard, or alternatively removal of this feature.	More information will need to be provided to assess this condition.
(d)	To Heidelberg Road:	
	(i) Minimum footpath width of 3m	Condition has been met.

Attachment 5 - Open Space Unit Referral Comments

	(ii) Remove continuous landscape strip	Condition has been met.
	(iii) Introduce bicycle hoops and seating between street trees;	Condition has been met, however final locations to be verified and coordinated with Urban Design and Sustainable Transport.
	(iv) Retaining wall relocated at the kerb side edge	Further levels across Heidelberg Road need to be provided to verify this condition.
	(v) Remove brick paving extending from the Outer Circle Mews	Condition has been met. There is still a residual garden bed reflective of the outer circle mews style along Heidelberg Road. Our preference is to continue the tree planting along Heidelberg Road to create a strong boulevard of tree planting and remove the larger garden bed. Review the location of the bus stop and if it will impede access for emergency vehicles. Ensure final location is compliant with standards but meets access requirements.
	(vi) Tree species to consider impact from future location of power lines and infrastructure.	There is acknowledgement of this in the notes, however further information is needed to clarify this condition.
	(vii) Ensure/demonstrate the tree within the splitter island adjacent to the vehicle entrance does not impact on sight lines.	Condition has been met.
(e)	To the outer circle mews:	
	(i)The cluster of four trees at each end of the Mews to be replaced with a single tree;	The four trees at each end have not been removed, condition has not been met. Information around tree species will need to be provided in order to assess this point.
	(ii) Avoid small 'left over; spaces between street furniture and garden beds;	Condition has been met.
	(iii) Small garden beds or vertical garden planting along the eastern edge	WSUD beds have been provided in this location. Please provide further information on the system and its broader connections.
	(iv) Greater detail of the windscreens e.g. materials, porosity	More information will need to be provided to assess this condition.
	(v) Provision of BMX coping/deterrents to street furniture	More information will need to be provided to assess this condition.
	(vi) colour variation applied to the brick plinths and pavements	More information will need to be provided around plinth details to assess this condition.
(f)	To the southern access lane:	
	(i) Further tree planting to the north/east edge (triangular space);	Condition has been met, however discussions at the meeting on 13/11/18 around the use and layout of this space have not been reflected in these plans.
	(ii) Minimum 1.5m planting width for street trees	Condition has been met.

Attachment 5 - Open Space Unit Referral Comments

	(iii) Doors to the back of house storage area to not open outward to the footpath	Condition has been met, however consideration will need to be made as to how sightlines to the lower ground level entry point are achieved.
(g)	To the Level 1 terrace:	
	(i) Provision of medium sized trees in larger planter boxes	Condition has been met.
	(ii) Inclusion of softer materials	Condition has been met.
	(iii) Seating to be provided in clusters	Review layout of seating and potential for gathering and congregation in this area. Further detail on seating to be provided.
(h)	To the Residential Gardens/Paper Trail	
	(i) Further tree planting along the southern and eastern edge of the residential gardens	Condition has been met.
(i)	To the Village Square	
	(i) Redesign to avoid significant change in level between the square and Latrobe Avenue	Further information is required on levels and grading in order to assess the condition.
	(ii) Provision of large trees along the western side that will allow light to penetrate at ground level.	Condition was met, please provide supplementary tree planting as per condition Iiii below.
	(iii) Incorporate landscaping on the eastern edge of the square that will supplement the Main Street tree planting	More information will need to be provided to assess this condition.
	(iv) Replace corten seel with an alternative graffiti resistant material to the satisfaction of the Responsible Authority	This condition has not been met. More corten steel elements have been added as landscape features. We will need more information how these features sit within the Village Square, how they will be incidentally used and how they complement the space.
	(v) Additional entrance that aligns with the Latrobe Avenue crossing	More information will need to be provided on the plan in order to assess this condition.
	(vi) Deletion of ground water jets	Condition has been met.
	(vii) Consider custom seating that allows for groups to gather and interact	More information will need to be provided to assess this condition.
	(viii) Lawn area to be raised on two sides to deter cross traffic movements	Condition has been met, however ongoing maintenance access to the lawn area will need to be considered.
	(ix) Bicycle hoops, drinking fountains and bins to Council's Standards or otherwise to the satisfaction of the Responsible Authority;	Details to be provided.
	(x) Provision of clear wayfinding signage for access to Level 1	Indicate location of signage on landscape plans as per 'Wayfinding and Interpretation Strategy Report'.
	(xi) Double sided timber benches to include backs and armrests; and	More information will need to be provided on the plan in order to assess this condition.

Attachment 5 - Open Space Unit Referral Comments

	(xii) Clear demarcation between public and private areas; including location of assets	More information will need to be provided on the landscape plans in order to assess this condition.

An Irrigation Management Plan will need to be provided to satisfy condition 18.

Conditions 19 and 20 can only be assessed once works are complete.

Include notes on maintenance and landscape specifications prior to works in future landscape drawings to supplement condition 20.

Please feel free to contact me if you would like me to clarify any of these points.

Sincerely

Julia Mardjuki

Open Space Planner

Attachment 6 - Internal Urban Design Unit Referral Comments (streetscape design)

CITY OF YARRA

MeMO

TO: Amy Hodgen (Statutory Planning)
FROM: Blake Farmar-Bowers (Urban Design)
DATE: 04 February 2019
SUBJECT: 626 Heidelberg Rd, Alphington
The Outer Circle Mews, Heidelberg Road, Access Lane and the Level 1 Terrace.
APPLICATION NO: PLN17/0703
DESCRIPTION: Use and development of the land for a mixed use development containing dwellings, supermarket, shops, food and drink premises, office (including medical centres), restricted recreational facility (gym), childcare centre, education centre (primary school) and a place of assembly and a reduction in the car parking requirements and creating access to a Road Zone Category 1 road.

COMMENTS

Urban Design comments have been sought on the above application, in particular on the proposed public realm and streetscape improvements.
This memo provides comment in regard to The Outer Circle Mews, Heidelberg Road, Access Lane and the Level 1 Terrace only.
Comments are provided below and refer to application plans received on Friday 4 January 2019.

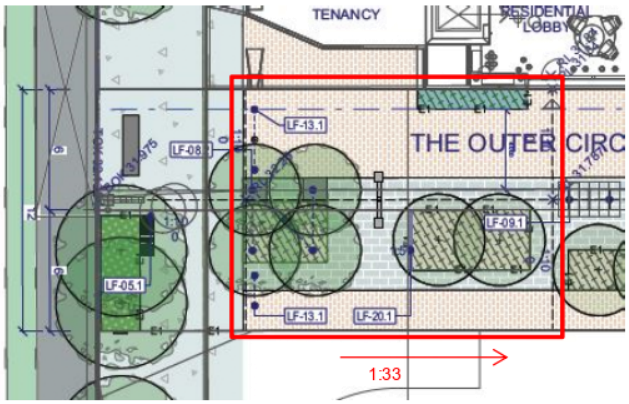
Outer Circle Mews

General

Show the architectural footprint of the Cayden Development (2A) on plan drawings to illustrate the interface with built form.

Grading & Drainage

The northern segment of the Mews has a long fall of 1:33. Given this surface will accommodate movement in various directions the maximum (cross) fall should be 1:40.
Ensure a clear drainage strategy is provided.

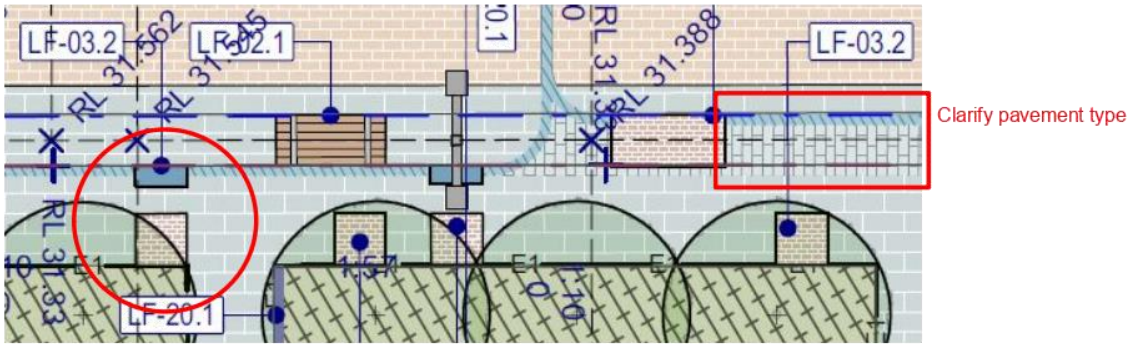


Attachment 6 - Internal Urban Design Unit Referral Comments (streetscape design)

Material Schedule & Selections
Update and reissue the schedule of materials to further understand the proposed material palette.

Pavements & Surfaces
Provide detail of the interpretive inlay (co-ordinate with furniture as required).
Clarify the pavement anomaly (as noted below).

Fixtures & Furniture
Provide details of the custom furniture & fixtures (including integration with interpretive inlay)
Provide detail of wind screens.
Clarify code LF8.2.
Clarify if locked bicycles obstruct MFB access.



Tree Species
Nominate proposed tree species.

Heidelberg Road

General
Show the architectural footprint of the Cayden Development (2A) on plan drawings to illustrate the interface with built form.
Clarify relevant line work for road and vehicle entries (duplicate options shown).

Grading
Provide comprehensive levels and grading information.
Co-ordinate sections and plans.

Services
Confirm the alignment and depth of underground power lines.

Trees
Once service constraints have been clarified the proposed tree species, required soil volumes, tree pit size and spacing can be determined.
Regular spacing between trees is required along Heidelberg Road.
Confirm and co-ordinate if trees are proposed in the garden bed located at the end of the Outer Circle Mews. (TP-LAN-0G-102 Rev 06 / TP-LAN-0G-103 Rev 06)

Material Schedule & Selections
Update and reissue selections schedule to understand the proposed material palette.

Attachment 6 - Internal Urban Design Unit Referral Comments (streetscape design)

Pavements & Surfaces
Jointing layout plan is to be provided for the Heidelberg Road footpath.

Shared Path
Annotate the extents of the shared path and show all required/recommended line marking.
An alternative pavement selection may be used to delineate extents of shared path (e.g. charcoal coloured concrete).

Furniture & Fixtures
Confirm bus stop and shelter location.
Provide details of custom furniture.
We expect that the Mill Building Lobby Entrance will generate the need to supply public seating at this location on Heidelberg Road. As such we recommend that approximately 10 L. m of seating be provided.
Ensure seats with backs and armrests are included within furniture selections.

Ensure furniture placement in relation to the shared path is complaint with Austroads guidelines.
Clearances, Batters and Fences 7.5.7
The following guidelines should be applied for clearances between the cyclist operating spaces and potential hazards beside paths:

- *Where both the areas beside the path and the path alignment are both relatively flat a lateral clearance of at least 1.0 m (0.5 m absolute minimum) should be provided between the edge of any path for cycling and any obstacle, which if struck may result in cyclists losing control or being injured. However, on high-speed paths it is most desirable to have a clearance considerably greater than 1.0 m.*

Cycling Aspects of Austroads Guides_Austroads 2014 | page 97

Refer to Strategic Transport's comments in regard to required bicycle hoop numbers.

Access Lane

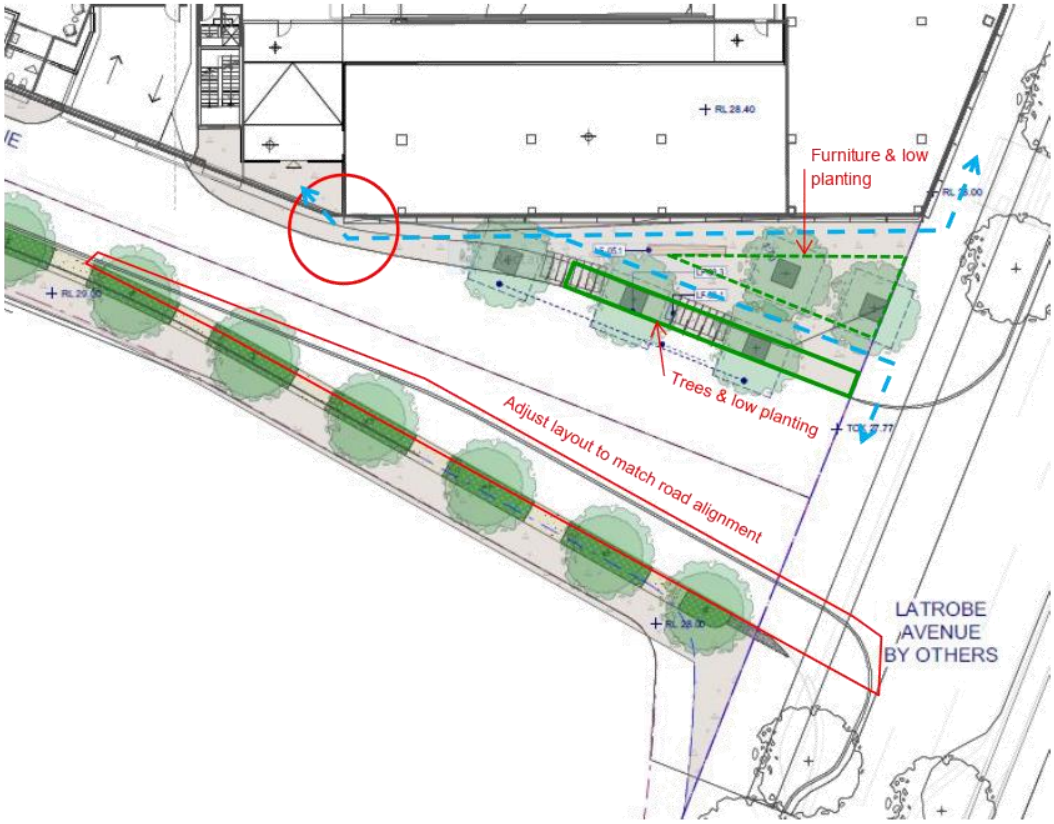
General
Co-ordinate layout with road alignment, and redesign accordingly (as noted below).

Pedestrian Clearances
Ensure a minimum 2.5m wide clear path of travel is attained along the building line.
Suitable usage clearances should be considered for locating adjacent furniture (e.g. 500mm).

Grading
Provide comprehensive levels and grading information.

Lower Ground Commercial entry
The Lower Ground Commercial entry has been relocated and sightlines are restricted due to the setback from Mills Boulevard and the adjacent speciality store.
Clarify the dimension of pinch point at the south-west corner of development (as shown below).
Nominate streetscape/ wayfinding treatments to ameliorate the compromised visibility and physical access.

Attachment 6 - Internal Urban Design Unit Referral Comments (streetscape design)



Furniture & Fixtures

Bicycle hoops are to be setback 900mm from the kerb line when located perpendicular to the road alignment.
Provide details of custom furniture. Ensure seats with backs and armrests are included within furniture selections.
Adjust layout to cater for multiple groupings.
Provide details of tree pits and associated grates.

Softscape

Given the northern triangular streetscape is over 200m2 introduce low planting to reduce the area of hardscape.
The streetscape treatment on the southern side of the access road may be replicated on the north.

Level 1 The Terrace

General

Ensure the extent and height of architectural canopies are shown in plan and section.

Grading and Drainage

Provide comprehensive levels and grading information.
Ensure a clear drainage strategy is provided (including raised planter).
Note: Slope of synthetic grass mound is 1:3 not 1:20 as shown on 1: TP-LAN-L1-703 Rev 03.

Attachment 6 - Internal Urban Design Unit Referral Comments (streetscape design)

Tree planting

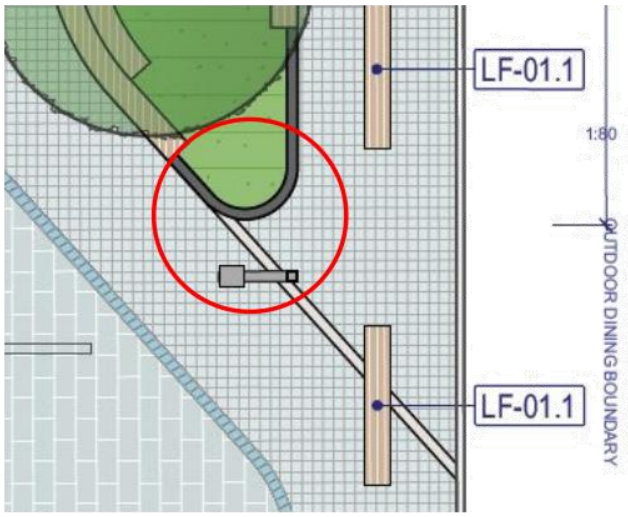
Nominate proposed tree species and available soil volumes.
Clarify form and grade of mound (including extents of crest, heights of edges etc.).
Ensure proposed tree locations are suitably offset from edges and adequate depth is attained.
Provide further detail of proposed tree planting (considerate of both the establishment phase and the ultimate condition).

Furniture & Fixtures

Provide details of custom furniture.
Ensure furniture is compliant with Australian Standards and seats with backs and armrests are included within furniture selections.
The current bleacher arrangement is not particularly welcoming or comfortable; review of depth of bleachers, provision of back rests, feet clearance etc.
Estimate seating capacity currently being provided to assist in determining desirable quantity.
Show TGSIs on stairway.

Pavements & Surfaces

Provide detail of interpretive inlay.
Clarify detail of edges (see below).



Clarify edge type and height

Attachment 7 - Internal Urban Design Unit Comments (Village Square)

CITY OF YARRA

MeMO

TO: Amy Hodgen (Statutory Planning)
FROM: Blake Farmar-Bowers (Urban Design)
DATE: 08 January 2019
SUBJECT: 626 Heidelberg Rd, Alphington
The Village Square- Levels Interface
APPLICATION NO: PLN17/0703
DESCRIPTION: Use and development of the land for a mixed use development containing dwellings, supermarket, shops, food and drink premises, office (including medical centres), restricted recreational facility (gym), childcare centre, education centre (primary school) and a place of assembly and a reduction in the car parking requirements and creating access to a Road Zone Category 1 road.

COMMENTS

This memo provides comment in regard to the proposed levels for and adjacent to The Village Square. The request from Alpha Partners (and associated consultants) is to set approved datum levels within the Alpha owned title boundary to allow unimpeded documentation of the Village development.

Comments are provided below (and attached annotated drawing) and refer to ASPECT Studios TP-LAN-0G-101 Rev 08: General Arrangement Plan- The Village Square plan dated 3 December 2018.

SUMMARY

Insufficient information has been provided to approve the proposed levels and grading layout.
The following information is required to gain a comprehensive understanding of proposed levels:

Western Food Mall Interface

The general grading approach of applying a 1:80 grade that falls away from the building is supported. This grade is shallow enough not to hinder outdoor dining whilst enabling positive drainage to be achieved.

- Further resolution is required to clarify discrepancies of grade (1:60 at northern entry) and define levels at pavement extents.

Northern Interface

A level change of approximately 900mm exists between the Primary Entry and the Mills Boulevard footpath. It is understood that a series of 1:20 ramps is required to mitigate this level change. (Unrestricted access is not possible).

- As mentioned above further resolution is required to clarify the grade from the top ramp to the Primary Entry as a level discrepancy (1:60 not 1:80 as noted) may impact adjacent ramp grades.
- Ensure the landing between the 1:20 ramps aligns with the Bicycle Store entry.
- Ensure the full extent of 1:20 ramps includes side protection as per Australian Standards (review eastern end).
- Define the edge treatment required for 1:20 ramps: both in regard to levels and materiality. Provide Top of Wall Heights for all edges, including seat walls.

Attachment 7 - Internal Urban Design Unit Comments (Village Square)

Eastern Mills Boulevard Interface

It is understood that the Mills Boulevard footpath can achieve both a long fall and cross fall shallower (or equal to) 1:40. This approach is supported as it allows for unencumbered pedestrian access from Mills Boulevard.

- Further clarification is required to clearly annotate the proposed Mills Boulevard levels (particularly at all connection points).

Southern Interface

A level change of approximately 2m exists between the Southern Entry and the Mills Boulevard footpath. It is understood that a series of stairways is required to mitigate this level change. Stairways are separated to allow visual permeability into the Village Square from the southern approach.

- Further clarification is required to clearly assess the proposed stairways:
- Provide cross sections through all stairways (include No. of steps, riser & tread dimensions and tactile, stair nosing and handrail details).
- Provide levels at the extents of all stairway landings.
- Provide an elevation of the stairway at Mills Boulevard to clarify the interface with adjacent levels. E.g. to account for footpath long falls (125mm difference across 5m width at 1:40).

- Define levels of adjacent surfaces; including pavements, gardens beds and associated edges if raised.

Drainage

No drainage information has been provided within the current documentation.

- Ensure a clear drainage strategy is provided.

Attachment 8 - ESD Referral Response

CITY OF YARRA

MeMO

To:	Amy Hodgen	Date: 25/2/19
Cc:		
From:	Scott Willey	
Subject:	Review of revised SMP and drawings of the application for an amendment to a planning permit	

File:	PLN17/0703
Subject Site:	626 Heidelberg Road, Alphington

Amy,

The revised drawings and ESD report for the above project have been reviewed with comments provided on:

- proposed changes – for buildings with significant planning changes or changes to facades
- revised SMP – in response to permit conditions
- revised drawings – in response to permit conditions

The revised ESD report covers considerably more ground than that previously submitted, but still contains a lack of clarity of the degree of commitments in some areas discussed. Some sought items are promised in future stages, though there is no submission requirement noted in the current conditions for post construction. It is suggested that a condition be added which captures all items not submitted before any amended permit is issued. This would include: Section J report, JV3 energy modelling, glazing calculator, photovoltaic specification etc.

The revised drawings contain a considerable lack of clarity around the provision of shading in general, and a lack detail on the provision of best practice natural ventilation for the proposed changes to commercial facades, and that of the school and civic spaces.

As discussed, some condition response should be passed for internal referral. This includes:

- Transport – for relevant bicycle facilities and electrical vehicle charging
- Engineering – for review of the MUSIC model

Please find comments for each of these below, and please let me know if you wish to discuss the proposal.

Regards,

Scott Willey

Environmental Sustainable Development Advisor

Attachment 8 - ESD Referral Response

Assessment

The following revised documents were reviewed against the permit conditions that relate to ESD:

- Architectural drawings - prepared by NHA/Bird de la Coeur Architects / Architectus, Project 01234, TP drawings - Revision 4
- Sustainable Management Plan - prepared by Norman Disney & Young, dated 21/11/18
- Waste Management Plan - prepared by Salt3, dated 20/11/18

Further information is needed before the project proposal could be considered to meet Council's conditions relevant to ESD and/or best practice.

Comment on proposed changes

- **Effective shading** – The proposed facades indicate unprotected glazed areas which would be subject to significant summer solar gain. Effective external shading is sought to prevent undesirable summer solar heat gain, though allow winter sun. Provision of effective shading, for sun-exposed glazing is sought to be demonstrated for the following (e.g. north-facing glazing - for the summer solstice at midday, and for west-facing glazing – at 3pm):
  - Residential – habitable rooms of apartments and serviced apartments including common corridors, and entry lobbies
  - Commercial and civic – habitable spaces as well as common corridors, and entry lobbies
- **Natural ventilation** – New façade elements are proposed without sufficient explanation of how these facades will encourage natural ventilation to decrease the need for, and reliance on, mechanical ventilation, heating and cooling.
  - Windows – indicate operable window sashes to all habitable rooms and common corridors for buildings where facades are proposed to be altered.
  - Passive – Provide details of strategies to encourage utilisation of a passive ventilation over mechanised ventilation

Comment in response to ESD relevant Permit Conditions

Condition 1

Condition 1(g) Additional external shading systems applied on all east, west and north facing facades of the Urban Anchor and Living Matrix;

- *Not satisfactory – External shading is lacking or not obviously effective. Provide typical façade details that demonstrate external shading is effective in preventing solar heat gain in warmer months. Indication of shading effectiveness on the summer solstice is sought - for north-facing glazing at noon, for east facing glazing at 10am (AEST) and west – at 3pm (AEST).*

Condition 1(h) Location and size of the water tank;

- *Satisfactory - Shown on Lower Ground Level.*

Condition 1 (i) Roof plan showing location of all solar panels;

- *Satisfactory – The 85kW noted on page 6 of SMP is matched by 24kW shown on the school (Level 8), and 61kW shown on apartments (Level 14)*

Condition 1 (j) provision and location of a minimum of 40 electric vehicle charging points;

- *Refer to Transport comments*

Condition 9 Sustainable Management Plan

Before the development commences, an amended Sustainable Management Plan (SMP) to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Sustainable Management Plan will be endorsed and will form part of this permit. The amended SMP must be generally in accordance with the Sustainable Management Plan prepared by Norman Disney Young and dated 14 February 2018, but modified to include or show:

- *See comments on the SMP report in the matrix below.*

Condition 9(a) Bicycle numbers updated to reflect the plans i.e. 484 bicycle spaces;

- *Refer to Transport*

Condition 9(b) All car parking areas with the potential to be electrically wired to be 'EV ready', with a minimum 40A single phase electrical sub circuit installed to the each of these areas;

- *Refer to Transport*

Condition 9(c) Size of the rainwater tank described consistently within the SMP;

- *Satisfactory – 100kL noted page 13 of SMP*

Condition 9(d) Evidence to demonstrate that SPEL proprietary products are effective in local Victorian conditions or provide a different approach for managing stormwater;

- *Not satisfactory – Information sought was not provided.*

Attachment 8 - ESD Referral Response

Condition 9(e) Separate water metering for all major common area uses, tenancies and dwellings;

- *Satisfactory – Page 13 of the SMP notes this is done*

Condition 9(f) Comprehensive commissioning and tuning of all major appliances and building services

- *Satisfactory – Page 18 of the SMP notes Commissioning and tuning will be undertaken following project completion.*

Condition 9(g) Environmental Management Plan Monitor and control activities undertaken during construction;

- *Satisfactory – Page 18 of the SMP notes an EMP is contained within the Construction Management Plan*

Condition 9(h) Use of recycled materials e.g. insulation;

- *Not satisfactory – Several valid material choices are noted page 17 of SMP, however the text commits to only one of these – which could result in only minor change to single material. Given the magnitude of the project, and the volume of materials to be used, commitment to several of the more significant items is sought, and separate to those noted items noted in Condition 9(i), and 9(l).*

Condition 9(i) Recycled content of concrete and steel; and

- *Not satisfactory – Commitments to reduce the impacts of concrete and steel on page 17 of SMP are sought to be substantial, and over and above any commitments given under Condition 9(h) above. While there is some mention of hardscaping – the intent of this condition is project wide.*

Condition 9(j) A sample of dwellings demonstrating that NatHERS annual cooling loads do not exceed the 21MJ/M2 threshold (Moorabbin area);

- *Satisfactory – Consultant Advice on pages 73-75 of the SMP summarise findings on preliminary modelling.*

Condition 9(k) Provision for stormwater retention within open space areas;

- *Not satisfactory – Landscape plans indicate raingardens in the Town Square at Ground Level, and Level 3 podium between the Living Matrix and Sculptural Building, however no cross-sections or other details of these raingardens are provided.*

Condition 9(l) FSC certified sustainable or recycled timber for all timber uses where ever possible onsite; and

- *Not satisfactory – Page 17 of the SMP notes engineering timber will be certified, though the project appears likely to be constructed of reinforced concrete, with other certified timber noted as a potential option. There is no commitment to utilise timber as per the intent of the condition.*

Condition 9(m) Provision of a facilities for organic residential waste collection.

- *Satisfactory – Page 7 of the SMP notes organic waste collection from residents, and organic waste bins appear on the Ground Floor plan.*

Condition 10. The provisions, recommendations and requirements of the endorsed Sustainable Management

- *Not satisfactory – See comments below:*
  - *Report unpublished - The project is required to be 'published' from the BESS website to allow it to be reviewed. This can be done by clicking the 'review and submit' tab in the widget on the left hand side of the screen. Publishing the BESS report will create a snapshot of the project for the information entered.*
  - *Drawing annotation – The BESS report notes at its end, 'Items to be marked on floorplans'. While the report offers clarity on the provision of many items, these are not necessarily apparent in the revised drawings. Provide notes on the drawings included in a cover sheet (or similar) to cover the items notes.*
  - *Natural ventilation – The BESS report makes reference to drawings TP-2D-802 for typical apartment natural ventilation, which appears to be an error. Drawings TP-2E-804 and TP-2E-805 appear to provide this detail however appear to confuse sliding glass door as 'operable windows'. Clarify where operable windows are provided as opposed to doors. A minimum of one operable window sash is sought for each habitable room to be naturally ventilated with the strong preference that it can be locked ajar.*
  - *Energy efficiency - The BESS report indicates that preliminary Section J / NABERS energy modelling has been performed. Provide this modelling.*
  - *Lighting – The SMP notes a commitment to a lighting power density reduction of 10% however it is noted that the NCC 2019 draft proposes at a minimum to far exceed the 2016 provisions. Consider committing to meeting the proposed 2019 minimum standards.*
  - *Clotheslines – The BESS Energy credit 3.4 notes the inclusion of clothesline. Indicate these on the typical drawings.*
  - *Third pipe – The BESS Water Profile Questions notes a third pipe / water recycling system has been provided on-site although this is not noted elsewhere. Provide details of this.*
  - *Waterless chillers – Further to BESS Water credit 4.1 - provide detail of the level of commitment to waterless chillers*
  - *Fire test water - Further to BESS Water credit 4.1 - provide detail of the commitment to fire test water capture and reuse*

Attachment 9 - Engineering Services Unit Referral Comments

MEMO

To:	**Amy Hodgen**	
From:	**Mark Pisani**	
Date:	**1 February 2019**	
Subject:	**Application No:**	**PLN17/0703.01**
	Description:	**Section 72 Amendment; AMCOR Village Precinct**
	Site Address:	**626 Heidelberg Road, Alphington**

I refer to the above Planning Amendment application received on 4 January 2019 and the accompanying *Transport Impact Assessment* report prepared by GTA Consultants (issue 02 dated 6 December 2018) in relation to the proposed development at 626 Heidelberg Road, Alphington. Council's Civil Engineering unit provides the following information:

CAR PARKING PROVISION
Proposed Development
Under the provisions of Clause 52.06-5 of the Yarra Planning Scheme, the development's parking requirements are as follows:

Proposed Use	Quantity/ Size	Statutory Parking Rate	No. of Spaces Required	No. of Spaces Allocated
One-bedroom dwelling	83	1 space per dwelling	83	42
Two-bedroom dwelling	257	1 space per dwelling	257	180
Three-bedroom dwelling	13	2 spaces per dwelling	26	13
Residential visitors	353 dwellings	1 space per 5 dwellings	70	
Office	9,875 m^2	3.5 spaces per 100 m^2 of net floor area	345	247
Supermarket	5,797 m^2	5 spaces per 100 m^2 of leasable floor area	289	14
Shop	4,063 m^2	4 spaces per 100 m^2 of leasable floor area	162	20
Food and Drink	337 m^2	4 spaces per 100 m^2 of leasable floor area	13	3
Childcare Centre	120 children	0.22 spaces to each child	26	10
Primary School	300 students 12 employees	1 space to each employee of the maximum number of employees on site at any one time	12	15

Attachment 9 - Engineering Services Unit Referral Comments

Proposed Use	Quantity/ Size	Statutory Parking Rate	No. of Spaces Required	No. of Spaces Allocated
Community Centre	300 patrons 2,282 m²	Not Specified	To the satisfaction of the RA	9
Gymnasium	892 m²	Not Specified	To the satisfaction of the RA	4
		Total	**1,283 Spaces + Parking for Gymnasium & Community Centre**	**557 spaces + 461 shared spaces**

To reduce the number of car parking spaces required under Clause 52.06-5 (including to reduce to zero spaces), the application for the car parking reduction must be accompanied by a Car Parking Demand Assessment.

Car Parking Demand Assessment
In reducing the number of parking spaces required for the proposed development, the Car Parking Demand Assessment would assess the following:

Parking Demand Consideration	Details
Parking Demand for the Residential Dwellings	The proposed car parking demand rates for the dwellings as per the submitted report (0.5 spaces per one-bedroom dwelling, 0.7 spaces per two-bedroom dwelling and 1.0 space per dwelling) are lower than the recommended residential parking rates and ABS average parking rates specified in the endorsed *Traffic Management Plan*. This equates to 234 spaces for the 353 dwellings. Given the broad scale of the development and its proximity to public transport services, a reduced parking rate is considered appropriate.
Parking Demand for Residential Visitors	By applying the established empirical rate of 0.12 spaces per dwelling, the peak visitor parking demand is expected to be around 42 spaces. By applying an off-peak rate of 0.07 spaces per dwelling, the visitor parking demand would be around 25 spaces. GTA had adopted 0.1 spaces per dwelling; however, we will adopt 0.12 spaces per dwelling for consistency with other developments we have assessed.
Parking Demand for Office Use	An office parking demand of 2.5 spaces/100 m² has been adopted, which equates to 247 spaces. This rate is considered appropriate. The office visitor parking would constitute 10% of the total office parking demand (in this case, 25 spaces).
Parking Demand for Supermarket Use	The rate of 4.5 spaces/100m² has been adopted as per the endorsed *Traffic Management Plan*, resulting in a parking demand of 261 spaces. The applicant would allocate 11 spaces for one of the supermarkets, based on information provided by the future tenant (a rate of 0.25 employee spaces/100 m²). Applying this rate for the total supermarket area of the site, there would be a total supermarket employee parking demand of 14 spaces.

Attachment 9 - Engineering Services Unit Referral Comments

Parking Demand Consideration	Details
Parking Demand for Shop Use	The rate of 2.3 spaces/100 m^2 has been adopted as per the endorsed *Traffic Management Plan*, resulting in a parking demand of 93 spaces. The employee parking rate for this use (0.5 spaces/100m^2) has been adopted – also from the endorsed *Traffic Management Plan*, equating to 20 employee spaces.
Parking Demand for Food and Drink Use	A rate of 3.0 spaces/100 m^2 could be adopted for the food and drink premises, which equates to 13 spaces. An employee parking rate of 0.1 spaces/100m^2 could be used, which results in an employee parking demand of three spaces.
Parking Demand for Childcare Centre	The rate of 0.19 spaces per child has been adopted as per the endorsed Traffic Management Plan, resulting in a parking demand of 23 spaces. The parent/staff split in the parking, a parent parking rate of 0.1 spaces per child could be adopted (consistent with a site we have previously reviewed: 556 Swan Street, Richmond; PLN15/0302). The parent parking demand would equate to 12 spaces (therefore, 11 spaces would be allocated to staff).
Parking Demand for Primary School	GTA have adopted a parking rate of 0.25 spaces per student (based on previous, uncited surveys), equating to 75 spaces. A rate of 0.05 spaces per student has been adopted to estimate the likely teacher and employee parking (15 spaces), which is included as part of the overall school parking demand.
Parking Demand for Community Centre and Gymnasium	The parking provision for these two uses is to be to the satisfaction of the Responsible Authority. For the community centre use, the precise nature of this use is unknown. It can be assumed that many of the participants who would use the centre would be locals. GTA have assumed a car parking provision of 90 spaces, including nine spaces for staff. For the gymnasium, GTA have used the NSW Roads and Maritime Services rate of 3.0 spaces/100 m^2 equating to 26 spaces. A rate of 0.5 spaces /100 m^2 for employee parking, resulting in four spaces. There is no objection to these assumptions.

Attachment 9 - Engineering Services Unit Referral Comments

Total Car Parking Demand

Proposed Use	Estimated Parking Demand
Residential Dwellings	234
Residential Visitors (Peak)	42
Office	247
Supermarket	261
Shop	93
Food and Drink	13
Childcare Centre	23
Primary School	75
Community Centre	90
Gymnasium	26
Total	**1,104 spaces**

The above table (a combination of rates used by GTA and rates we consider appropriate) results in a slightly lower parking demand estimate than the total parking demand figure presented in the submitted report (1,128 spaces).

It is agreed that the short-stay spaces of the various uses would be shared and would peak at various times (for example, the residential peak visitor parking occurs on weekday evenings and at weekends, whereas visitors to the shop, food and drink and medical centre would peak during the day). For the primary school, it is understood that pick-up and drop-off would take place outside the property/internal car parks.

Overall, the site should be able to be self-sufficient in terms of car parking.

The parking allocation of every individual use should be detailed and finalised by the applicant.

Attachment 9 - Engineering Services Unit Referral Comments

AMENDED DRAWINGS
Layout Design Assessment

NH Architecture Drawing Nos. TP-2E-200, TP-2E-201, TP-2E-202, TP-2E-203, TP-2R-204 and TP-2E-654 Revision 04 dated 26 November 208 and 3 December 2018

GTA Consultants *The Village Alphington – Car Parking Management Plan* dated 6 December 2018

Planning Permit (Corrected) PLN17/0703 issued on 28 December 2018

CONITION 66 – CAR PARKING

Condition	Engineering Comment
Condition 66 *Before the buildings are occupied, a Car Park Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the Car Park Management Plan will be endorsed and will form part of this permit. The Car Park Management Plan must address, but not be limited to, the following:* *(a) the number and location of car parking spaces allocated to each use including:* *(i) residential spaces provided at a minimum rate of 1 space per dwelling (including the affordable housing component);* *(ii) office employee car parking provided at a rate of 2.5 spaces per 100sqm of office space;* *(iii) 10 staff car spaces for the childcare;* *(iv) 15 staff car spaces for the school; and* *(v) minimum 497 car spaces for visitors;*	According to the applicant, resident parking has been provided at rates recommended in the original *Transport Impact Assessment*. There is no objection to modifying this item as suggested by the applicant. The staff parking provisions for the office, childcare centre and school have been allocated in accordance with the Permit. This item has been satisfied.
(b) location of a minimum of 14 disabled car spaces;	Fourteen disabled parking spaces have been provided. This item has been satisfied.
(c) any tandem parking spaces allocated to a single tenancy;	The development no longer contains any tandem parking sets.
(d) location of a minimum of two car share spaces, including time of shared use;	Two car shares spaces have been provided as required. This item has been satisfied.
(e) the management of visitor car parking spaces and security arrangements for occupants of the development, including details on how residential visitors are to access car parking;	Visitor parking would be located on the Lower Ground and Basement levels, which are publicly accessible. Residents would access their parking via the access lane by passing a security gate (remote control access). This item has been satisfied.
(f) details of way-finding, cleaning and security of end of trip bicycle facilities;	Signage and line marking for bicycle way-finding would be finalised in the signage schedule. Cleaning and security of end of trip bicycle facilities would be managed by the owners' corporation of the building.
(g) the number and allocation of storage spaces;	To be allocated on each individual title.
(h) policing arrangements and formal agreements;	Policing and formal agreements would be administered by the site's owners' corporation. This item has been satisfied.

Attachment 9 - Engineering Services Unit Referral Comments

Condition	Engineering Comment
(i) *a schedule of all proposed signage including directional arrows and signage, informative signs indicating location of disabled bays and bicycle parking, exits, restrictions, pay parking system etc.;*	Not yet prepared.
(j) *management of drop off and pick up for the school and childcare centre; and*	GTA Consultants have indicated that some on-street parallel parking spaces could be restricted to P10 minutes on Latrobe Avenue. In addition, it is proposed that some 60 spaces in the Lower Ground floor car park would be designated as school pick up and drop off between the hours of 8:00am to 9:00am and 3:00pm to 6:00pm for both the primary school and childcare centre. These arrangements are considered acceptable. This item has been satisfied.
(k) *provision of conveniently located power points for charging e-bikes.*	GTA suggest that power points can be installed within the indoor bicycle parking areas. This item has been satisfied.

Car Parking and Access Arrangements

Item	Assessment
Access Arrangements	
Development Entrance – Heidelberg Road Access	The main accessway has a carriageway width of 8.15 metres, and allows for two-way traffic movements.
Visibility – Heidelberg Road Access	The carriageway of the exit lane allows good visibility of pedestrians walking along the south side of Heidelberg Road.
Development Entrance – Via Access Lane	Widths not dimensioned on the drawings.
Visibility – Via Access Lane	Sight triangles for motorists entering the access lane via the two entrances have been provided in accordance with *Design standard 1 – Accessways* of Clause 52.06-9.
Internal Ramped Accessways	Not dimensioned on the drawings.
Car Parking Modules	
At-grade Parking Spaces	The dimensions of the regular at-grade parking spaces (2.6 metres by 4.9 metres to 5.4 metres) satisfy *Design standard 2: Car parking spaces*.
Accessible Parking Space	The dimensions of the accessible car parking spaces and associated shared areas satisfy the Australian/New Zealand Standard AS/NZS 2890.6:2009.
Aisles	The widths of the aisles range from 6.3 metres to 7.7 metres and satisfy *Table 2: Minimum dimensions of car parking spaces and accessways* of Clause 52.06-9.
Column Depths and Setbacks	Columns have been positioned in accordance with *Diagram 1 Clearance to car parking spaces* of Clause 52.06-9.

Attachment 9 - Engineering Services Unit Referral Comments

Item	Assessment
Clearances to Walls	Clearances of no less than 300 mm have been provided.
Blind Aisle Extensions	Blind aisles extensions satisfy AS/NZS 2890.1:2004.
Gradients	
Ramp Grade for First 5.0 metres inside Property – Heidelberg Road Entrance	The ramp grade for the first 5.0 metres inside the property (from Heidelberg) has not been specified.
Ramp Grades for First 5.0 metres inside Property – Via Access Lane	For the two entrances off the access lane, the ramp grades for the first 5.0 metres are flat.
Ramp Grades and Changes of Grade	The grades and changes and changes in grade satisfy *Table 3 Ramp Gradients* of Clause 52.06-9.
Other Items	
Loading Arrangements	The submitted swept path diagrams for the four classes of commercial vehicles as per the Australian Standard AS2890.2-2002 manoeuvring into and exiting loading docks are considered satisfactory.
Vehicle Passing Movements	The submitted swept path diagrams for vehicle passing movements using the B99 design vehicle and the B85 design vehicle throughout various points of the car parking levels are considered satisfactory.
Vehicle Turning Movements – Entrances via Access Lane	The swept path diagrams for the B99 design vehicle entering and exiting the entrance via the access lane are considered satisfactory.

Attachment 10 - Strategic Transport Unit Referral Comments

Planning Referral

To:	Amy Hodgen
From:	Julian Wearne
Date:	01/02/2019
Subject:	Strategic Transport Comments
Application No:	PLN17/0703.01
Description:	Amendment application: key changes include the relocation of the school building and the community facilities and the introduction of serviced apartments along Heidelberg Road.
Site Address	626 Heidelberg Road, Alphington

I refer to the above Planning Application referred on 04/01/2019, and the accompanying Green Travel Plan prepared by GTA Consultants in relation to the proposed development at 626 Heidelberg Road, Alphington. Council's Strategic Transport unit provides the following information:

Accuracy of plans and Development Schedules

It appears the development schedule on the Cover Sheet to the architectural plans and the Green Travel Plan (GTP) are both inaccurate. For example the development table and GTP states there are 88 visitor bike spaces at ground-level, but only 72 visitor spaces are shown on the development plans at ground-level.

Access and Safety

No significant access or safety concerns have been noted.

Bicycle Parking Provision

Statutory Requirement

Under the provisions of Clause 52.34-3 of the Yarra Planning Scheme, the development's bicycle parking requirements are as follows:

Proposed Use	Quantity/ Size	Statutory Parking Rate	No. of Spaces Required	No. of Spaces Allocated
Dwellings	313 dwellings	In developments of four or more storeys, 1 resident space to each 5 dwellings	63 resident spaces	313 Resident Spaces
		In developments of four or more storeys, 1 visitor space to each 10 dwellings	31 visitor spaces.	
Education centre (other than specified in the table)	12 employees 300 full-time students	1 employee space to each 20 employees	1 employee spaces[1]	38 school spaces (considered separately) [1]
		1 visitor space to each 20 full-time students	15 visitor spaces[1]	
Medical centre	15 practitioners	1 employee space to each 8 practitioners	2 employee spaces	

[1] *Whilst technically visitor spaces under the requirements of the planning scheme, spaces for students at the school will treated separately.*

Attachment 10 - Strategic Transport Unit Referral Comments

		1visitor space to each 4 practitioners	4 visitor spaces.	
Minor Sports and Recreation Facility (Gym)	892sqm	1 employee space per 4 employees	2 employee spaces	
		1 visitor space to each 200sqm of net floor area	4 visitor spaces	
Office (other than specified in the table)	9198 sqm	1 employee space to each 300 sqm of net floor area if the net floor area exceeds 1000 sqm	31 employee spaces	56 Employee spaces (for all uses)
		1visitor space to each 1000 sqm of net floor area if the net floor area exceeds 1000 sqm	9 visitor spaces.	
Place (of assembly other than specified in this table)	2282 sqm	1 employee space to each 1500 sqm of net floor area	2 employee spaces	
		2 plus 1 visitor space to each 1500 sqm of net floor area	4 visitor spaces.	
Residential building (other than specified in the table)	40 lodging rooms	In developments of four or more storeys, 1 resident space to each 10 lodging rooms	4 resident spaces	4 resident spaces
		In developments of four or more storeys, 1 visitor space to each 10 lodging rooms	4 visitor spaces.	
Retail premises (other than specified in this table)	337 sqm	1 employee space to each 300 sqm of leasable floor area	1 employee spaces	
		1visitor space to each 500 sqm of leasable floor area	1 visitor spaces.	
Shop	9861 sqm	1 employee space to each 600 sqm of leasable floor area if the leasable floor area exceeds 1000 sqm	16 employee spaces	
		1 visitor space to each 500 sqm of leasable floor area if the leasable floor area exceeds 1000 sqm	20 visitor spaces.	
Bicycle Parking Spaces Total			**121 resident / employee spaces**	**373 resident / employee spaces**
			77 visitor spaces	**200 visitor spaces**
			16 school spaces	**38 school spaces**
Showers / Change rooms		1 to the first 5 employee spaces and 1 to each additional 10 employee spaces	**6 showers / change rooms**	**6 showers / change rooms**

The proposed Childcare Centre use does not carry a statutory requirement for bicycle parking.

The development provides a total of 252 additional resident/employee spaces and 123 additional visitor spaces above the statutory requirements of Clause 52.34.

Adequacy of visitor spaces
The GTP indicates there will be 216 spaces for visitor use, including 88 spaces at ground-floor.
The architectural plans show:

- 72 visitor spaces at ground, including:
  - 18 visitor spaces along the Outer Circle Mews;
  - 34 spaces along the Heidelberg Road footpath;
  - 20 spaces on the Mills Boulevard footpaths;
- 128 visitor spaces within the lower-ground-floor car park.
- The remaining 16 visitor spaces referenced within the GTP do not appear to be shown on the plans.

Number of Spaces
Despite the shortfall in spaces shown on the plans compared to what is outlined within the GTP, the total number of visitor spaces is considered adequate for the following reasons:

- Best practice recommends 1 visitor space to each 4 dwellings, and 1 visitor space to each 500sqm of office floor area[2], 2 spaces for the childcare centre[3], and the statutory requirements for remaining uses; generating a recommended rate of 147 spaces.
- Given the above it would be acceptable if a number of visitor bicycle spaces were removed or re-allocated for employee use.

Design and location of visitor spaces
The design and location of visitor spaces appear to be generally well located, however it is understood Urban Design has raised potential concerns with location and design of spaces which should be considered.

Adequacy of School Spaces
The location, design and number of spaces for the school appears to be adequate.

Adequacy of Resident and Employee spaces
Number of spaces
The number of resident spaces (1 space per dwelling) meets best practice and is acceptable.

The number of employee spaces is below best practice and should be revised. A minimum of 109 employee spaces should be provided for the following reasons:

- Best practice requires 1 space to each 100sqm of office floor space[4]: generating a requirement of 92 employee spaces for the office use; and the statutory rates for the other listed uses (excluding the serviced apartments and school); this generates a requirement for 115 spaces
- Separate provision of 4 spaces for the serviced apartment has been made.
- The end of trip facilities should be upgraded in line with the recommended increased provision of employee bike spaces.

Design and location of employee and resident spaces and facilities
Whilst the shortfall of employee spaces will need to be addressed, it is noted the proposed resident and employee bicycle storage areas are well designed and located.

Electric vehicles & share cars
The provision of car share and EV charging bays appears to be adequate.

---

[2] *See page 2 of Sheet 6 (Transport) of Council's Sustainable Design Assessment in the Planning Process sheets.*
[3] *A comparable childcare centre at 27 Church Street, Richmond caters for a maximum of 150 children provides 3 bicycle spaces (see PLN14/0815). Generating a rate of 1 space to each 50 children.*
[4] *Category 6 of the Built Environment Sustainability Scorecard (BESS) offers the following best-practice guidance for bicycle parking rates: 'Non-residential buildings should provide spaces for at least 10% of building occupants.' Assuming a floor-space occupancy of 1 staff member to 10sqm (which is the maximum rate allowed under the National Construction Code for fire safety), providing bicycle spaces for 10% of occupants results in a rate of 1 space per 100sqm of floor area*

Attachment 10 - Strategic Transport Unit Referral Comments

Green Travel Plan

It is noted the applicant has supplied a Green Travel Plan (GTP). The GTP does not adequately address all conditions of the permit and contains some inaccuracies compared to the proposed plans, and should be modified to include:

- Clarification on references to emoployee permit parking (i.e. "*Minimise the number of car parking permits allocated to employees"* [p.22] is not measurable or demonstrable).
- References to bicycle parking numbers should accurately reflect the endorsed plans.

Recommendations

The following should be shown on the plans before endorsement:

1. The plans, Green Travel Plan and development schedule showing or referencing a consistent number of bicycle spaces.
2. Provision of 115 employee bicycle spaces in secure facilities, with reasonable access to employee entranceways and end of trip facilities.
3. Provision of at least 12 shower/changeroom facilities to support the number of employee bicycle spaces required at condition 2.

An Amended Green Travel Plan should be provided with the information outlined previously.

Regards

Julian Wearne

Sustainable Transport Officer
Strategic Transport Unit

Attachment 11 - City Works (Waste Management)Referral Comments

Hi Amy,

The waste management plan for Lot 2B 626 Heidelberg Rd, Alphington authored by SALT and dated 20/11/18 is satisfactory from a City Works branch's perspective.

Regards,

Patrick Orr
Contract Management Officer
City Works
Yarra Operations Depot, Clifton Hill

City of Yarra PO Box 168 Richmond 3121
T:(03) 9205 5554 **F:**(03) 8417 6666
E: patrick.orr@yarracity.vic.gov.au

Attachment 12 - City Works & Assets (Community Facilities)

Wed 27/03/2019 10:43 AM

Hi Amy

Further to our recent discussion on the submitted plans, I provide the following advice on changes sought.

Community Facilities Layout prepared by Architectus Drw. No. DA1010 dated 18/10/2018 amended to show the following:

- *Roller door provided from 'Hall Store 18' to the stadium ('MPC 1)*
- *Rename the 'Community 3' as 'Warm Shell' and 'Flexible Space 4' as 'Community space'*
- *Extend the northern wall of 'Store 12' to the column to the north (i.e. to align with Kitchen 11)*
- *'Store 12' divided to serve both the 'Community 3', and the 'Flexible Space 4', including provision for a door to the foyer and a dividing wall.*
- *Delete the door from the 'flexible space' into the restrooms to improve circulation and reduce conflicts.*
- *The WCs for the stadium '5, 14, and 13' require at least 1 shower each.*
- *Swap the location of the 'Kitchen 11' with the 'F WC Changing 13' and provide serving counters facing both the foyer area and the 'Flexible space 4'*
- *Provision for a partition to the 'Flexible Space 4' along Section Line S7*
- *Revised SMP to capture the following additional initiatives associated with the community facilities:*
    - *Thermal envelope with a minimum 20% improvement on NCC insulation requirements and double-glazing to windows*
    - *Provision for effective external shading to sun-exposed glazing.*
    - *Operable windows to all areas, including remote window operation for highlight windows (e.g. to the multi-purpose court)*
    - *Provision for ceiling fans including high-volume, low-speed fans (HVLS) within the multi-purpose court*
    - *Confirmation that captured rainwater will be utilised for toilet flushing in the community facilities*
    - *Hot water to be solar-boosted gas, with minimum 60% boost.*
    - *Photovoltaic array associated with the community facilities within the unused roof area of the school building*
- *NB. The group has not provided commentary on lighting or acoustics, as the plans do not enable commentary on this elements.*

Regards

Chris

Chris Leivers
Director City Works & Assets
Yarra City Council
T (03) 9205 5701
E: chris.leivers@yarracity.vic.gov.au

Attachment 13 - External Urban Design Referral Comments (DLA)

DAVID LOCK ASSOCIATES
TOWN PLANNING & URBAN DESIGN

626 HEIDELBERG ROAD, ALPHINGTON
THE VILLAGE, ALPHINGTON (AMCOR PAPER MILLS PRECINCT – STAGES 2A AND 2B)

Urban Design Referral

Date	15 March 2019
Council reference	PLN17/0703.01
To	Amy Hodgen
From	Mark Sheppard, David Lock Associates

INTRODUCTION

This report assesses a s.72 application to amend the permit for the above site.

In undertaking this assessment, we have had regard to the following:

- The existing permit for the site, including the permit conditions;
- The application material, including architectural drawings, reports and RFI responses;
- The relevant provisions of the Yarra Planning Scheme and relevant Reference and Incorporated Documents (particularly the *Alphington Paper Mills Development Plan (2016)*);
- The relevant provisions of the Darebin Planning Scheme (insofar as they apply to the northern side of Heidelberg Road);
- The physical context of the subject site and wider area; and
- The emerging scale of approved and proposed development in proximity to the Amcor Precinct.

ASSESSMENT

From an urban design perspective, there are three key aspects of the application that need to be considered:

- Building heights and setbacks
- Public realm interfaces
- Architectural quality

Therefore, the assessment below is organised under these headings.

Building heights and setbacks

The application seeks to amend the proposed built form in the following ways:

- Extend the community facility to the Heidelberg Road boundary and introduce a serviced apartment building above, reaching a total height of 8 storeys
- Increase the height of The Mill office building at the corner of Heidelberg Road and Mills Boulevard from 5 storeys to 6 storeys

- Increase the height of the school and childcare centre to 6 storeys

The Development Plan (DP) provides for a height of 6-8 storeys in this area. Therefore, the proposed height increases conform with the DP.

The DP prefers a street wall height of 6 storeys in Precinct 2B, with levels above set back at least 2.2m from the street edge. The proposed serviced apartment building has a street wall of 8 storeys, exceeding the 6 levels preferred by the DP. However, this is considered to be acceptable because setting back the upper two floors 2.2m would achieve little in terms of the visual presence of the overall family of buildings given the substantial width of Heidelberg Road and the scale of the neighbouring buildings. Further, it is considered that setting back the upper levels would detract from the coherent architectural quality of the building as a singular form. The perspective images demonstrate that the proposed serviced apartment building form will contribute to an effective transition in scale between its neighbours, as sought by the DP.

The slightly increased height of The Mill building will reinforce the gateway location of this intersection, as identified in the DP (to be marked with "*more visually prominent built form*"), without compromising the stepping down in scale sought by the DP from the landmark building at the corner of Chandler Highway and Heidelberg Road.

Together, the three buildings fronting Heidelberg Road will provide an appropriate 'urban' scale for framing this wide arterial road. Although they represent greater consistency in height than the current permit, they will still create a varied and interesting composition as sought by the DP.

Levels 3 and 4 of the 'Urban Anchor' building have been set back 2.2m from the western edge of the podium, in accordance with the presumed intent of condition 1(a). Above that, the building marginally encroaches beyond the western edge of the podium. However, this encroachment is substantially less than that to which condition 1(b) applies. It is considered that this minor encroachment is acceptable.

In summary, it is considered that the proposed amendments to the approved building heights and setbacks respond appropriately to the DP and the conditions that form part of the current permit.

Public realm interfaces

The DP seeks to "*Ensure street level interface treatments contribute to high levels of pedestrian amenity and safety*". Guidelines include:

- *Habitable uses such as commercial or residential uses should generally be provided as an interface to the public realm to provide visual activation to the built edge.*
- *Habitable uses should preferably be provided at all levels of the interface, with an outlook oriented towards the public realm to encourage passive surveillance.*

Supermarket frontage to Heidelberg Road

The DP requires that "*Where retail or hospitality uses are provided the interface should provide strong visual connections between public and private spaces through glazed shopfronts or entries.*" Accordingly, condition 1(c) requires "*Full height glazing along the Heidelberg frontage to the supermarket*".

The amended permit proposal has a completely redesigned supermarket façade to Heidelberg Road, including substantially more 'full height glazing'. However, all but one of these windows is to a display box, or comprises glass blocks, which will not provide visual connectivity. It is not considered that this meets the intent of condition 1(c) or the DP.

However, it is recognised that developing a supermarket with a fully-glazed external wall is challenging. Therefore, it is recommended that permit condition 1(c) be retained but changed to require at least 3 of the five proposed full-height windows to provide a clear view into the supermarket, with the window

dimensions generally retained and the clear windows distributed relatively evenly along the supermarket wall.

Extract of North Elevation showing recommended additional clear windows to supermarket

Three small raised planters are proposed on the Heidelberg Road frontage, generally around the serviced apartment lobby. It is queried whether this is a sufficiently robust form of landscaping in this main road environment. More detail should be sought to understand the merits of this landscaping and its maintenance.

Similarly, the value of the terrace in front of the shop at the base of The Mill building is queried. Who would occupy this space given the nature of Heidelberg Road? More detail should be sought on the likely use of the space, or it could simply be reverted to more shop space.

Circle Mews

The DP seeks to "*Ensure that above ground parking is suitably concealed by appropriate building features such as active podium frontages*". Guidelines include:

- *The interfaces to laneways, private roads and privately owned publicly accessible spaces will generally have a lower level of activation compared to the public realm interface. The details here will be determined in relation to the specific site context and design response.*

Accordingly, condition 1(f) requires "*The podium carpark be sleeved with apartments for the full length of the Outer Circle Mews, apart from the area accommodating the stairwell*".

The proposed podium layout adjacent to Outer Circle Mews has improved activation compared with the plans that were the subject of the current permit, particularly at the corner with Nelmoore Lane at Ground Floor, and at Levels 1 and 2.

However, condition 1(f) is not achieved. In particular, there are two significant sections of Outer Circle Mews that are not sleeved at Levels 1 and 2.

The activation provided by apartment sleeving is of considerably greater value at Level 1 than Level 2, due to its greater proximity to pedestrians in the lane. Therefore, it is recommended that at least some of the apartment floor area facing Outer Circle Mews at Level 2 be relocated to Level 1, to improve activation while maintaining the number of car parking spaces. For example:

- Relocate the 1-bedroom apartment at Level 1 to just north of the 'Living Matrix' core.
- Relocate the 2-bedroom apartment at Level 2 to Level 1 just south of the 'Urban Anchor' core, wrapping around the back of the lift to the podium-top open space.

Extracts of Level 1 Plan and detailed Outer Circle Mews podium elevation showing potential location of additional apartments to activate the lane

In order to achieve this, condition 1(f) could be retained but amended to limit the requirement to the majority of the length of Level 1.

Mills Boulevard

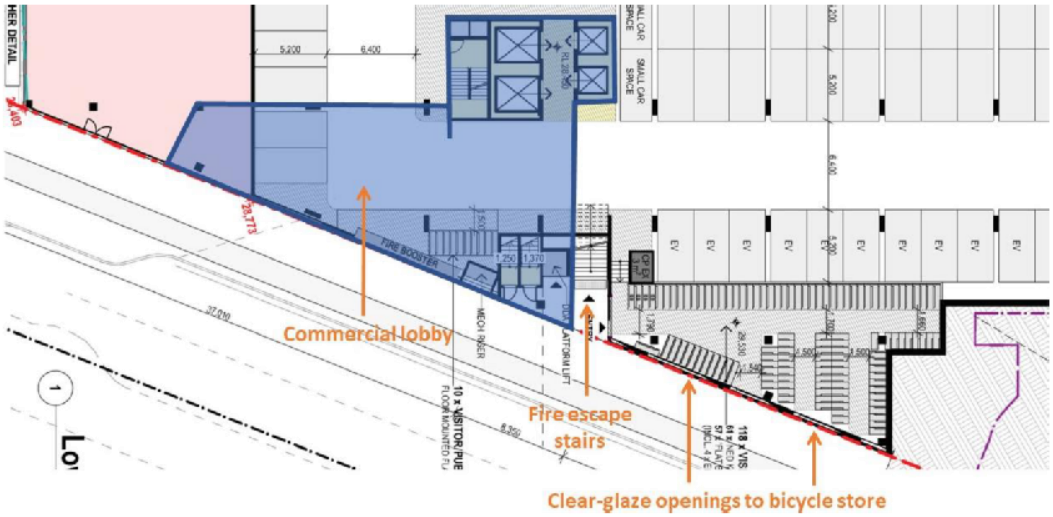
Mills Boulevard is the only north-south connector street through the whole Amcor development, providing a key access route from Heidelberg Road to the heart of the new community. Therefore, the quality of its public realm is particularly important.

As a result of the reconfiguration of the Lower Ground and Ground Floor accommodation, the activation of Mills Boulevard near its intersection with Nelmoore Lane has been lessened. In particular, the Lower Ground Floor frontage to Mills Boulevard between the shop at the corner and the southern stair to the Village Square, which is largely above footpath level, is largely occupied by 'back of house' functions, (including the bicycle store, car park and services), and clad in black powdercoated steel sheeting or louvred screens. In the approved proposal, this frontage was occupied by a commercial gym.

The bicycle storage facility has been moved to the eastern edge of the Lower Ground Floor, in accordance with condition 1(n). Greater actual and perceived activation could be achieved by clear-glazing the openings to the bicycle store, rather than filling them with a louvred screen.

South of the bicycle store is a stair and DDA lift to the lobby to the commercial office and gym at Ground Floor. The Lower Ground Floor level of the commercial core matches the footpath level in Mills Boulevard part-way along the eastern edge of the shop. Therefore, the commercial lobby could be relocated to Lower Ground Floor, with a level entry from Mills Boulevard, avoiding the need for a stair or lift. This would provide much improved activation of the street.

The fire booster cabinet and visitor bicycle spaces could presumably be relocated elsewhere (such as Nelmoore Lane), while the fire escape stairs could presumably be reconfigured to exit into Mills Boulevard between the commercial lobby and bicycle store.

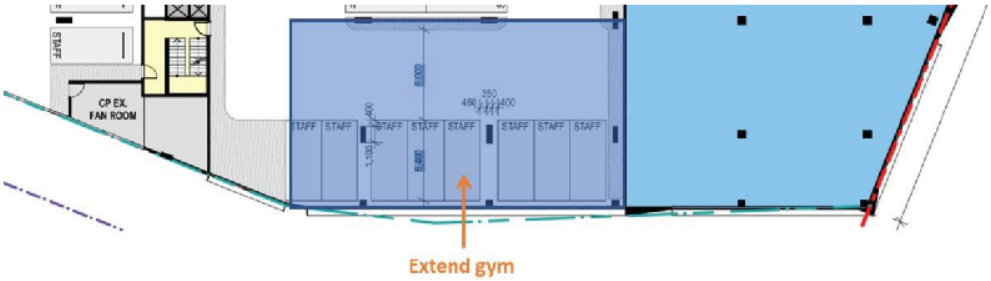


Extract of Lower Ground Floor plan showing recommended improvements to Mills Boulevard activation

Nelmoore Lane

The activation of the eastern end of Nelmoore Lane at Level 1 has been lessened. This is an important location given that it faces the widened space at the intersection of Nelmoore Lane and Mills Boulevard.

Therefore, a condition should be imposed on any permit requiring the gym to be extended along the full length of the east-west section of Nelmoore Lane at Level 1. If necessary, some car parking could be made up by deleting the 1-bedroom apartment facing Outer Circle Mews at Level 2.



Extract of Level 1 plan showing recommended extension of gym to activate Nelmoore Lane

Architectural quality

The DP requires development to "*achieve a high quality architectural response*", "*demonstrate sufficient articulation to avoid blank, long and continuous facades*" and "*collectively form a coherent and identifiable precinct*". It also calls for design to "*seek opportunities to introduce breaks in the overall form and to establish street rhythms*", and encourages:

- "*modulated building forms with vertical and horizontal breaks in the massing*",
- the avoidance of "*flat or continuous facades that (a) repeat the same form without variation, or (b) create a single horizontal form*", and
- "*building mass to be broken into multiple buildings with individual expression*".

The quality of the architectural expression of the proposed buildings is generally high. There is a clear and bespoke design intent behind each building, which will give them an individual identity, while the use of thematic materials will tie them together into a coherent precinct. Various façade articulation devices have been employed which will provide a high level of visual interest.

The proposed façade design and materials generally represent an improved response to the DP compared with the approved proposal. In particular:

- The 'rhythm' and use of brickwork in the 'Urban Anchor' podium frontage to Heidelberg Road responds better to the DP.
- The introduction of vertical elements in the façade of the Machinery Hall building, while not required by the permit conditions, are an improved response to the aspirations of the DP.
- The architectural treatment of the western and southern edges of the podium car park has been substantially improved, with metal battens replaced by a masonry wall clad in brick snaps and with punched openings, achieving the 'street rhythm' sought by the DP.

The proposed materials largely reflect the industrial heritage of the site, but have been used in a contemporary manner.

Condition 1(d) requires "*Decorative screens to the western portion of the northern façade associated with the Urban Anchor applied more irregularly and with variation in sizes, including operability to sections*". This condition is met by the proposal.

Condition 1(k) requires (among other things):

(iii) Replacement of the decorative precast concrete cladding with a higher quality material and finish;

(iv) More subdued colour finish applied to the Living Matrix screen, such as copper or bronze;

(v) Brick snap cladding (PR-53) to the eastern side of the Urban Anchor be finished in a brown shade similar to shown on the perspective;

(vi) Material FM-53 within the western portion of the urban Anchor to be a single cream colour.

Condition 1(k) (iv) has not been met, so this condition should be retained.

It is considered that PR-56 (concrete with formliner), which has replaced the decorative precast concrete material, should be replaced with PR-51 (midnight blue, stretcher bond, brick snaps) on the podium frontage to Nelmoore Lane, consistent with the Outer Circle Mews podium frontage.

The remaining two conditions are no longer relevant.

CONCLUSION AND RECOMMENDATIONS

In summary, the application to amend the permit is generally supported from an urban design perspective. The proposed building forms and architectural quality are an appropriate response to the DP and, in some cases, represent an improvement to the original permit.

However, further work is required to improve the activation of the public realm. In particular, it is recommended that:

- Permit condition 1(c) be retained but changed to require at least 3 of the five proposed full-height windows to provide a clear view into the supermarket, with the window dimensions generally retained and the clear windows distributed relatively evenly along the supermarket wall.
- Condition 1(f) be retained but changed to limit the requirement to the majority of the length of Level 1.
- The openings to the bicycle store at Lower Ground Level fronting Mills Boulevard be clear-glazed.
- The commercial lobby on Mills Boulevard be relocated to Lower Ground Floor, with a direct entry from Mills Boulevard.
- The gym be extended along the full length of the east-west section of Nelmoore Lane at Level 1. (If necessary, some car parking could be made up by deleting the 1-bedroom apartment facing Outer Circle Mews at Level 2.)

More detail is also sought in relation to the following aspects of the design on the Heidelberg Road frontage, given its 'robust' main road nature:

- The design and proposed maintenance regime of the three small raised planters generally around the serviced apartment lobby, to determine whether this is a sufficiently robust form of landscaping.
- The proposed use of the terrace in front of the shop at the base of The Mill building, to determine its value compared with a more direct shop frontage.

In relation to materials:

- Condition 1(k) (iv) should be retained.
- Condition 1(k) (iii) should be retained but amended to require the replacement of PR-56 (concrete with formliner) with PR-51 (midnight blue, stretcher bond, brick snaps) on the podium frontage to Nelmoore Lane.
- Conditions 1(k) (v) and (vi) are no longer relevant.

Mark Sheppard

Principal

Attachment 14 - Arts & Culture Referral Comments

Tue 19/03/2019 4:52 PM

Hi Amy,

I think to achieve something of this scale and to be able to fulfil the aspirations, they will have to engage a curator or partner with a gallery/artist run space. There will also be a need to ensure there is adequate budget to create the works, depending on the frequency of the change over.

I would caution any notion that this space is compared to "advertising space" and the opportunity to display is valuable that artists would forfeit any fees or pay for the installations themselves. Artists are not comparable to goods brands. Sorry to be blunt like that.

A partnership with an artist run space, such as BUS PROJECTS or WESTSPACE could manage the space with agreed criteria and rotation times. If they are employing a curator directly to change over the works, we would recommend a 3 stage process, in permanent works we recommend 4 stage.

1. A brief will be developed and open for artists submissions, or by invitation to a group of shortlisted arits.
2. The concept design submissions will be assessed by Council's Visual Arts Panel or project specific panel and one artist may be successfully selected to proceed to commission round.
3. The artist may be engaged for a further design stage or proceed straight to commission, however a fixed budget will be established and the artist contracted to deliver the project within this set fee.

I hope that helps.

Siu

Chan, Siu
BUSINESS UNIT MANAGER ARTS, CULTURE AND VENUES

Attachment 15 - External Traffic Engineering Peer Review (Traffix Group)

Traffic Engineers and Transport Planners

Our Reference: 24706L#3

Traffix Group Pty Ltd
ABN 32 100 481 570

Address
Suite 8, 431 Burke Road
Glen Iris Victoria 3146

Contact
Telephone 03 9822 2888
Facsimile 03 9822 7444
admin@traffixgroup.com.au
www.traffixgroup.com.au

5th March, 2019

Yarra City Council
Statutory Planning Branch
PO Box 168
RICHMOND VIC 3121

Attention: Ms Amy Hodgen

Dear Madam,

The Village Alphington, Lot 2B 626 Heidelberg Road, Alphington
Proposed Mixed Use Development
Traffic Engineering Review

Introduction

Further to your instructions, please find following our review of the proposed mixed-use development at The Village Alphington – Alphington Paper Mill. For this assessment, we have reviewed the following documents:

- Planning Permit No. PLN17/0703, dated 5th June, 2018
- Traffic Impact Assessment by GTA (TIA), dated 6th December, 2018
- Green Travel Plan, prepared by GTA (GTP), dated 6th December, 2018
- Car Parking Management Plan, prepared by GTA (GTP), dated 6th December, 2018
- RFI Letter response by GTA, dated 9th January, 2019
- Alphington Paper Mill Site Development Plan – Traffic Management Plan (TMP), prepared by GTA, dated 19th August, 2015
- Alphington Paper Mill Integrated Transport Plan (ITP), prepared by GTA, dated 19th August, 2015
- Endorsed Development Plan for Alphington Paper Mill, stamped 27th May, 2016
- Development plans for the Village Alphington by NH Architecture, Revision 5, dated 30th November, 2018

Proposal

This assessment relates to 'The Village Alphington' at the Alphington Paper Mill site.

The proposal is for an amendment to the approved mixed-use development on the site. The development summary below compares the amendment plans to the previous set of plans reviewed by Traffix Group.

Table 1: Development Summary

Land Use	NH Architecture, Rev 3, dated 23rd February, 2018 (Last reviewed by Traffix Group)	NH Architecture, Rev 5, dated 30th November, 2018
Supermarket	6,065m²	5,797m²
Retail	4,134m²	4,063m²
Food and Drink	2,286m²	337m²
Office	3,412m²	9,875m²
Childcare Centre	120 places	120 places
Gymnasium	1,928m²	892m²
Community Centre	1,700m² (300 patrons)	2,282m² (300 patrons)
Primary School	300 students & 12 staff	300 students & 12 staff
Medical Centre	15 practitioners	None
Serviced Apartments	None	40 (various sizes)
Residential	281 Apartments	313 Apartments
One-bedroom apartment	34	83
Two-bedroom apartment	163	257
Three-bedroom apartment	84	13
Car spaces	901 450 resident/employee 451 public/visitor	1,018 557 resident/employee 461 public/visitor
Bicycle spaces	484	627

Car parking is proposed within multiple building levels as follows:

- Basement – 112 spaces
- Lower Ground – 402 spaces
- Level 1 – 275 spaces
- Level 2 – 229 spaces

The public spaces are located at Lower Level (all 402 spaces) and Basement level (59 spaces). All other spaces are allocated to private parking (resident or staff parking).

Access to the basement and lower ground carparks is via:

- Left-in/left-out access to Heidelberg Road
- Full access to the 'Access Lane' along the site's southern boundary, connecting into Latrobe Avenue.

Access to the Level 1 and Level 2 carparks is via the same 'Access Lane'.

The only significant change in regards to these arrangements is that the two carpark entrances to the rear Access Lane have been separated, which we believe is an improved design outcome.

Car Parking Assessment

It is important as a matter of principle that the development proposed is self-sufficient in car parking terms, particularly for short-term car parking. While there is some on-street car parking being created in Latrobe Avenue, there are limited alternative car parking opportunities in the nearby area, including along Chandler Highway and Heidelberg Road.

Statutory Car Parking Assessment

The statutory car parking assessment of the development is set out in the table below.

Table 2: Statutory Car Parking Assessment – Clause 52.06-5 (Column A)

Use	Size/No.	Statutory Parking Rate (Column A)	Car Parking Requirement (Note 1)	
Commercial/Public Uses				
Supermarket	5,797m²	5 spaces per 100m² LFA	289	
Shop	4,063m²	4spaces per 100m² LFA	162	
Food and Drink	337m²	4 spaces per 100m² LFA	13	
Office	9,875m²	3.5 spaces per 100m² NFA	345	
Childcare Centre	120	0.22 spaces per child	26	
Gymnasium	892m²	To the satisfaction of the RA		
Primary School	12 staff (300 students)	1 space per employee that is part of the maximum number of employees on the site at any time	12	
Community Centre	300 patrons	0.3 car spaces per patron permitted	90	
Serviced apartments (Residential Hotel)	40	To the satisfaction of the RA		
Dwellings				
One-bedroom	43	1 car space per one or two-bedroom dwelling	43	326
Two-bedroom	257		257	
Three-bedroom	13	2 car spaces per three or more-bedroom dwelling	26	
Residential visitors	313	1 space per 5 dwellings	62	
TOTAL			1,325	

Notes:

1. Clause 52.06-5 specifies that where a car parking calculation results in a requirement that is not a whole number, the number of spaces should be rounded down to the nearest whole number.

Based on the above assessment, the proposed application has a statutory car parking requirement to provide 1,325 car spaces, plus any parking requirement by the Responsible Authority for the Gym and serviced apartments.

The GTA assessment makes no distinction between serviced apartments and 'standard' apartments, with the number of serviced apartments included in the total one-bedroom apartments.

The provision of 1,018 car spaces results in a shortfall of at least 307 car spaces, plus any car parking required for the Gym or serviced apartments. Accordingly, the development requires a car parking reduction under the decision guidelines of Clause 52.06-7.

Car Parking Demand Assessment

The following table compares the parking proposed and approved under the Traffic Management Plan (TMP) and the empirical rates adopted in the Traffic Impact Assessment (TIA) for Alphington Village.

Table 3: Review of GTA empirical parking rates

Use	Approved TMP	Empirical TIA rates	Comment
Supermarket	4.5 / 100m^2	4.5 / 100m^2	Same as approved TMP - accepted
Shop	2.3 / 100m^2	2.3 / 100m^2	Same as approved TMP - accepted
Food and Drink	Not included	4 / 100m^2	Same as statutory rate - accepted
Office	3.5 / 100m^2	2.5 /100m^2	Lower than TMP - accepted
Childcare Centre	0.19 / childcare place	0.19 / childcare place	Same as approved TMP - accepted
Gymnasium	Not included	3 / 100m^2	Based on RTA Guide - accepted
Primary School	Not included	0.25 spaces / student	Based on unspecified empirical data
Community Centre	Not included	0.3 / patron permitted	Same as statutory rate - accepted
Serviced Apartments	Not included	Not assessed	See more detail below
Dwellings			
One-bedroom	1 / dwelling	0.5 / dwelling	Lower than TMP
Two-bedroom	1 / dwelling	0.7 / dwelling	Lower than TMP
Three-bedroom	2 / dwelling	1 / dwelling	Lower than TMP
Residential visitors	0.12 / dwelling (high density)	0.1 / dwelling	Lower than TMP

Supermarket

The empirical parking rate for the supermarket is the same as that specified in the TMP and is accepted.

In the TMP, the overall rate of 4.5 spaces/100m^2, split between customers (3.6 spaces/100m^2) and employees (0.9 spaces/100m^2). This equates to a demand for 273 car spaces.

However, the TIA states that Coles have only leased 11 car spaces for staff (0.25 spaces/100m^2). Additional staff will not have car parking. The TIA then extends this rate to the second supermarket, resulting in a total staff demand of 14 spaces and a customer demand of 261 spaces.

This is acceptable, provided that the public carpark is suitably time controlled to prevent all-day parking. We agree that many supermarket staff are not of driving age and have reduced parking demands.

Shops (Specialty retail)

The empirical parking rate for the shops is the same as that specified in the TMP and is accepted. The split between staff (0.5 spaces per 100m^2) and customers (1.8 spaces per 100m^2) is accepted, resulting in a peak demand for 93 spaces (20 staff and 73 customer spaces).

Food and Drink

GTA adopted the statutory requirement of 4 spaces per 100m^2 for these uses and 25% of the demand associated with staff. This equates to a total demand of 13 car spaces (3 staff and 10 customers).

We would be satisfied with adopting a rate of 2.3 spaces per 100m^2 – which is consistent with the speciality retail rate already accepted. Shops and Food and drink premises generally have similar parking characteristics (which is reflected in both use having the same statutory requirement). This results in a peak demand for 7 spaces.

Office

The TMP recommend office is provided with parking at 3.5 car spaces per 100m^2.

The TIA adopts an empirical office parking rate of 2.5 car spaces per 100m^2, which accords with Condition 66a(ii) of the current Planning Permit and this rate is accepted.

In our view, office parking should be allocated only to staff – resulting in a demand for 247 employee spaces. The number of office visitor spaces is not significant.

Childcare Centre

The empirical parking rate for the childcare centre of 0.19 spaces per childcare place is the same as that specified in the TMP and is accepted.

The split between staff and parents is not accepted, the GTA assessment determines an empirical peak demand for 28 car spaces. It is our experience that childcare centre parking at peak times is split 50/50 between staff and parents. However, during the middle of the day, most of the demand is associated with staff and the parking rate for staff is not significantly lower than the peak demand.

In our view, the 120 place childcare centre has a peak demand for 23 spaces and should be allocated 10 staff spaces and 13 parent spaces, as per Condition 66a(iii).

Gym

GTA has adopted the RTA rate of 3 spaces per 100m^2 for the gym, which equates to a peak demand of 26 car spaces. This rate was broken down into staff 4 spaces (0.5 spaces/100m^2) and customers (22 spaces).

This rate is likely to be conservative, given that the Alphington Paper Mill will ultimately accommodate 2,500 dwellings, we would expect local residents to form a significant proportion of gym patrons.

We expect the peak demand for customers to be approximately half the rate estimated by GTA or 11 car spaces.

Primary School

GTA has adopted a peak rate of 0.25 car spaces per student based on unspecified data. This data should be supplied. This was further split into 15 staff spaces (0.05 spaces per student) and 60 parent spaces (0.2 spaces per student).

We are satisfied with the provision of 15 staff spaces for 300 students, as per Condition 66a(iv) of the Planning Permit.

Community Centre

This use has been classified as a 'place of assembly' and GTA applied the statutory car parking requirement of 0.3 car spaces per person and a patron limit of 300 patrons. This equates to a demand for 90 car spaces. This was split between staff (10% or 9 spaces) and patrons (90% or 81 spaces). In the absence of more precise information as to the exact nature of the community centre, this assessment is accepted.

Service Apartments

The GTA report does not discuss the serviced apartments specifically, rather they appear to have been counted as one-bedroom dwellings in the TIA. Serviced apartments fall under the land-use category of 'Residential Hotel' and are a distinct use from 'Dwellings'. The TIA and CPMP counts the serviced apartments as one-bedroom apartments and therefore allocates car parking at a rate of 0.5 spaces/serviced apartment. This equates to 20 spaces for 40 apartments.

The rate of parking required for a serviced apartment use depends on location, with lower rates down to zero acceptable in the CBD and rates of up to 1 per apartment necessary in outer suburban and rural areas. We are satisfied with a rate of 0.5 car spaces per serviced apartment. This rate is inclusive of staff and guests.

Residential Visitors

The TMP recommended for high density residential development a parking rate of 0.12 car spaces per dwelling. The TIA adopts a lower empirical parking rate of 0.1 car spaces per dwelling.

It is recommended that the parking rate adopted under the TMP is used in a revised assessment. For the 313 dwellings proposed (i.e. excluding serviced apartments), this equates to a peak of 38 visitor spaces.

Dwellings

The TMP recommended adoption of the statutory parking rates for dwellings – 1 space per one/two-bedroom dwelling and 2 spaces per three-bedroom dwelling. This was on the basis of an examination of the 2011 ABS Census data for the statistical areas closest to the site and the extensive traffic analysis at the time supported car parking at this level. Condition 66a(i) specifically requires a minimum of 1 car space per dwelling.

The TIA has adopted significantly lower parking rates on the basis of the Clause 37.06 requirements for Victoria Street East Precinct. Specifically:

- 0.5 spaces per one-bedroom dwelling,
- 0.7 spaces per two-bedroom dwelling, and
- 1 space per three-bedroom dwelling.

No empirical data is provided to support this.

Based on the mix of dwellings proposed (43 x one-bed, 257 x two-bed and 13 x three-bed dwellings) and if car parking was provided at these rates, this would result in 215 resident car spaces or 0.69 car spaces per dwelling overall.

The 2016 ABS Census data (and 2011 data) is a poor guide to the likely resident parking demand. The sample size for high density apartments in Alphington is too small to undertake an assessment of likely resident parking demand. Surrounding suburbs generally do exhibit a proportion of households within smaller apartments that do not require vehicle, but not as low as the rates detailed above.

Consistent with our previous review of the application, a lower parking rate for the smaller one-bedroom apartments is supportable. In our experience, the rates proposed would be lower than what is typically supported in similar urban areas. In transport/access terms, it is our view Alphington shares more in common with middle suburbs, than inner suburbs such as Richmond or Collingwood. In particular, the overall rate of car parking is low and in particular providing less than 1 car space per dwelling for the two-bedroom apartments.

The lower parking rates proposed by the applicant have been supported by Council in the past in inner areas of Yarra where access to local services, Activity Centres and the CBD is high, limited alternative public parking is available and the road network is highly congested (areas such as Richmond and Collingwood). The Paper Mill site does not have the same issues with traffic congestion and notwithstanding the mix of uses proposed on the site, has lower access to nearby services, Activity Centres and the CBD compared to inner areas of Yarra. By way of example, the transit score for the subject site is 55 (classified as 'Good') and the transit score for 600 Victoria Street, Richmond is 72 ('Excellent'). In our view, the Victoria Street East precinct is not directly comparable to Alphington.

There isn't a strong traffic engineering need to reduce the level of resident parking proposed by the applicant. The original Development Plan and Traffic Assessment for Paper Mill assumed that car parking was provided at the statutory rates and the associated traffic impacts were taken into account.

Whether the lower car parking rates proposed by the applicant are supported is ultimately a strategic decision for Council to make. The proposed parking rates are low in the context of the nearby area and there isn't a strong traffic impact reason to require lower car parking rates, however they are not necessarily unacceptably low. Additionally, residents without car parking would not have alternative parking opportunities as the nearby public parking is/will be highly restricted, which supports a low parking provision.

It is noted that Council's Internal Traffic referral supported the lower residential parking rates.

It should be noted that we would not support a future amendment that reduced the supply of public or employee car parking to facilitate additional resident car parking at a later date (with a change in intensity of these other uses).

Appropriateness of the Car Parking Provision

There is a total of 557 resident/employee car spaces and 461 public/visitor car spaces nominated on the plans. This two allocations reviewed separately below.

Private Parking

The plans allocate a total of 557 resident/employee spaces. The empirical demand for employee car parking totals 342 car spaces, calculated as follows:

- Supermarkets – 14 spaces
- Shop – 20 spaces
- Food and drink premises – 3 spaces
- Office – 247 spaces
- Childcare Centre – 10 spaces
- Gym – 4 spaces
- Primary School – 15 spaces
- Community Centre – 9 spaces
- Serviced apartments – 20 spaces

Allocating staff parking at these empirical rates leaves 215 car spaces for 313 dwellings, an overall car parking rate of 0.69 car spaces per dwelling.

As previously noted, the key issue is the treatment of the serviced apartments car parking provision. Both the TIA and CPMP treat the serviced apartments as dwellings and in our view they should be treated separately as they are different land uses.

Public Car Parking

The plans allocate a total of 461 public/visitor spaces. The total demand for customer/visitor/public car spaces is 533, calculated as follows:

- Supermarkets - 261 spaces
- Shop - 73 spaces
- Food and drink premises - 4 spaces
- Office - negligible
- Childcare Centre - 13 spaces
- Gym - 3 spaces
- Primary School - 60 spaces
- Residential visitors - 38 spaces
- Community Centre – 81 spaces

Accordingly, there is an empirical shortfall of car parking, before any sharing of parking resources is taken into account. GTA provided an assessment of the sharing of car parking and found that adequate car parking is available on the site. We are generally satisfied with the assessment. Fundamentally, it is highly unlikely that all of these uses would peak at the same time, it is reasonable to assume that the overall car parking demand will reduce by at least the 16% required for the demand to be under the supply (533/461 = 16% under supply).

Electric Vehicles and Share Cars

The development plans include two 'share car' space and a large number of 'EV' (electric vehicle) spaces. Neither of these spaces are discussed in the TIA.

We support the provision of two share car vehicles. There is nothing precluding the provision of additional vehicles if demand warrants them in the future. We support their location in the public parking areas (as opposed to secure resident or employee areas) as this allows more users access to these spaces and increases their viability.

We support the number of EV car spaces proposed.

Bicycle Parking Assessment

Clause 52.34 of the Planning Scheme specifies bicycle parking requirements for new developments and changes in use. The table below sets out the statutory bicycle parking assessment.

It should be noted that the Development Plan approved for the site requires 1 bicycle space per dwelling and this has been adopted in the assessment below.

Table 4: Statutory Bicycle Parking Assessment – Clause 52.34/Development Plan

Proposed Use	Size/No.	Bicycle Parking Rate		No. of spaces required
		Employee/Resident	Customer/ Visitor	
Supermarket (shop)	5,797m²	1 per 600m² LFA, if LFA >1,000m²	1 per 500m² LFA, if LFA >1,000m²	10 employee 12 customer
Shop	4,063m²	1 per 600m² LFA, if LFA >1,000m²	1 per 500m² LFA, if LFA >1,000m²	7 employee 8 customer
Food and Drink (Retail other than specified)	337m²	1 per 300m² LFA	1 per 500m² LFA	1 employee 1 customer
Office[note 1]	9,875m²	1 per 300m² NFA, if NFA >1,000m²	1 per 1,000m² NFA, if NFA >1,000m²	33 employee 10 customer
Childcare Centre	120	None	None	-
Gymnasium (Minor sports and recreation facility)	892m² 8 employees [note 2]	1 per 4 employees	1 per 200m² NFA	2 employee 4 customer
Primary School	12 staff 300 students	1 per 20 employees	1 to each 5 pupils over year 4	1 employee 17 student[Note 3]
Community Centre (Place of Assembly)	2,282m²	1 per 1,500m² NFA	2 plus 1 per 1,500m² NFA	2 employee 4 visitor
Dwellings[note 4]	313	1 per dwelling	1 per 10 dwellings	353 resident 35 visitor
Service apartments (Residential Building, other than specified)	40	In developments of four or more storeys, 1 to each 10 lodging rooms	In developments of four or more storeys, 1 to each 10 lodging rooms	4 employee 4 visitor
Total				**468 spaces** 60 employee 313 resident 78 customer/ visitor 17 student

Notes:

1. There is an error in the GTA report for the office visitor parking rate
2. An assumption from the GTA report
3. Assuming an even split of student numbers from prep to year 6 – the GTA assessment applied the requirement to all 300 students.
4. Not including serviced apartments

The development requires 468 bicycle spaces to be provided on the site under Clause 52.34 and the Development Plan. A total of 627 bicycle spaces are provided, exceeding the statutory requirement.

The following table compares the allocation of bicycle parking to the statutory requirements.

Table 5: Review of Bicycle Parking Allocation

Bicycle Parking Type	Bicycle Parking Required	Bicycle Parking Allocated	Surplus/Shortfall
Resident	313	313	-
Service apartment guests or staff	8	4	-4
Employee	56	56	-
Visitor/Customer	78	216	+142
Students	17	38	+21
Total	472	627	+159

The TIA allocates 4 bicycle spaces for the serviced apartments, instead of 8. This is considered reasonable in the context that guests are unlikely to cycle.

End of Trip Facilities

The 56 staff bicycle spaces are served by 6 showers in two change rooms (male and female). This provision accords with Clause 52.34, which generally requires 1 shower/change for for every 10 employee spaces. This is acceptable.

Design of Bicycle Spaces

Bicycle space dimensions accord with AS2890.3-2015 and are acceptable[1].

Over 20% of bicycle spaces are floor mounted rails in accordance with Clause 2.1 of AS2890.3-2015.

We are satisfied with the design of the bicycle parking facilities.

Loading

Clause 65.01 of the Planning Scheme specifies that:

> *Before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate:*
>
> - *The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts.*

Loading provisions are summarised as follows:

- Loading for the supermarket is possible for vehicles up to 19m semi-trailers.
- Loading for the other retail tenancies is facilitated by trucks up to the 8.8m MRV.

[1] The requirements of the Australian Standard are more current then the requirements of Clause 52.34.

- Waste areas can be serviced trucks up to either the 8.8m MRV or 12.5m HRV.
- Loading for residents by the 8.8m MRV

All of these truck sizes are appropriate.

We have received the swept path diagrams presented at Appendix G of the TIA and are satisfied that they are acceptable.

Carpark Layout

The parking layout and access arrangements have been assessed under Clause 52.06-9 of the Planning Scheme and the relevant clauses of the Australian Standard (AS2890.1-2004 and AS2890.6-2009). We are generally satisfied with the carpark layouts, subject to the following comments.

The key concern is the use of the Australian Standard car spaces for the employee and resident car spaces, specifically the 2.4m width. Australian Standard dimensions have been employed on the upper private parking levels.

Design Standard 2 of Clause 52.06-9 states the following:

> *Some dimensions in Table 2 vary from those shown in the Australian Standard AS2890.1-2004 (off street). The dimensions shown in Table 2 allocate more space to aisle widths and less to marked spaces to provide improved operation and access. The dimensions in Table 2 are to be used in preference to the Australian Standard AS2890.1-2004 (off street) except for disabled spaces which must achieve Australian Standard AS2890.6-2009 (disabled).*

We do not generally support the use of 2.4m wide spaces unless they affect a small number of spaces and there are exceptional circumstances (such as only a small number of spaces being affected). A 2.4m wide space is very narrow and can be challenging for the end user as it only allows 560mm to open a car door from the B85 design car. There have been VCAT determinations in the past supporting 2.6m as the minimum width for car spaces as lesser dimensions are inconvenient for residents to use.

Carparks are commonly designed to Clause 52.06-9 in Victoria and citing structural requirements for large carpark such as this is not a sufficient reason to deviate from the Planning Scheme carpark dimensions in our view.

For the clear majority of car spaces throughout the upper parking levels, the spaces shown could easily have complied with Clause 52.06-9, in particular the 2.6m width. In most cases there are 3 x 2.4m spaces between columns, with an additional 300mm clearance to the columns. As a minimum, it is recommended that car spaces are reconfigured at 2.6m wide by removing the column clearances (while remaining at 5.4m long with a minimum 5.8m aisle), significantly improving pedestrian access to parked cars.

The majority of car spaces could also have fully complied with Clause 52.06-9, namely 2.6m wide x 4.9m long car spaces with 6.4m wide aisles, without shifting columns.

There are 19 'small car' spaces which are affected by structural walls within the 461 public car spaces (less than 2% of spaces). This is acceptable in the context of the supply of car parking, provided they are appropriately signed.

Vehicle Access Arrangements

The amended proposal modifies the vehicle access arrangements to those previously approved by separating the private and public vehicle access points to Nelmoore Lane along the southern boundary of the site by shifting the public carpark access further east.

This arrangement is an improvement on the previous arrangement as separating the access points reduces the complexity of the previous arrangement and is an improve for both pedestrians and vehicles.

Traffic Generation and Impacts

The following comments have not changed from our earlier advice on this site.

The GTA report reaches the following conclusion to its analysis on traffic generation:

> *While there is a proposed slight increase in the number of places at the childcare centre, along with the addition of a primary school and community area, the additional traffic these land uses will generate is not expected to be as high as the reduction in traffic from the reduced yields of the retail and commercial land uses that were previously assessed in the microsimulation modelling for the Development Plan.*

No figures or comparison tables were provided assessing the actual traffic volumes of the proposal against the Development Plan forecast volumes. We would have preferred that this exercise was completed to cover this issue.

It may well be correct that traffic volumes are lower than assessed and approved under the TMP, but this is not possible to determine from the information available. It is recommended that the applicant provide a table outline the traffic generation forecasts for the weekday AM and PM peak hours for the development considered under the Development Plan and what is proposed under the Planning Permit to confirm that this is the case.

Review of Green Travel Plan

We have reviewed the Green Travel Plan (GTP) and are satisfied with its contents.

Conclusions

Based on our various investigations, we are of the opinion that:

a) The proposed application has a statutory car parking requirement to provide 1,325 car spaces, plus any parking requirement by the Responsible Authority for the Gym and serviced apartments.

b) The provision of 1,018 car spaces results in a shortfall of at least 307 car spaces, plus any car parking required for the Gym or serviced apartments. Accordingly, the development requires a car parking reduction under the decision guidelines of Clause 52.06-7.

c) Serviced apartments are a distinct use from residential apartments and should have been assessed separately.

d) The proposed provision of private (staff and resident) car parking is supported based on an empirical assessment, however a decision of the adequacy of the resident parking supply is a strategic decision for Council to make (see pages 7-8 for more details).

e) The proposed provision of public car parking is generally supported based on an empirical assessment and the temporal profile of parking demand.

f) The provision and design of bicycle parking facilities is acceptable.

g) The provision of two car share vehicles and electric vehicle charging stations is supported.

h) The design of the carparking areas is generally in accordance with Clause 52.06-9, with the key exception that most car spaces on the upper parking levels are designed to AS2890.1-2004 instead of Clause 52.06-9. This is not supported as the dimensional requirements of Clause 52.06-5 take precedence over AS290.1-2004 and the justification for the variation is not accepted.

i) The separation of the vehicle access points to the rear laneway is supported.

j) The loading and waste collection arrangements proposed are acceptable.

k) Not enough detail is provided to confirm that the level of traffic generated by the proposal is consistent with (or less than) the traffic expected under the Development Plan.

l) The Green Travel Plan is satisfactory.

We trust this information meets with your requirements. If you require further information, please contact Leigh Furness at Traffix Group on 9822 2888.

Yours faithfully,

TRAFFIX GROUP PTY LTD

LEIGH FURNESS
Senior Associate

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

TraffixGroup
Traffic Engineers and Transport Planners

Road Safety Audit - Peer Review

Proposed Vehicle Access
at
626 Heidelberg Road, Alphington

Prepared For
Yarra City Council

Traffix Group Pty Ltd ABN 32 100 481 570
Address: Suite 8, 431 Burke Road, Glen Iris Victoria 3146
Telephone: 03 9822 2888 Website: www.traffixgroup.com.au
Email: admin@traffixgroup.com.au

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit Peer Review

Proposed Vehicle Access
at
626 Heidelberg Road, Alphington

Document Control

Issue No.	Type	Date	Prepared By	Approved By
A	Report	5/03/2019	B. Hodges	W. de Waard

Our Reference: G24706R-04A

COPYRIGHT: The ideas and material contained in this document are the property of Traffix Group (Traffix Group Pty Ltd – ABN 32 100 481 570, Traffix Survey Pty Ltd – ABN 57 120 461 510, Traffix Design Pty Ltd – ABN 41 060 899 443). Use or copying of this document in whole or in part without the written permission of Traffix Group constitutes an infringement of copyright.

LIMITATION: This report has been prepared on behalf of and for the exclusive use of Traffix Group's client, and is subject to and issued in connection with the provisions of the agreement between Traffix Group and its client. Traffix Group accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Table of Contents

1 Introduction 1
2 Previous Road Safety Audit 1
3 Scope of RSA Peer Review 2
4 Site Details 3
4.1 Road Network 3
5 Review of RSA Report Findings 5
6 Review of Project Manager Response to RSA Findings 5
7 Additional Safety Issues Identified 5
8 Summary 5

List of Figures

Figure 1: Proposed Access Arrangements 1
Figure 2: Locality Plan 4
Figure 3: Aerial Photograph 4

List of Tables

Table 1: Site Inspection Details 2
Table 2: Review of Previous RSA Report Issues / Suggestions / Status 7
Table 3: Review of Project Manager Response to RSA Findings 12

List of Appendices

Appendix A: Photographs
Appendix B: Road Safety Audits Pty Ltd – Previous RSA Report

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

1 Introduction

Traffix Group Pty Ltd has been engaged by Yarra City Council to conduct a Peer Review of a previous Road Safety Audit prepared for the proposed vehicle access to 626 Heidelberg Road, Alphington.

The following report reviews the findings of the previous Road Safety Audit and the responses provided by the project manager.

2 Previous Road Safety Audit

RSA Pty Ltd were engaged by GTA Consultants to prepare a Functional Design Stage Road Safety Audit of the proposed Heidelberg Road access to 626 Heidelberg Road, Alphington. The RSA Pty Ltd Reference Number is RSA-05937.

The proposal is for the construction of a left in / left out access point to Heidelberg Road, including a left turn deceleration lane. Internally, the proposed accessway splits into two (2) sections, one for vehicles to access a ramp to the internal carparking areas and one for trucks to the internal loading areas.

A shared path is provided along the Heidelberg Road frontage, with a raised crossing provided over the proposed access point.

A copy of the plan subject to the previous Road Safety Audit is provided in Figure 1 below.

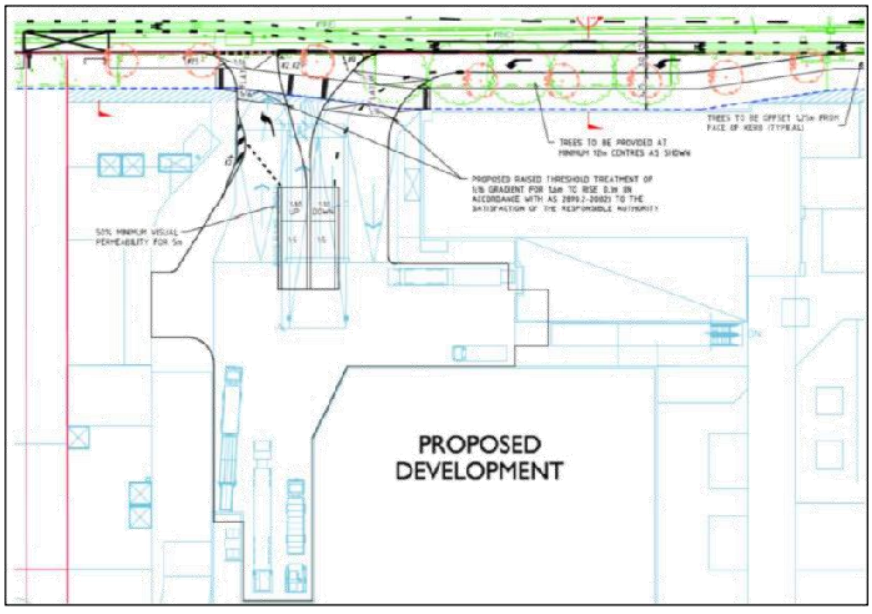


Figure 1: Proposed Access Arrangements

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

3 Scope of RSA Peer Review

Traffix Group has been engaged by Yarra City Council to undertake a peer review of the previous Road Safety Audit prepared for 626 Heidelberg Road, Alphington. The scope of our engagement includes the following:

- Review and commentary on the issues, ranking and suggested improvements identified in the previous Road Safety Audit,
- Review and commentary on the responses provided to the Road Safety report by GTA Consultants, and
- Identification of any additional safety items associated with the audited design.

Road Safety Audits are undertaken in accordance with the AustRoads Guide to Road Safety: Part 6A (2019). Specifically, we note that Road Safety Audits are undertaken on an exceptions basis, where only items that are considered safety issues are identified. We note that the auditors associated with the previous Road Safety Audit may have contemplated a number of matters that were ultimately not deemed safety issues (as hence were not detailed in the Road Safety Audit report). On this basis, we are not aware of the full considerations of the previous Road Safety Audit and can only comment on the safety issues reported.

Furthermore, the previous Road Safety Audit report notes the following:

> *'A Road Safety Audit is fundamentally a subject qualitative process highly influenced by the experience and views of the individual team members'*

We agree with this view and note that different teams can form different views regarding the same project.

The peer review of the previous Road Safety Audit was carried out by:

- Brent Hodges, B.E. (Civil) Hons.
  Associate, Traffix Group Pty Ltd (Senior Road Safety Auditor)
- Will de Waard, B.E. (Civil) Hons., M.I.E.Aust., M.V.P.E.L.A.
  Director, Traffix Group Pty Ltd (Senior Road Safety Auditor)

The site inspections were undertaken as described in Table 1 below.

Table 1: Site Inspection Details

Activity	Day Inspection
Day	Friday
Date	1st March 2019
Time	6:45am – 7:30pm
Auditor/s	B. Hodges

Activity	Day Inspection
Weather Conditions (Clear, Raining, Snowing, Fog, Dust, Smoke, Unknown or Not Applicable)	Clear
Light Conditions (Light, Dark Dusk Dawn, Light and Dark, Unknown or Not Applicable)	Light
Road Surface Conditions (Dry, Wet, Muddy, Snowy, Icy, Unknown or Not Applicable)	Dry

4 Site Details

4.1 Road Network

Heidelberg Road is an arterial road that extends between Queens Parade, Clifton Hill in the west to Lower Heidelberg Road / Upper Heidelberg Road, Ivanhoe in the east. In the vicinity of the subject site, Heidelberg Road Provides for a single carriageway with two lanes in each direction. Parking is not allowed on either side of Heidelberg Road. An on-road bicycle lane is provided on both sides of the road.

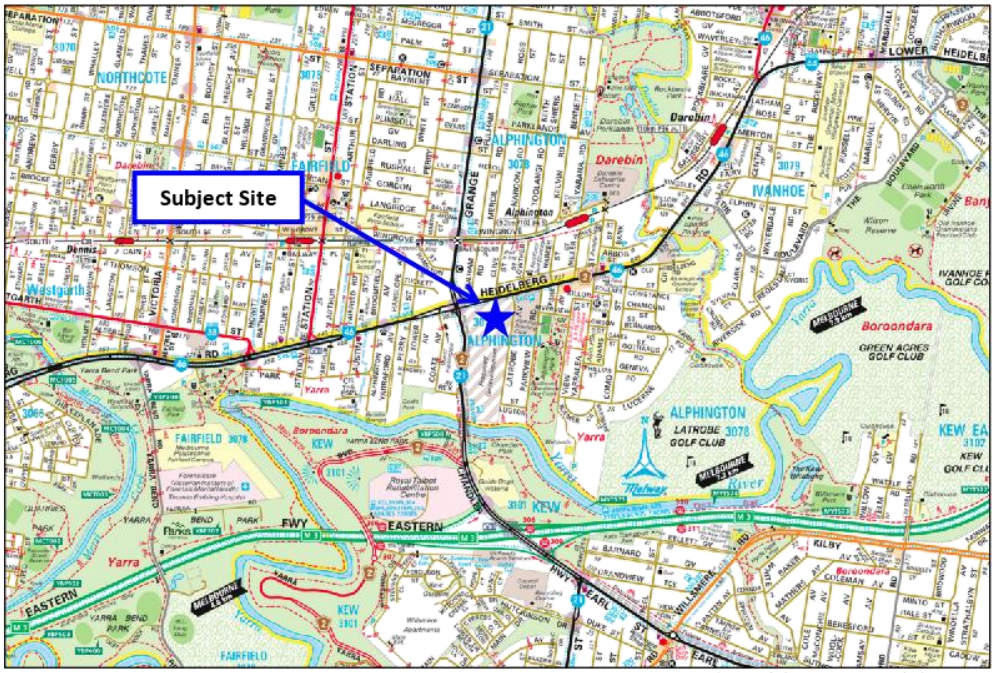
A posted speed limit of 60km/h applies to Heidelberg Road in the vicinity of the subject site.

Chandler Highway is an arterial road that extends between Heidelberg Road in the north and Earl Street in the south. In the vicinity of the subject site, Chandler Highway is currently being redeveloped to provide for a dual carriageway.

A temporary posted speed limit of 40km/h applies to Chandler Highway in the vicinity of the subject site associated with roadworks.

A locality plan and aerial photograph illustrating the site location is presented at Figure 1 and Figure 3, while photographs of the existing conditions are provided at Appendix A.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)



Reproduced with Permission of Melway Publishing Pty Ltd

Figure 2: Locality Plan

Source: Nearmap

Figure 3: Aerial Photograph

5 Review of RSA Report Findings

Table 2 reviews the safety issues identified in the previous Road Safety Audit report along with the suggested improvements and 'status' of each issue.

The final columns in the table provides our commentary / review of each item and provides a agree/partial/disagree summary. Our commentary is provided in 'blue'.

6 Review of Project Manager Response to RSA Findings

Table 3 reviews the responses provided by the project manager (GTA Consultants) to the audit findings from the previous Road Safety Audit report. Our commentary is provided in 'blue'.

7 Additional Safety Issues Identified

In accordance with the general principles of a Road Safety Audit, we have separately reviewed the proposed layout plans with a view to identifying any additional safety issues that were not identified by the previous RSA report.

We have formed the view that there are no additional safety issues that were not identified by the previous Road Safety Audit report.

8 Summary

We have undertaken a peer review of the previous Road Safety Audit prepared by Road Safety Audits Pty Ltd for the proposed vehicle access at 626 Heidelberg Road, Alphington. The audit peer review has completed the following:

- Reviewed the safety issues, suggestions and status identified in the previous Road Safety Audit,
- Reviewed the project managers response to the previous Road Safety Audit, and
- Considered any additional safety items not identified in the previous Road Safety Audit,

Our key recommendations for consideration by Council are as follows:

- The issue of shared path priority is still unresolved. We are of the view that this issue has a 'high' risk rating and the shared path priority should be clear to drivers, riders and pedestrians.
- A number of changes to the design are proposed in the GTA Consultants Road Safety Audit response, however, these haven't been included on the plans provided. Amended plans should be sought from the proponent showing their proposed modifications including:
  - Signage, linemarking and pavement changes to highlight the vehicle / truck travel paths,
  - Gates across the truck access point to further delineate travel paths,
  - Realignment of the warning TGSIs on the shared path crossing,
  - An energy absorbing bollard in front of the basement ramp wall

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Name	Signature	Date
Brent Hodges Senior Road Safety Auditor		5/03/2019
Will de Waard Senior Road Safety Auditor		5/03/2019

Reference Documents Used During the Audit:

a) Australian Standard AS 1742.2-2009, Manual of Uniform Traffic Control Devices Part 2, Traffic Control Devices for General Use, March 2009.

b) AustRoads, Guide to Road Design, Part 3: Geometric Design, September 2016.

c) AustRoads, Guide to Road Design, Part 4A: Unsignalised and Signalised Intersections, June 2017.

d) AustRoads, Guide to Road Safety, Part 6A: Implementing Road Safety Audit, February 2019.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Table 2: Review of Previous RSA Report Issues / Suggestions / Status

	Road Safety Audits Pty – Identified Safety Issues	Traffix Group Review	
		Agree/ Disagree	Comments
	Issue: **Navigation** *'It is understood that the loading area will be distinguished from the car park access road with signs and line-marking. If drivers may be confused here there is potential for sudden stops and rear-end crashes.* *The Westfield Doncaster example shown in Figure 3 could be easily misunderstood due for faded pavement markings and gantry signage for the carpark only.'*	Agree	If the car and truck access points are not clearly signed there is potential for rear end crashes as drivers make last minute decisions.
	Suggestion: *'Ensure the loading bay area is clearly distinguished from the road – preferably by a different colour paving.'*	Agree	Agree that the loading bay should be clearly distinguished from the carpark access. However, there are multiple signage, linemarking or pavement options that could be applied (it doesn't necessarily have to be limited to a different coloured paving).
1	Status: *'Important'*	Agree	Road Safety Audits provide a 'basic' ranking system whereby items are classified as Urgent / Important / Minor. Traffix Group adopts a different ranking system that applies numerical ratings to likelihood and severity to generate classifications of Low, Medium, High and Intolerable. Our ranking for this item is as follows: Probability: Probable Severity: Limited Risk Rating: Medium We are of the view that our ranking is generally similar to the RSA ranking provided.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

	Road Safety Audits Pty – Identified Safety Issues	Traffix Group Review	
		Agree/ Disagree	Comments
2	Issue: **Cyclists** *'With the level shared path threshold treatments, a concern is raised about the potential for cyclists on the shared path to approach at speeds higher than drivers expect or can easily give way to.* *Note: Based on Victorian Road Rules, SUP users have the right of way over entering vehicles (side road or driveway), and sometimes over exiting vehicles (driveway but not side road).'*	Agree	The proposed plans do not clearly highlight the priority at the raised shared path crossing point. This could lead to confusion between riders, pedestrians and drivers to who has right of way.
	Suggestion: • *'Check sight distance (including ensuring trees chosen will not be bushy below 2m).* • *Investigate measures to slow cyclists and to alert them.* • *As the Road Rules are not well understood on this point, consider actively providing priority to SUP users with signs and markings.'*	Agree	The plans should clearly show who has priority at the shared path crossing (bicycles / pedestrians or vehicles). The selection of appropriate vegetation around the crossing is also critical to maintain sight lines.
	Status: 'Important'	Partial	Our ranking for this item is as follows: Probability: Occasional Severity: Serious Risk Rating: **High** We are of the view that our ranking is generally indicating that the issue should be given greater weighting than the 'important' status applied by the previous RSA.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

	Road Safety Audits Pty – Identified Safety Issues	Traffix Group Review	
		Agree/ Disagree	Comments
3	Issue: **TGSIs** *'1. Some of the TGSIs are shown perpendicular to approach paths rather than crossing alignment (red circles).* *2. TGSIs can be skidding hazards for cyclists.* *3. Some projects get constructed with white TGSIs on light grey paths.'*	Agree	The warning TGSIs should align with the path of travel. The currently arrangement would direct vision impaired pedestrians onto the ramp associated with the raised crossing.
	Suggestion: • *'Realign these TGSIs.* • *Specify TGSIs with similar friction characteristics to the surrounding path.* • *Ensure good contrast is provided.'*	Agree	The TGSIs should be updated to reflect the relevant Australian Standard.
	Status: No ranking provided	-	The previous Road Safety Audit doesn't provide a risk ranking for this item. Our ranking for this item is as follows: Probability: Improbable Severity: Minor Risk Rating: **Low**

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

	Road Safety Audits Pty – Identified Safety Issues	Traffix Group Review	
		Agree/ Disagree	Comments
	Issue: **Wall Hazard** *If a wall is present between entering trucks and cars, it would be a roadside hazard (although speeds will be low).*	Agree	Whilst it is agreed that the wall does present a blunt end adjacent to the possible travel paths, the vehicle speeds within the site would be expected to be very low (i.e. carpark speeds).
	Suggestion: *Consider incorporating a shock absorbing bollard as shown.*	Agree	An energy absorbing bollard would address the issue of the wall hazard. Furthermore, improved delineation as described in Item 1 would assist with alignment of vehicles into the carpark access.
4	Status: No ranking provided	-	The previous Road Safety Audit doesn't provide a risk ranking for this item. Our ranking for this item is as follows: Probability: Improbable Severity: Minor Risk Rating: **Low** Whilst no ranking has been provided, we are of the view that this item has a low risk rating.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

	Road Safety Audits Pty – Identified Safety Issues	Traffix Group Review	
		Agree/ Disagree	Comments
5	Issue: **Sight Lines Between Vehicles Approaching Heidelberg Road** *The wall between trucks and cars will obstruct sightlines between drivers of vehicles with conflicting movements. While a give way line is shown, truck drivers can only give way if they can see the vehicles they have to give way to.*	Agree	Whilst the plans do reference 50% visual permeability, it is agreed that further detail regarding the wall openings should be provided at future design stages.
	Suggestion: *50% visual permeability is specified. Ensure this visual permeability is relevant to the angles of viewing required.*	Agree	The plans already specify 50% visual permeability.
	Status: No ranking provided	Partial	The previous Road Safety Audit doesn't provide a risk ranking for this item. Our ranking for this item is as follows: Probability: Occasional Severity: Minor Risk Rating: **Medium** Given the medium ranking, this item should be given the appropriate weighting.
6	Issue: **Swept Paths** *'Swept path diagrams were not provided.'*	Partial	Swept paths were provided in the updated GTA Consultants Traffic Impact Assessment. These swept paths show that the loading area is adequately sized to cater for the design vehicles. We would not expect any significant safety issues associated with the swept paths.
	Suggestion: *'Ensure swept path checks are undertaken for all expected vehicles.'*	Partial	
	Status: No ranking provided	Agree	No specific safety issue has been identified and therefore it is appropriate to not provide a risk ranking.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Table 3: Review of Project Manager Response to RSA Findings

	RSA Issue	Project Manager Response (GTA Consultants)		Traffix Group Review
		Accept / Reject	Comments / Status	
1	Issue: ***Navigation*** *'It is understood that the loading area will be distinguished from the car park access road with signs and line-marking. Drivers may be confused here there is potential for sudden stops and rear-end crashes.* *The Westfield Doncaster example shown in Figure 3 could be easily misunderstood due for faded pavement markings and gantry signage for the carpark only.'* Suggestion: *'Ensure the loading bay area is clearly distinguished from the road – preferably by a different colour paving.'*	*Accept*	*It is expected that different coloured paving will be provided to differentiate the public car park to the loading area.* *It should be noted that the public ramp has been sufficiently set back from Heidelberg Road to allow motorists time to enter the car park.* *Additionally, signage will clearly identify the entrance to the car park, with the loading area to be gated (both entry and exit) for loading vehicles only.*	The proposed actions address the proposed safety concerns, in particular the usage of gates for the entry and exit of the loading area will clearly define the access path for general vehicles. However, the architectural plans submitted to Council do not show any of the detail proposed to address this item (signs, pavement treatment, linemarking or gates). **Recommendation:** Seek plans from the proponent showing the suggested improvements.
2	Issue: ***Cyclists*** *'With the level shared path threshold treatments, a concern is raised about the potential for cyclists on the shared path to approach at speeds higher than drivers expect or can easily give way to.* *Note: Based on Victorian Road Rules, SUP users have the right of way over entering* *vehicles (side road or driveway), and sometimes over exiting vehicles (driveway but not side road).'* Suggestion: • *'Check sight distance (including ensuring trees chosen will not be bushy below 2m).* • *Investigate measures to slow cyclists and to alert them.* • *As the Road Rules are not well understood on this point, consider actively providing priority to SUP users with signs and markings.'*	*Reject*	*Along the site frontage on Heidelberg Road, both an on-road bicycle lane and a shared path are proposed to be provided in accordance with the Development Plan for the overall site.* *As such, it is expected that competent cyclists (travelling at speed) will chose to utilise the on-road bicycle lane, with less experienced users expected to utilise the shared path at slower speeds.* *Notwithstanding the above, the canopy of the street trees are proposed to be greater than 2m to aid sight distance for motorists.*	The response addresses the sight lines issues associated with the proposed landscaping, with trees with a higher canopy than 2m to be utilised. However, the response does not address the issue of shared path priority. The discussion simply indicates that less experienced riders would be using the path. We are of the view that it is therefore even more important that the priority is clear to drivers and riders. **Recommendation:** Ask the proponent to clearly define the shared path priority.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

RSA Issue		Project Manager Response (GTA Consultants)		Traffix Group Review
		Accept / Reject	Comments / Status	
3	Issue: ***TGSIs*** *'1. Some of the TGSIs are shown perpendicular to approach paths rather than crossing alignment (red circles).* *2. TGSIs can be skidding hazards for cyclists.* *3. Some projects get constructed with white TGSIs on light grey paths.'* Suggestion: • *'Realign these TGSIs.* • *Specify TGSIs with similar friction characteristics to the surrounding path.* • *Ensure good contrast is provided.'*	*Accept*	*The functional layout plan can be updated to include a realignment of the TGSI's.*	The project manager has accepted the suggestion to realign the pram ramps. However, both the architectural plans and functional layout provided in the GTA report do not show the pram ramps being realigned. **Recommendation:** Seek plans from the proponent showing the suggested improvements.
4	Issue: ***Wall Hazard*** *If a wall is present between entering trucks and cars, it would be a roadside hazard (although speeds will be low).* Suggestion: *Consider incorporating a shock absorbing bollard as shown.*	*Accept*	*The functional layout plan can be updated to include a bollard as suggested.*	The project manager has accepted the suggestion to include a bollard in front of the wall. However, bot the architectural plans and functional layout provided in the GTA report do not show the bollard included. **Recommendation:** Seek plans from the proponent showing the suggested improvements.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

RSA Issue		Project Manager Response (GTA Consultants)		Traffix Group Review
		Accept / Reject	Comments / Status	
5	*Issue:* ***Sight Lines Between Vehicles Approaching Heidelberg Road*** *The wall between trucks and cars will obstruct sightlines between drivers of vehicles with conflicting movements. While a give way line is shown, truck drivers can only give way if they can see the vehicles they have to give way to.* *Suggestion:* *50% visual permeability is specified. Ensure this visual permeability is relevant to the angles of viewing required.*	*Accept*	*The wall between trucks and cars will be 50% permeable for exiting cars/trucks at this location.*	The plans provided as part of the previous RSA included text for the wall to be 50% clear of visual obstructions. This action would address the identified safety issue. The plans provided as part of the planning permit submission do not show this note. It is important that this design detail is not lost at the detailed design stage. **Recommendation:** Ensure that the note for 50% permeability is provided
6	*Issue:* ***Swept Paths*** *'Swept path diagrams were not provided.'* *Suggestion:* *'Ensure swept path checks are undertaken for all expected vehicles.'*	*Accept*	*Swept paths for all relevant design vehicles have been undertaken*	The GTA Consultants Traffic Impact Assessment report included swept path diagrams for trucks accessing the loading area.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

Appendix A: Photographs

G24706R-04A

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

Photograph 1:

Heidelberg Road – East of Chandler Highway

View to West

Photograph 2:

Heidelberg Road – Existing Bus Stop

View to West

Photograph 3:

Heidelberg Road – East of Chandler Highway

View to West

Photograph 4:

Heidelberg Road opposite Clive Street

View to West

G24706R-04A

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

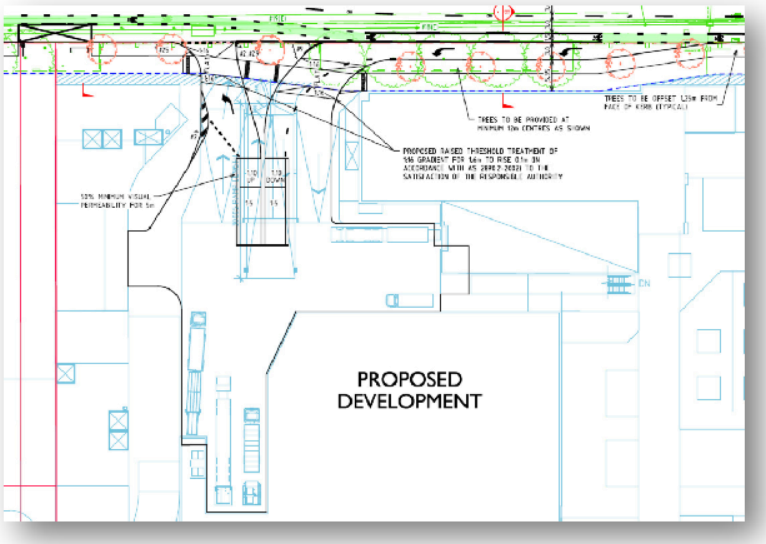
Road Safety Audit - Peer Review
626 Heidelberg Road, Alphington: Proposed Vehicle Access

Appendix B:
Road Safety Audits Pty Ltd – Previous RSA Report

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

22 YEARS OF EXCELLENCE

Road Safety Audit Report



Location: **Heidelberg Road**

Project: **Intersection modification**

Stage: **Functional Design**

Clients: **GTA Consultants**

Report Issue Date: 25/07/2017

Road Safety Audits
8/79 Manningham Rd
Bulleen, Victoria 3105
ABN 86 216 469 930
www.rsaudits.com.au

Contact
Bob Cumming
(03) 9852 4700
bobc@rsaudits.com.au

PRACTICAL
INDEPENDENT

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Road Safety Audit Report

Heidelberg Road

GTA Consultants

RSA Reference: RSA-05937

Document Record

Issue	Delivered	Senior Auditors	Primary Contact	Notes
A	25/07/2017	Bob Cumming Peter Harris	Bob Cumming	Nil

Road Safety Audits
rsaudits.com.au
© Road Safety Audits Pty Ltd 2016

The information contained in this document is confidential and intended solely for the client for the purpose for which it has been prepared. Use of or copying this document in whole or part without the written permission of Road Safety Audits P/L constitutes and infringement of copyright. The intellectual property contained in this document remains the property of Road Safety Audits P/L.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

CONTENTS

Contents **3**
Introduction **4**
Road safety audit: overview 4
Road safety audit team 4
Conduct of the site inspection 4
Scope / Audit Focus **5**
Project **5**
Description 5
Issues Table **7**
Concluding Statement **10**
Responding to the Road Safety Audit **11**
References **11**

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

INTRODUCTION

This is a road safety audit of the proposed modifications to the previously approved left-in / left-out intersection on the south side of Heidelberg Road between Latrobe Avenue and Chandler Highway. It is undertaken by Road Safety Audits P/L, commissioned by GTA Consultants. It has been carried out in accordance with "Austroads Guide to Road Safety, Part 6: Road Safety Audit 2009" guidelines.

ROAD SAFETY AUDIT: OVERVIEW

A road safety audit is an independent examination of a design or condition to evaluate potential safety issues for all road user types. It is typically done by a team of suitably qualified people and often provides suggestions for consideration by the designer / client / project team.

A road safety audit is fundamentally a subjective qualitative process highly influenced by the experience and views of the individual team members. RSA P/L's quality assurance process utilises customised checklists designed for niche areas in traffic engineering/road design (e.g. channelized intersections, signalised intersections, safety barriers), in conjunction with a four-layer audit process: 1. on-site evaluation; 2. media and data capture and review; 3. specialist auditor input; and 4. secondary blinded reviews.

The purpose of a road safety audit is to raise potential safety issues, not to check compliance with guidelines and standards.

ROAD SAFETY AUDIT TEAM

The road safety audit was carried out by Bob Cumming, Chris Keramidas and Peter Harris. Bob Cumming, Chris Keramidas and Peter Harris carry out road safety audits full-time in various states of Australia and have extensive experience in all stages of road safety audits leading or participating in several hundred audits and risk assessments every year.

Road Safety Audits Pty Ltd is accredited for the conduct of road safety audits under VicRoads' professional services register. Bob Cumming and Peter Harris are accredited Senior Road Safety Auditors under VicRoads pre-qualified senior road safety audit scheme.

CONDUCT OF THE SITE INSPECTION

A site visit was carried out as part of previous road safety audits here by RSA P/L and the subject area is well known to the audit team.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

SCOPE / AUDIT FOCUS

The scope of the audit is limited to the new proposed intersection and does not encompass turning from the access road to and from the car park proper or the layout of the loading bay.

PROJECT

DESCRIPTION

RSA P/L previously undertook a road safety audit of a different design for this intersection as shown in Figure 1 (RSA-04482 dated 07/06/2016).

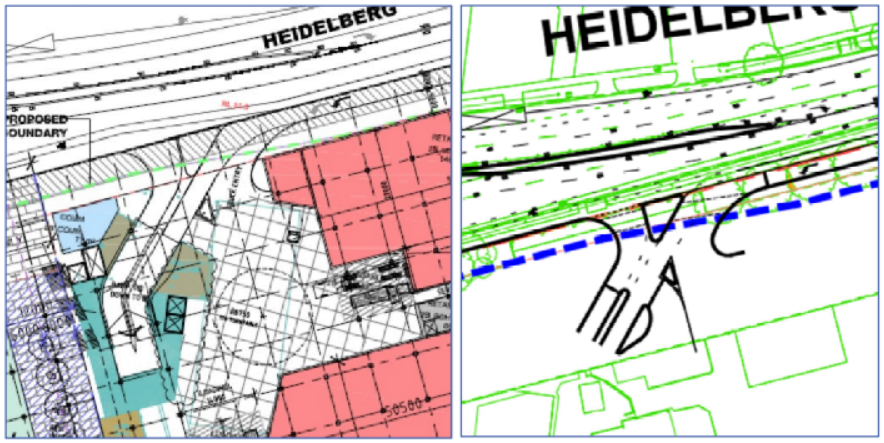


Figure 1: Previous design from 2016

Since that time there have been a number of amendments that have occurred to this frontage, summarised as follows:

- The removal of the proposed pedestrian operated signals at this access due to an amended internal function that does not require loading trucks to cross the entry path for the public vehicles that the access. The design now requires trucks to circulate around the public access ramp, which has been set back from the Heidelberg Road as far as practical.
- The inclusion of trees along the Heidelberg Road frontage, noting that the updated VicRoads tree planting policy avoids the need for the use of barrier systems.
- VicRoads have granted in-principle approval to the functional layout and streetscape design comprising trees at 12m centres.

The revised plan is shown in Figure 2.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

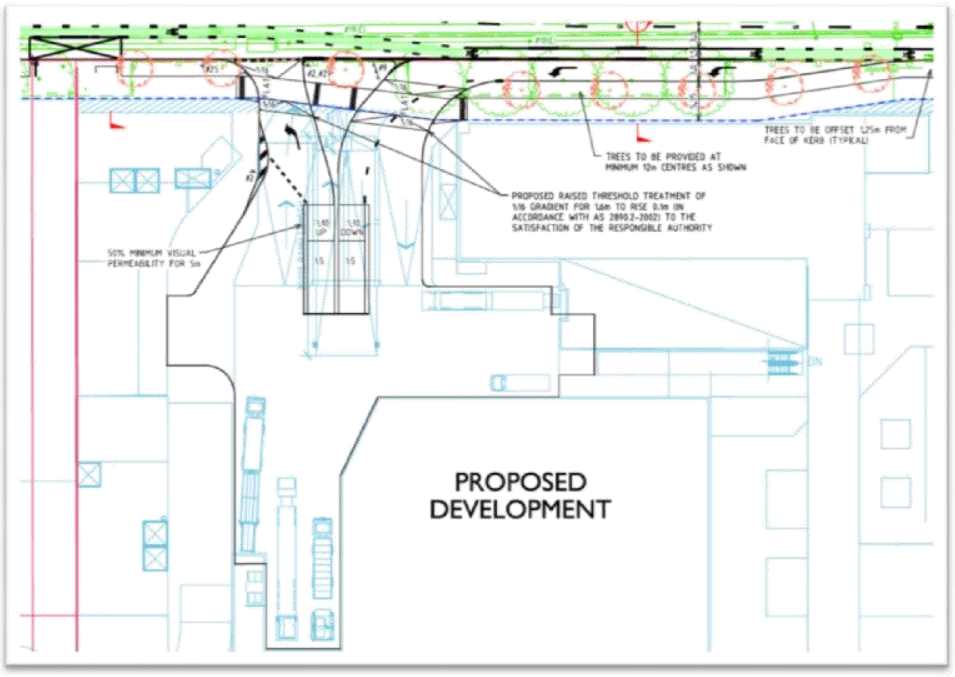


Figure 2: Design which is the subject of this audit

The layout will function somewhat similarly (in principle) to the arrangement for Westfield Doncaster at the Doncaster Road/Frederick Street (Figure 3).

Figure 3: Westfield Doncaster - Doncaster Road/Frederick Street public car park / loading dock entry

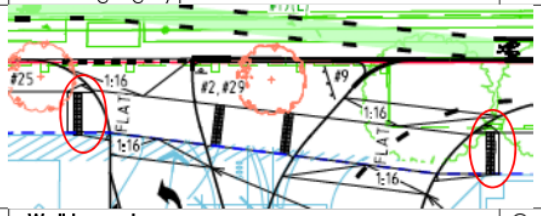
The left-in left-out intersection will not be signalised and will incorporate raised threshold treatments with a level grade for shared path users and 1:16 ramps for road traffic.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

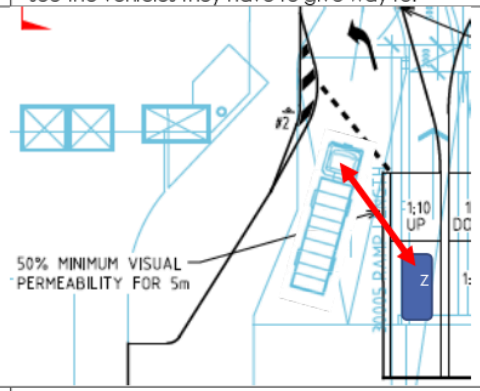
ISSUES TABLE

Point No.	Issue	Suggestion	Response	
			Accept / Reject	Comment / Status
1.	**Navigation** It is understood that the loading area will be distinguished from the car park access road with signs and line-marking. If drivers may be confused here there is potential for sudden stops and rear-end crashes. The Westfield Doncaster example shown in Figure 3 could be easily misunderstood due for faded pavement markings and gantry signage for the carpark only.	Ensure the loading bay area is clearly distinguished from the road – preferably by a different colour paving. **Status**: Compliance / NA / Urgent / **Important** / Minor	Accept	It is expected that different coloured paving will be provided to differentiate the public car park to the loading area. It should be noted that the public ramp has been sufficiently set back from Heidelberg Road to allow motorists time to enter the car park. Additionally, signage will clearly identify the entrance to the car park, with the loading area to be gated (both entry and exit) for loading vehicles only.
2.	**Cyclists** With the level shared path threshold treatments, a concern is raised about the potential for cyclists on the shared path to approach at speeds higher than drivers expect or can easily give way to. Note: Based on Victorian Road Rules, SUP users have the right of way over entering vehicles (side road or driveway), and sometimes over exiting vehicles (driveway but not side road).	• Check sight distance (including ensuring trees chosen will not be bushy below 2m). • Investigate measures to slow cyclists and to alert them. • As the Road Rules are not well understood on this point, consider actively providing priority to SUP users with signs and markings. **Status**: Compliance / NA / Urgent / **Important** / Minor	Reject	Along the site frontage on Heidelberg Road, both an on-road bicycle lane and a shared path are proposed to be provided in accordance with the Development Plan for the overall site. As such, it is expected that competent cyclists (travelling at speed) will chose to utilise the on-road bicycle lane, with less-experienced users expected to utilise the shared path at slower speeds. Notwithstanding the above, the canopy of the street trees are proposed to be greater than 2m to aid sight distance for motorists.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Point No.	Issue	Suggestion	Response	
			Accept / Reject	Comment / Status
3.	**TGSIs** 1. Some of the TGSIs are shown perpendicular to approach paths rather than crossing alignment (red circles). 2. TGSIs can be skidding hazards for cyclists. 3. Some projects get constructed with white TGSIs on light grey paths.	1. Realign these TGSIs. 2. Specify TGSIs with similar friction characteristics to the surrounding path. 3. Ensure good contrast is provided.	Accept	The functional layout plan can be updated to include a realignment of the TGSI's.
				
4.	**Wall hazard** If a wall is present between entering trucks and cars, it would be a roadside hazard (although speeds will be low). 	Consider incorporating a shock absorbing bollard as shown.	Accept	The functional layout plan can be updated to include the bollard as suggested.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

Point No.	Issue	Suggestion	Response	
			Accept / Reject	Comment / Status
5.	**Sightlines between vehicles approaching Heidelberg Rd** The wall between trucks and cars will obstruct sightlines between drivers of vehicles with conflicting movements. While a give way line is shown, truck drivers can only give way if they can see the vehicles they have to give way to.	50% visual permeability is specified. Ensure this visual permeability is relevant to the angles of viewing required.	Accept	The wall between trucks and cars will be 50% permeable for exiting cars/trucks at this location.
				
6.	**Swept paths** Swept path drawings were not provided.	Ensure swept path checks are undertaken for all expected vehicles.	Accept	Swept paths for all relevant design vehicles in this area have been undertaken.

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

CONCLUDING STATEMENT

The audit has attempted to balance the safety needs of all road users within the site/design constraints. As per Austroads guidelines, the suggestions provided have attempted to be realistic/feasible and commensurate with the actual risk posed. Although it attempts to raise all potential safety risks, this is generally not practicable due to a limited knowledge of the site and the design. Agreement to the issues and/or suggestions does not necessarily eliminate risk.

A road safety audit is fundamentally a subjective qualitative process highly influenced by the experience and views of the individual team members. It is expected that the project team has competence to incorporate any audit findings into the broader design-risk decision process and to ask the audit team further questions where necessary.

Peter Harris

25/07/2017

Senior Road Safety Auditor
CPEng, RPEQ, NER, BE (Civil), BB (Bus. Admin)

Bob Cumming

25/07/2017

Senior Road Safety Auditor
BE (Civil)

Attachment 16 - External Traffic Engineering Peer Review of Road Safety Audit (Traffix Group)

RESPONDING TO THE ROAD SAFETY AUDIT

Although the client receiving the report does not have to agree to the audit findings/suggestions, the issues and associated risks should be carefully considered. A written response should be made to all of the audit findings raised, then signed off by the responsible person from the project team.

RSA P/L does not change the audit findings or sign off on the project's responses. However, if a finalisation meeting has not been commissioned by the client, the client is **encouraged to provide the responses to RSA P/L to check that each audit point has been fully understood**. Also, the responses can be used by RSA P/L for their knowledge and possible use on future audits for this project.

REFERENCES

Relevant guidelines, standards, laws, and policy documents

Road Safety Audit

- Austroads Guide to Road Safety – Road Safety Audit - 2009

Traffic Engineering

- Austroads Guide to Road Design (AGRD)
- Austroads Guide to Traffic Management (AGTM)
- AS 1742 Manual of Uniform Traffic Control Devices, including:
  - Part 1 General Introduction and Index of Signs
  - Part 2 Traffic Control Devices for General Use
- VicRoads Supplement to Austroads Guides and AS1742

Pedestrian Facilities

- VicRoads TEM1 Ch.4 Pedestrian Facilities
- AS 1742.10 Manual of Uniform Traffic Control Devices - Part 10 Pedestrian Control and Protection
- Austroads AGRD Part 6A Pedestrian and Cyclist Paths

Parking

- VicRoads TEM1 Ch.9 Parking
- AS/NZS 2890 Parking Facilities
- AS 1742.11 Manual of Uniform Traffic Control Devices - Part 11 Parking Controls

Attachment 17 - Acoustic Engineers (SLR) Referral Comments

29 March 2019

640.10090.05320 626 Heidelberg Rd Alphington Lot B 20190328A.docx

City of Yarra
PO Box 168
RICHMOND VIC 3121

Attention: Amy Hodgen

Dear Amy

626 Heidelberg Road, Alphington, Lot 2B
Development Application Acoustic Review
PLN 17/0703

SLR Consulting Pty Ltd (SLR) has been retained by the City of Yarra to provide a review of the revised acoustic assessment report for the mixed use development proposed for 626 Heidelberg Road, Alphington, Lot 2B.

Details of the report are as follows:

- Title: The Village Alphington – Mixed Use Development
- Reference: MC300-01F02
- Date: 21 November 2018
- Prepared for: Alpha APM
- Prepared by: Norman Disney Young Pty Ltd

The report was submitted to address Condition 11 of the Yarra City Council planning permit for the project, which pertains to acoustics. Condition 11 is reproduced below.

Acoustic Report

11. Before the development commences, an amended Acoustic Report to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the amended Acoustic Report will be endorsed and will form part of this permit. The amended Acoustic Report must be generally in accordance with the Acoustic Report prepared by Norman Disney Young Pty Ltd and dated 21 February 2018, but modified to include (or show, or address):
    (a) Apartments in close proximity to the netball court to achieve the following targets:
        (i) 35dBA Leq and 50dBA Lmax in habitable rooms during the day and evening and
        (ii) 30dBA Leq and 45 dBA Lmax in bedrooms at night.
    (b) Noise from ball bouncing within the sport courts and measure to address potential impacts on nearby residential uses and the community space below the court;
    (c) Consider structure borne sound from the indoor recreational facility on surrounding commercial premises;
    (d) Lmax targets met for apartments above the loading bay entrances in the event of evening and night time deliveries and/or recommendations for restricted delivery and collection times;
    (e) Targets of 40dBA, Leq16h in living rooms and 35dBA Leq8hr in bedrooms met for traffic noise along Heidelberg Road; and
    (f) Provide adequate acoustic treatment to the community spaces to enable live music/performance and protect the abutting residences.

SLR Consulting Australia Pty Ltd Suite 2, 2 Domville Avenue Hawthorn VIC 3122 Australia
T: +61 3 9249 9400 E: melbourne@slrconsulting.com
www.slrconsulting.com ABN 29 001 584 612

SLR were also provided with a copy of the NDY letter 'RFI 6 Acoustics – Roller Shutter Material', dated 14 January 2019.

SLR reviewed an earlier version of the report. Subsequent to that review there have been changes to the development plans, which include:

- The relocation and full enclosure of the basketball court. An open air basketball court was previously located on the Level 1 roof of the community centre, and was overlooked by apartments on the Levels 2 and above.
- Inclusion of a large outdoor area for students, on Level 4 of the school buildng. The outdoor area will be overlooked by apartments on the upper levels of the 'Sculptural Building' (this building has apartments on Levels 3 to 7). This outdoor area is closer to the apartments than the one shown in the previous drawings.
- Inclusion of an additional external mechanical plant area on Level 6 of the 'Machinery Hall'.

The above changes can be expected to have implications for acoustics on the project and potential implications for the planning permit conditions, which were prepared to address the previous design.

We note that the acoustic report does not include specific reference to the planning permit.

The extent to which the report addresses the planning permit conditions and the current plans is considered below.

1 Condition 11(a) – Internal noise targets for apartments near netball court

(Sections 5.4 and 6.0 of the report)

NDY Report: Design targets nominated for noise from the multipurpose court are 35 dBA Leq and 50 dBA Lmax in the acoustic report, in accordance with the Condition 11(a).

Noise from whistles and crowds is considered in Section 5.4.

Airborne noise from basketballs being bounced is not explicitly considered in the report.

Glazing to the apartments potentially most exposed to noise from the multi-purpose court is proposed to be 10.76 mm thick laminated glass / 16 mm air cavity / 12 mm thick glass.

***SLR Comments**: The current netball court design is understood to include full enclosure of the multipurpose space and cladding comprising 'external glazing with expanded metal layer'. The type or thickness of the glass is not provided. Given that the space is proposed to be enclosed, it would be appropriate to design the external walls such that noise from the use does not impact the overlooking dwellings. This would eliminate the need for administrative controls on the use of the multipurpose space, and would provide apartment occupants with a good level of amenity outdoors and/or with windows open during the periods that the school outdoor area is not in use. In summary, we recommend that an acoustic specification is provided for the external walls of the multipurpose space in order to achieve reasonable external noise levels on apartment balconies when the space is in use.*

The school outdoor area has been increased in size and moved closer to the apartments. The façade upgrade treatments shown in the current acoustic report will control children's voice noise from the school outdoor area to these overlooking apartments.

2 Condition 11(b) – Noise from ball bouncing to residents and commercial uses below

(Section 6.0 of the report)

NDY Report: Advice is provided in the report for controlling structureborne noise from ball bouncing by adding a resilient floor finish to the multi-purpose court.

SLR Comments: *The floor surface may be unsuitable for basketball if a resilient finish is added to it. Structureborne noise from use of the multipurpose space should ideally be considered to the commercial use below, to the offices on Level 2 and to the school building. Both ball bouncing and people movement noise (e.g. running and jumping) have potential to cause nuisance.*

3 Condition 11(c) – Structureborne noise from indoor recreational facility to commercial spaces

SLR Comments: *This condition is understood to refer to the commercial gym proposed for Level 1 of the development. Stuctureborne noise from this premises is not addressed in the report. Noise from the gym to the offices should be considered, taking into consideration the likely use of the gym.*

The new design has also introduced a small gym opposite the serviced apartments on Level 2. Structureborne noise from this gym is not considered in the report. However, the gym is quite small and it is not unreasonable for noise from its use to be managed by the operators through restricted access and restricted equipment options. Given this, we have not raised the issue as an item requiring further consideration in the acoustic planning report.

4 Condition 11(d) – Lmax targets for apartments above the loading bay entrance in the event of evening and night time deliveries and/or recommendations for restricted delivery times

SLR Comments: *An Lmax assessment of truck entry noise to the apartments directly above loading bay is not included in the acoustic report. We recommend an internal target (doors and windows closed) of 45 to 50 dBA Lmax be met inside apartments for trucks entering and leaving the loading bay. The acoustic report should confirm whether these targets will be met with the current façade treatments, given that deliveries are proposed to take place throughout the night.*

5 Condition 11(e) – Internal noise targets of 40 dBA Leq16hr and 35 dBA Leq,8hr for traffic noise

(Sections 5.1.1, 5.7 and Appendix A of the report)

NDY Report: The planning permit targets for road traffic noise have been adopted in the report.

Advice for glazing upgrades is provided in Section 5.7 and the marked up plans included as Appendix A. Drywall elements are required to have a rating at least as good as the glazing.

SLR Comments: *We do not have sufficient information to conduct a full independent assessment of traffic noise ingress to the proposed apartments, however, the advice provided in the report is representative of a substantial upgrade from standard glazing, and appears likely to achieve the internal noise targets.*

6 Condition 11(f) – Provide adequate acoustic treatment to the music spaces to enable live music / performances and protect abutting residences

SLR Comments: *This matter is not addressed in the acoustic report. It is also not clear from the current design which areas may be used for music.*

From our understanding of the spaces, there appears to be potential for the 'community acitivty space' and the 'community pavillion' on Level 1 to be used for music. There are apartments abutting the community activity space, and serviced apartments above it. These areas are also connected to the Level 1 multipurpose space, which may have open sides (resulting in further potential noise leakage from music events).

As a minimum, some commentary in the acoustic report regarding noise from music performances would be required to address planning permit Condition 5f.

7 Other Matters

7.1 Mechanical Plant Deck

The current design shows roof top plant decks on Level 6, in close proximity to some apartments in the Structural Building. The deck may be overlooked by apartments on Level 7.

The acoustic report does not specifically refer to this new roof plant deck, and given its closer proximity to apartments there is a greater risk of SEPP N-1 non-compliance. Given this change in design, we recommend that post construction testing is provided demonstrating compliance with SEPP N-1 at potentially impacted apartments.

7.2 Loading Bay Entrance Door

The memo provided by NDY dated 14 January 2019 clarifies that their assessment of loading bay noise assumed that the carpark entrance door was pervious. NDY refer to loading bay absorptive treatments, to be installed in accordance with the Coles brief, to control noise from the loading bay. While we agree that it may be possible to adequately control noise from this loading bay without requiring an impervious entrance door to be installed, there is insufficient information provided in the report to satisfy us that SEPP N-1 limits will be met. For this reason we recommend post construction testing to demonstrate compliance with SEPP N-1 for noise from the loading bay.

8 Summary

A summary of our review of the revised acoustic report for 626 Heidelberg Road, Alphington, Lot 2B, with specific reference to items we are of the opinion require further attention, is provided below.

Condition 11(a)

- It is recommended that an acoustic specification be provided for the walls of the multipurpose space and for any ventilation pathways, in order to ensure that noise from this area is controlled to overlooking apartment balconies and windows.

Attachment 17 - Acoustic Engineers (SLR) Referral Comments

- Façade upgrade treatments are provided for apartments overlooking the multipurpose space and the school outdoor area (which is located above the multipurpose space). These treatments may not be required to control noise from the multipurpose space given that is it fully enclosed, however they will address noise from the school outdoor area.

Condition 11(b)

- The acoustic report provides advice for a resilient surface to control noise from basketball bouncing. If control of structureborne noise is required, a full isolated concrete floor is likely to be necessary. We recommend that structureborne noise from use of the multipurpose space be considered to the commercial use below, to the offices on Level 2 and to the school building, taking into consideration both ball bouncing and people movement noise (e.g. running and jumping).

Condition 11(c)

- This condition is understood to refer to the commercial gym proposed for Level 1 of the development. Stuctureborne noise from this premises is not addressed in the report. Noise from the gym to the offices should be considered, taking into consideration the likely use of the gym.

Condition 11(d)

- An Lmax assessment of noise from the trucks entering the loading bay has not been provided in the report. We recommend that this be included to address condition 11(d).

Condition 11(e) – no further information required to address permit condition

Condition 11(f)

- Music noise from performance spaces is not addressed in the report. Some further commentary regarding which spaces may be used for music, details of the level of music assumed in the design, and details of the treatments required to address it, should be provided to address this condition.

Other matters

There are a number of changes to the design which have implications for both acoustics and for the potential relevance of the planning permit conditions (which took the original design into consideration). In our opinion the current design presents a greater risk of nuisance from mechanical plant noise. For this reason we recommend that post construction acoustic testing be required to demonstrate compliance with SEPP N-1 at all sensitive receiver locations in this or adjacent residential developments.

Post construction testing of loading bay noise is also recommended to demonstrate compliance with SEPP N-1, given that the entrance to the loading bay is proposed to be pervious, and a detailed assessment is not provided in the report.

Yours faithfully,

Dianne Williams
Associate – Acoustics

Checked/
Authorised by: JA

Attachment 18 - Wind Consultants (MEL) Peer Review

22 CLEELAND ROAD
SOUTH OAKLEIGH VIC 3167
AUSTRALIA

M E L
CONSULTANTS

(ACN 004 230 013)

Ref: 64-18-DE-REV-01

21st March 2019

City of Yarra
PO Box 168
Richmond VIC 3121

Attn: Amy Hodgen
Coordinator – Statutory Planning

Dear Amy,

Village Alphington, Alphington
Review of Vipac Pedestrian Wind Tunnel Study
Vipac Document Number: 30N-18-0136-TNT-6752950-0

The review of the Vipac Wind Tunnel Test Report for the Village Alphington Development, Alphington, is based on our experience of wind flow around buildings and structures. This experience has been developed from more than 40 years of desktop, wind tunnel, and full scale studies of environmental wind conditions in urban and sub-urban areas. No wind tunnel studies have been undertaken to support the review. Our comments are as follows:

- This is an updated wind tunnel study report prepared by Vipac for the subject development. Reference is made back to MEL Consultants review dated 9th May 2018 where it was stated that we have no issues with the wind tunnel modelling techniques used for the study.

- A planning permit has been issued for the development with Condition 13 relating to the Wind Assessment Report.

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

- Vipac provide recommended criteria for the intend activation of the streetscapes in Section 3.1 in Table 5 and diagrammatically in Figures 8 to 12 for the lower ground level, ground level, level 1, level 3, and Level 4. We have no issue with these recommended criteria for the various locations around the development site. We have summarised the criteria recommended by Vipac in Section 3.1 of the report in Table 1 of this document. We note that the information in Appendix A of the Vipac report lists recommended criteria for each Location examined and this has also been summarised in Table 1 and the colours highlight the compliance and non-compliance with the recommended criteria. If these two recommended criteria are compared, there are differences of the recommended criteria at a number of Locations (e.g. 13, 14, 18,19). It will be assumed that the recommended criteria in Appendix A takes precedence.

  Section 3.1.1 of the report discusses the rationale behind the recommendation of using the walking criterion for the apartment balcony/terraces and outdoor amenity areas, and we have no issue with the use of the walking criterion as the recommended criterion for these locations.

  However, advice from the City of Yarra has informed MEL Consultants that the Level 1 public terrace is intended to be used for outdoor sitting areas associated with the F&B tenancy on this level. If this is the case, then the outdoor sitting area on the terrace would be recommended to achieve the sitting criterion rather than the walking criterion. The sitting criterion in these locations is in line with the Vipac recommendation for other outdoor seating areas, such as location 16. Additionally, the terrace at Level 4 has been identified as a childcare outdoor play area. As this is appears to be the only outdoor play area for the children it would be recommended that the standing and sitting criteria, depending on the activity at a specific location on the terrace, be achieved rather than the walking criterion. This would be expected to improve the utilisation of the terrace for the children.

- Section 6.1 describes the two configurations studied for the assessment of the environmental wind conditions. Configuration 1, which MEL Consultants would

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

suggest is the most relevant for assessing the wind impact of the proposed development, has modelled the proposed development with the existing surrounding buildings. Configuration 2 has modelled the proposed development with the possible future buildings expected in the next 5 years and is useful for knowledge of future building interactions. Given some of the future developments will be part of the development precinct, clarification from the City of Yarra would be necessary to determine which configuration needs to achieve compliance with the proposed wind comfort criteria. Reviewing these data in the report there still appears to be a mixed reliance of Configurations 1 or 2 to demonstrate compliance with the recommended wind comfort criteria.

- The report investigates wind mitigation controls for a number of locations as follows:
    - The Mews

      The City of Yarra has informed MEL Consultants that The Mews will be an important pedestrian link through the precinct. The wind conditions at Location 2 have not been shown to comply with the walking criterion for either configuration. Vipac have stated that the wind conditions were caused by the entire massing of the proposed development and cannot be mitigated. They further suggest relaxing the target criterion to fast walking due to the low number of exceedances in Configuration 2. The exceedances would be expected to be higher for Configuration 1. The issued permit states the walking criterion is the minimum acceptable criterion.

      MEL Consultants would query Location 3, where there is compliance for Configuration 1 but not for Configuration 2. Vipac have demonstrated that the wind conditions for Configurations would be improved by setting the entrance into the building by >1m, but it is not clear whether the sensor for Location 3 was shifted into the recess as the photographs and diagram suggest it was not moved. If it was not moved then MEL Consultants do not understand the demonstrated improvement of the wind conditions at Location 3.

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

- Vipac have noted that Location 31 does not comply for either Configuration but the wind conditions should be mitigated by the proposed adjacent developments. This appears to be shifting the wind issues to another development site and for Configuration 1 the wind conditions have been shown to exceed the recommended criterion, particularly for the north winds, which the future development massing model has been demonstrated to not mitigate. Again, as noted earlier, there appears to be confusion as to whether compliance is demonstrated by either Configuration 1 or 2.

- Location 1 does not show compliance with either Configuration. As noted for earlier, there is confusion as to whether compliance is demonstrated by either Configuration 1 or 2.

- We agree with the Vipac conclusions that the proposed development would not cause wind conditions to exceed the safety criterion.

In summary, we have no issue with the modelling and methodology of the Vipac wind tunnel study. This work has been carried out as would be expected for an environmental wind assessment of a proposed development's wind impact. However, we do have a number of issues with the data in the report, which have been highlighted, and thus cannot support the recommendation and conclusions by Vipac. We suggest further wind tunnel testing be undertaken to provide the following information to allow further assessment of the development:

- The City of Yarra to inform the developer as to the Configuration that needs to be shown to comply with the recommended pedestrian comfort criteria. At the moment both configurations studied are being used to show compliance at some of the study locations.
- The permit condition states that the minimum acceptable criterion is walking. This needs to be demonstrated at all locations.
- The recommended criteria should give consideration of the outdoor seating area on the Level 1 public terrace and require the sitting criterion. Additionally, it has

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

been suggested that the recommended criteria for the Level 4 childcare outdoor play area should be standing and sitting criteria.

Yours sincerely,

M. Eaddy

M. Eaddy
MEL Consultants Pty Ltd

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

Attachment 18 - Wind Consultants (MEL) Peer Review

Table 1: Summary of Applicable/Recommended Criteria and Criteria Achieved

Location	Section 3.1 Recommended Criteria	Appendix A Recommended Criteria	Existing Config	Proposed Config 1	Proposed Config 2	WMC/Comment
1		Walking	Walking	Above Walking	Above Walking	
2	Walking	Walking	Walking	Above Walking	Above Walking	
3	Standing	Standing		Walking	Above Walking	Standing (Config 2)
4	Standing	Standing		Walking (marginal)	Standing	
5	Standing	Standing	Walking	Standing	Standing	
6	Standing	Standing	Walking	Walking	Standing	Config 1 - not worse than Exisiting
7	Walking	Walking	Walking	Above Walking	Walking	
8	Walking	Walking		Walking (marginal)	Walking (marginal)	
9	Walking	Walking	Above Walking	Walking	Standing	
10	Walking	Standing		Walking	Sitting	
11	Walking	Standing	Walking	Standing	Sitting	
12	Walking	Walking	Walking	Walking	Walking	
13	Walking	Standing	Walking	Standing (marginal)	Sitting	Better than Existing for higher wind directions
14	Walking	Standing	Walking	Standing	Standing	
15	Standing	Standing	Above Walking	Sitting	Sitting	Better than Existing
16	Sitting	Sitting	Standing	Walking	Above Walking	Sitting (Config 2) / expect similar mitigation for Config 1
17	Standing	Standing		Sitting	Sitting	
18	Standing	Sitting	Walking	Standing	Sitting	
19	Standing	Sitting	Walking	Standing	Sitting	
20	Walking	Walking	Above Walking	Walking	Walking	
21	Standing	Standing	Walking	Standing	Above Walking	Sitting (Config 2)
22	Walking	Walking	Walking	Walking	Walking	
23	Walking	Walking	Above Walking	Walking	Walking	
24	Standing	Standing	Standing	Walking	Standing	
25	Walking	Walking		Standing	Standing	
26	Walking	Walking	Walking	Walking	Walking	
27	Walking	Walking		Sitting	Walking	

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

Attachment 18 - Wind Consultants (MEL) Peer Review

Location	Section 3.1 Recommended Criteria	Appendix A Recommended Criteria	Existing Config	Proposed Config 1	Proposed Config 2	WMC/Comment
28	Standing	Standing		Standing	Standing	
29	Walking	Walking		Above Walking	Above Walking	Walking (Config 2)
30	Walking	Walking		Walking	Walking	
31	Walking	Walking		Above Walking	Above Walking	
32	Walking	Walking		Walking (marginal)	Walking (marginal)	
33	Walking	Walking		Walking	Standing	
34	Walking	Walking		Walking	Walking	
35	Walking	Walking	Walking	Above Walking	Walking	
36	Walking	Walking		Above walking	Above Walking	
37		Walking		Above Walking	Standing	
38		Walking		Walking	Sitting	
39		Walking		Above Walking	Standing	
40		Walking		Above Walking	Sitting	
41		Walking		Standing (marginal)	Standing	
42		Walking		Walking	Walking	
43		Walking		Above Walking	Walking	
44		Walking		Above Walking	Walking	
45		Walking	Above Walking	Above Walking	Above Walking	Config 2 - Higher than Existing
46		Walking		Sitting	Walking	
47		Walking		Standing	Standing	
48		Walking	Above Walking	Above Walking	Walking	
49		Walking	Walking	Sitting	Walking	
50		Walking		Walking	Walking	
51	Walking	Standing		Standing	Standing	
52	Walking	Walking		Above Walking	Walking	Standing (Config 2) / expect similar mitigation for Config 1
53	Walking	Walking		Walking	Walking	Childcare Terrace
54	Walking	Walking		Walking	Walking	Childcare Terrace
55	Walking	Walking		Walking	Standing	Childcare Terrace

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

Attachment 18 - Wind Consultants (MEL) Peer Review

8

Location	Section 3.1 Recommended Criteria	Appendix A Recommended Criteria	Existing Config	Proposed Config 1	Proposed Config 2	WMC/Comment
56	Walking	Walking		Walking	Sitting	
57	Walking	Walking		Walking	Walking	Walking (Config 2)
58	Walking	Walking		Above Walking	Walking	Walking (Config 1)
59	Walking	Walking		Above Walking	Walking	
60	Walking	Walking		Walking	Walking	
61	Walking	Walking		Sitting	Sitting	
62	Walking	Walking		Above Walking	Walking	Walking (Config 1)
63	Walking	Walking		Above Walking	Walking	Walking (Config 1)
64	Walking	Walking		Above walking	Walking	Walking (Config 1)

TELEPHONE: (03) 8516 9680 : Intl +613 8516 9680 FAX : (03) 9562 7055: Intl +613 9562 7055

THE VILLAGE ALPHINGTON

LANDSCAPE ARCHITECTURAL DRAWINGS

ISSUED IN RESPONSE TO COUNCIL RFI

1 LOCATION PLAN (Source Nearmap.com)
NTS

DRAWING REGISTER

00-001	COVER PAGE, LOCATION PLAN & DRAWING REGISTER
00-002	OVERALL LEGEND
00-003	INTERPRETIVE ELEMENTS, FURNITURE & FIXTURES SCHEDULE
00-101	OVERALL GENERAL ARRANGEMENT PLAN - GROUND & LOWER GROUND LEVEL
00-102	OVERALL GENERAL ARRANGEMENT PLAN - LEVEL 1
00-103	OVERALL GENERAL ARRANGEMENT PLAN - LEVEL 3
	GROUND (THE VILLAGE SQUARE, THE OUTER CIRCLE MEWS, HEIDELBERG ROAD)
0G-101	GENERAL ARRANGEMENT PLAN - THE VILLAGE SQUARE
0G-102	GENERAL ARRANGEMENT PLAN - THE OUTER CIRCLE MEWS
0G-103	GENERAL ARRANGEMENT PLAN - HEIDELBERG ROAD LOT 2A & 2B
0G-701	LANDSCAPE SECTIONS - THE VILLAGE SQUARE
0G-711	LANDSCAPE SECTIONS - THE OUTER CIRCLE MEWS
0G-721	LANDSCAPE SECTIONS - HEIDELBERG ROAD (1 OF 2)
0G-722	LANDSCAPE SECTIONS - HEIDELBERG ROAD (2 OF 2)
	LOWER GROUND (ACCESS LANE)
L0-101	GENERAL ARRANGEMENT PLAN - ACCESS LANE
L0-701	LANDSCAPE SECTIONS - ACCESS LANE
	LEVEL 1 (THE TERRACE)
L1-101	GENERAL ARRANGEMENT PLAN - LEVEL 1 THE TERRACE
L1-701	LANDSCAPE SECTIONS - LEVEL 1 THE TERRACE
	LEVEL 3 (THE PAPER TRAIL GARDENS, RESIDENTIAL GARDENS)
L3-101	GENERAL ARRANGEMENT PLAN - THE PAPER TRAIL GARDENS
L3-102	GENERAL ARRANGEMENT PLAN - RESIDENTIAL GARDENS

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
20/02/2018	03	ISSUED IN RESPONSE TO COUNCIL RFI
16/11/18	04	UPDATED FOR TOWN PLANNING
3/12/18	05	UPDATED FOR TOWN PLANNING

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

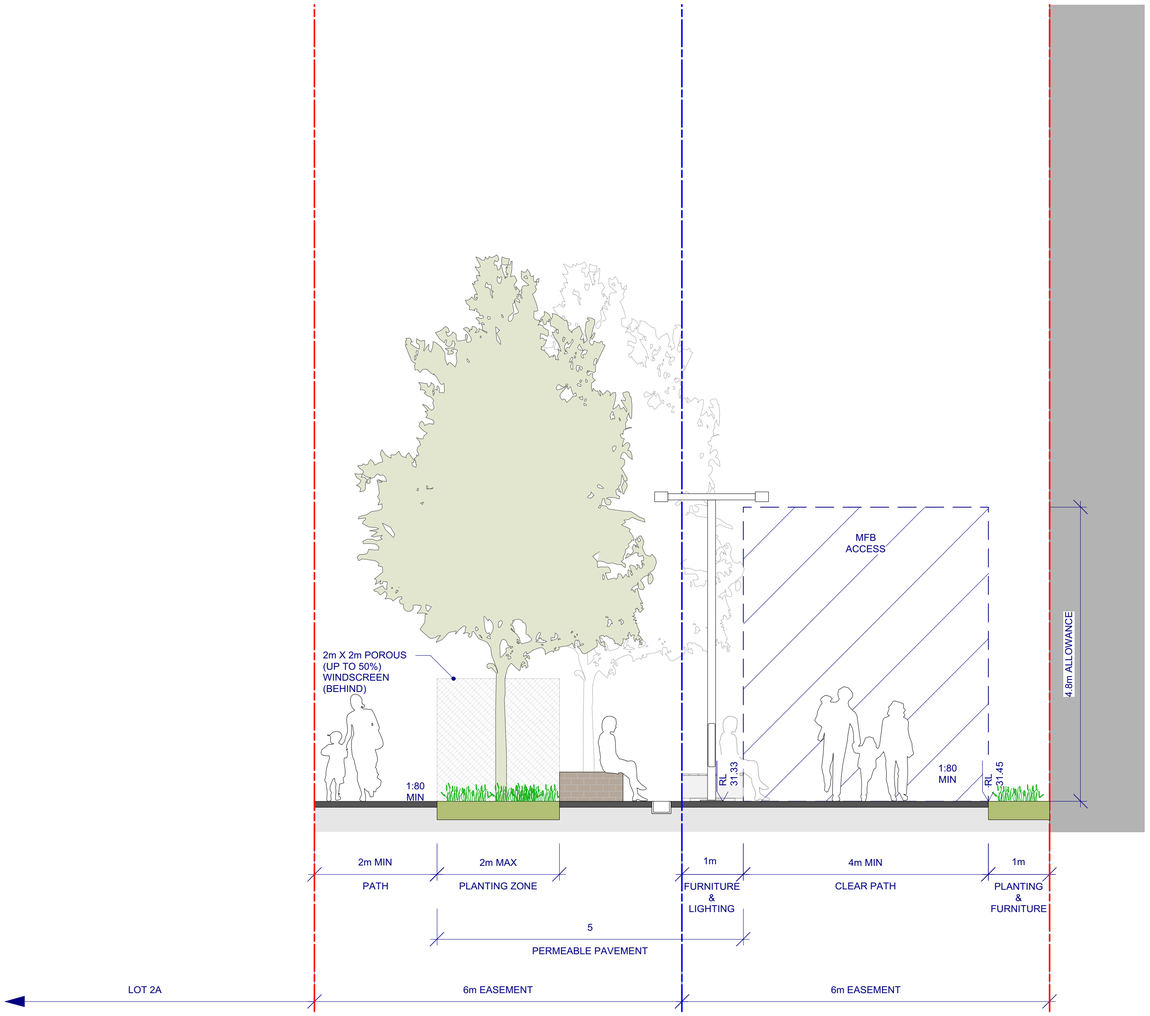
Cover Page, Location Plan & Drawing Register

DRAWN	CHECKED	SCALE A1	SCALE A3
DN	NK	NA	NA

STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	00-001	05



1 OUTER CIRCLE MEWS TYPICAL SECTIONAL ELEVATION
1:50 @A1 / 1:100 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATED FOR TOWN PLANNING
16/11/18	04	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Sections - The Outer Circle Mews

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:50 1:100

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

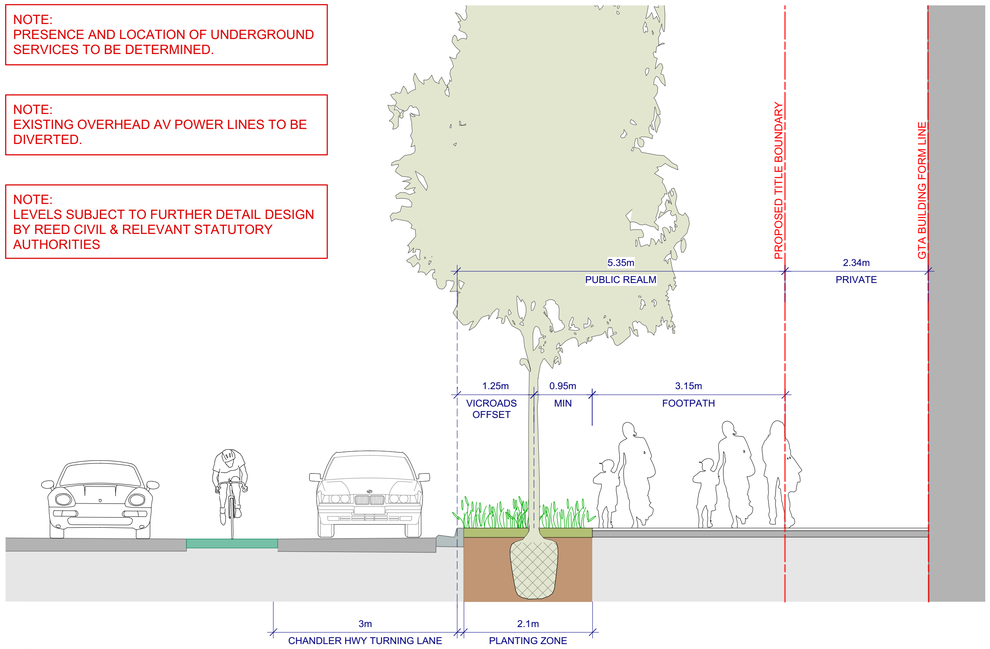
ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	0G-711	04

NOTE:
TREE SPECIES TO SATISFACTION OF CITY OF YARRA

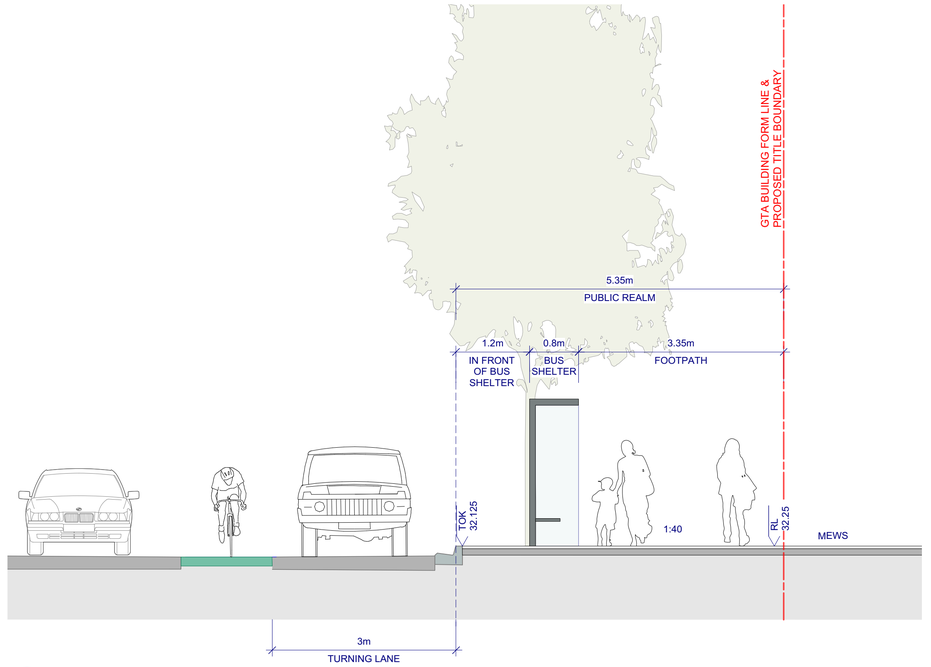
NOTE:
PRESENCE AND LOCATION OF UNDERGROUND SERVICES TO BE DETERMINED.

NOTE:
EXISTING OVERHEAD AV POWER LINES TO BE DIVERTED.

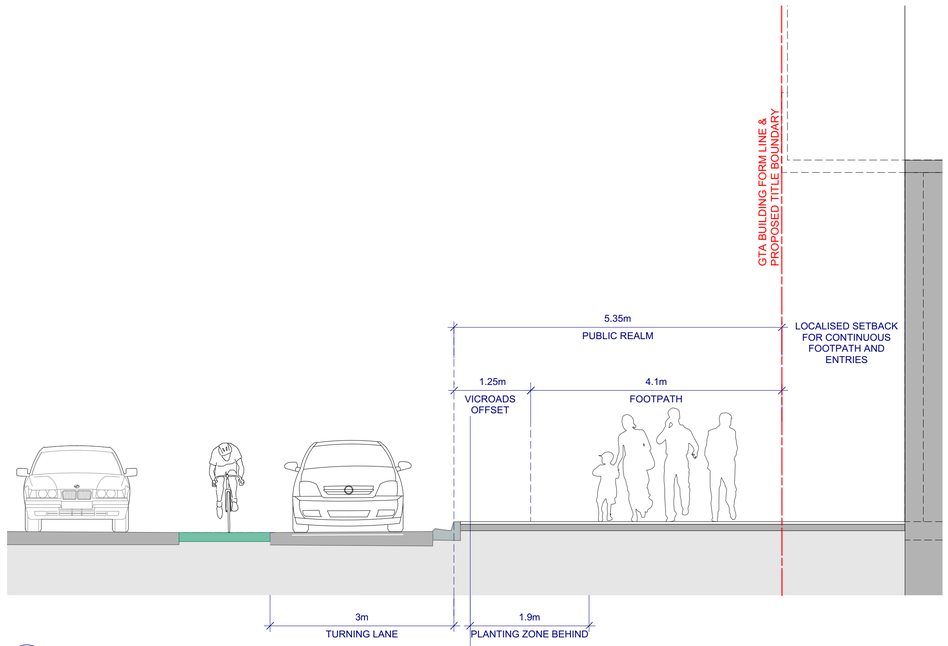
NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES



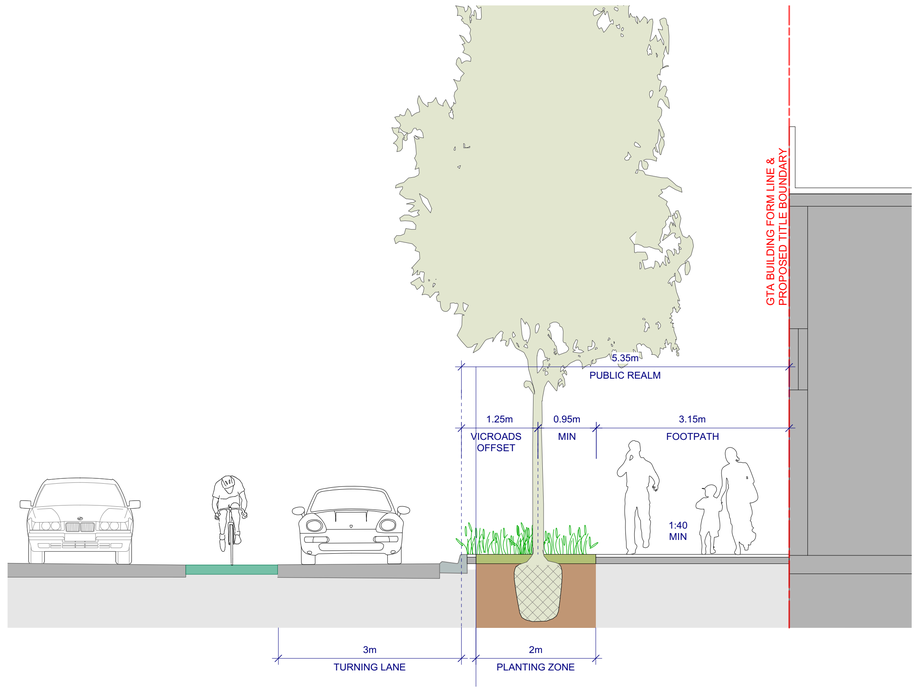
1 SECTION HEIDELBERG ROAD - LOT 2A NORTH-EAST
1:50 @A1 / 1:100 @A3



2 SECTION HEIDELBERG ROAD - LOT 2A THE OUTER CIRCLE MEWS
1:50 @A1 / 1:100 @A3



3 SECTION HEIDELBERG ROAD - LOT 2B NORTH-EAST
1:50 @A1 / 1:100 @A3



4 SECTION HEIDELBERG ROAD - LOT 2B NORTH
1:50 @A1 / 1:100 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATED FOR TOWN PLANNING
16/11/18	04	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT
ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Sections - Heidelberg Road (1 of 2)

DRAWN	CHECKED	SCALE A1	SCALE A3
DN	NK	1:50	1:100

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

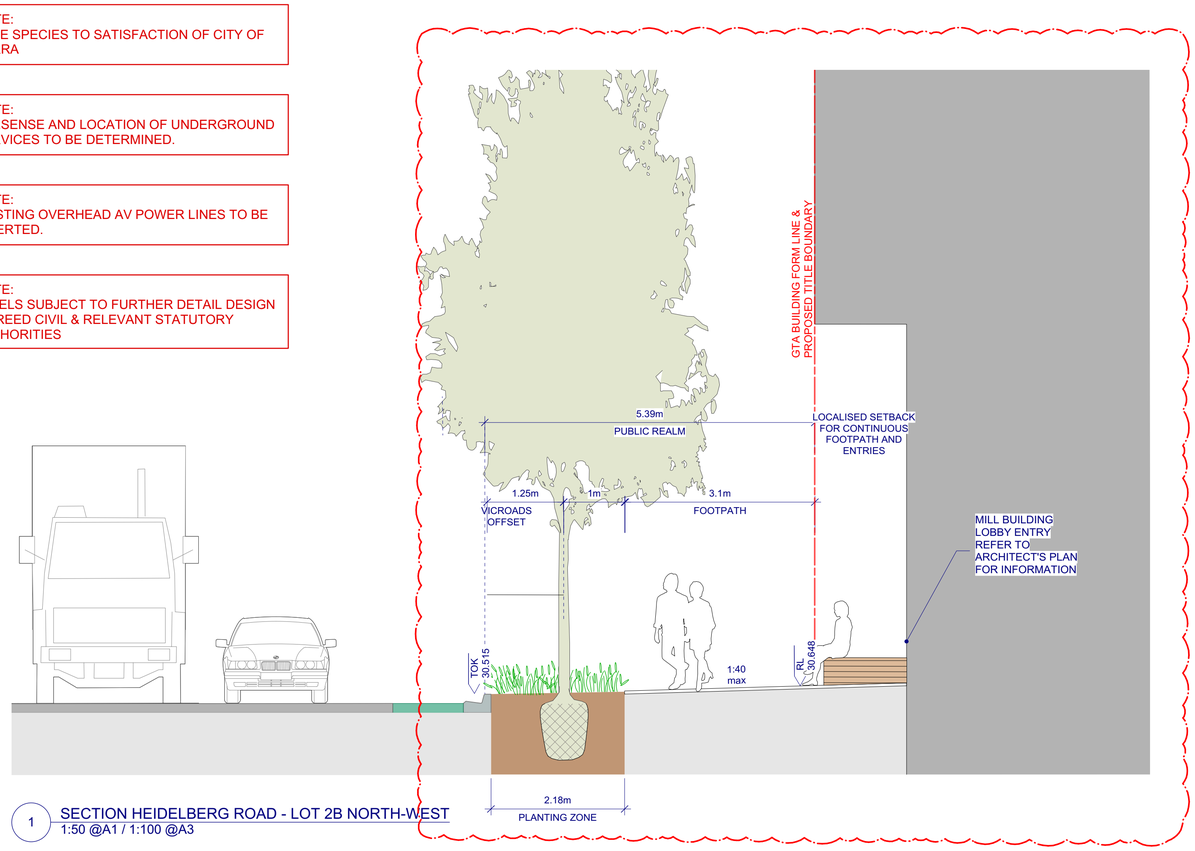
ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN- 0G-721		04

NOTE:
TREE SPECIES TO SATISFACTION OF CITY OF YARRA

NOTE:
PRESENSE AND LOCATION OF UNDERGROUND SERVICES TO BE DETERMINED.

NOTE:
EXISTING OVERHEAD AV POWER LINES TO BE DIVERTED.

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES



1 SECTION HEIDELBERG ROAD - LOT 2B NORTH-WEST
1:50 @A1 / 1:100 @A3

05 UPDATED FOOTPATH LEVELS

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATED FOR TOWN PLANNING
16/11/18	04	UPDATED FOR TOWN PLANNING
3/12/18	05	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

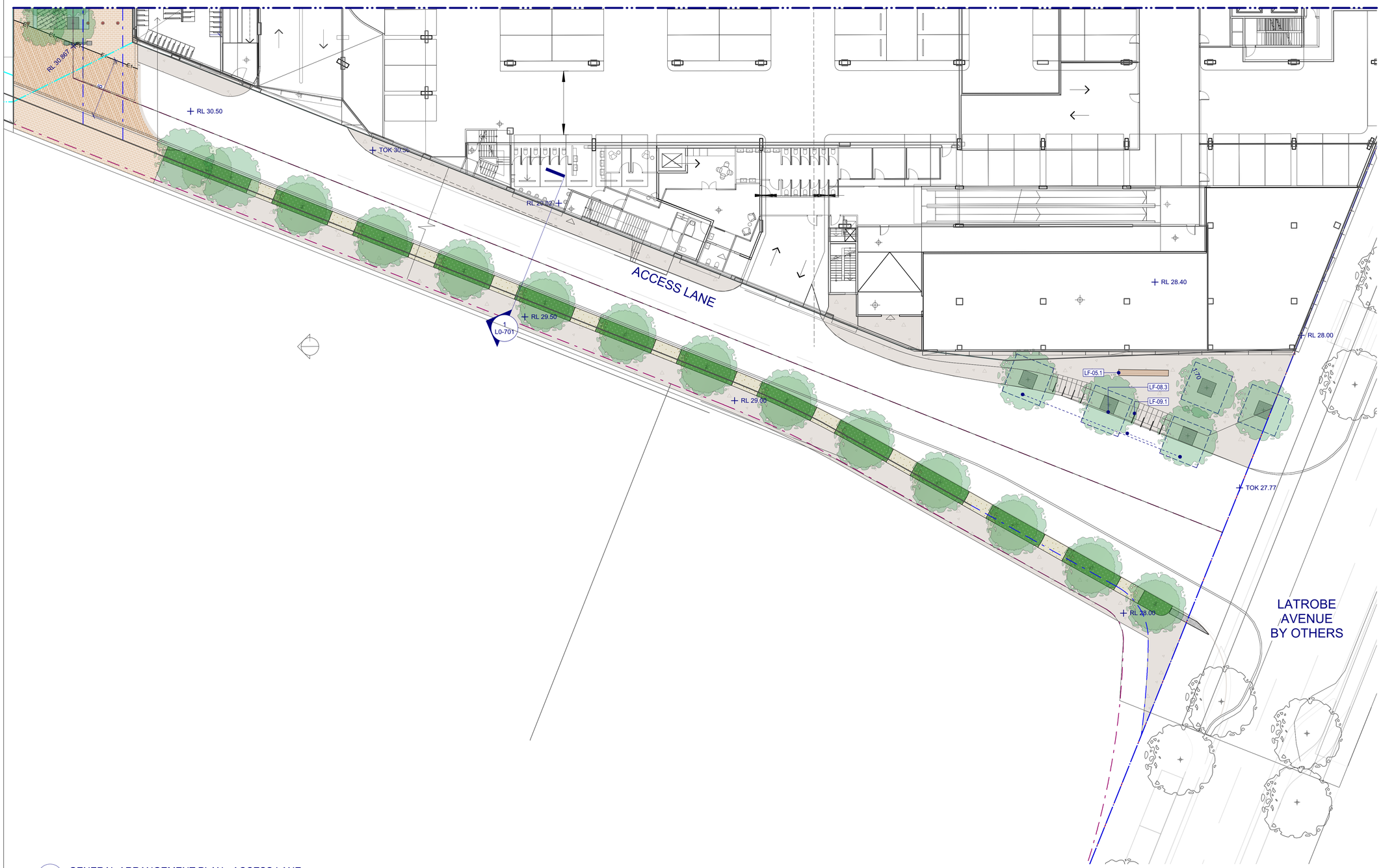
PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Sections - Heidelberg Road (2 of 2)

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:50 1:100

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	0G-722	05



1 GENERAL ARRANGEMENT PLAN - ACCESS LANE
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
11/12/18	03	UPDATED FOR TOWN PLANNING
13/11/18	04	UPDATED FOR TOWN PLANNING
16/11/18	05	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

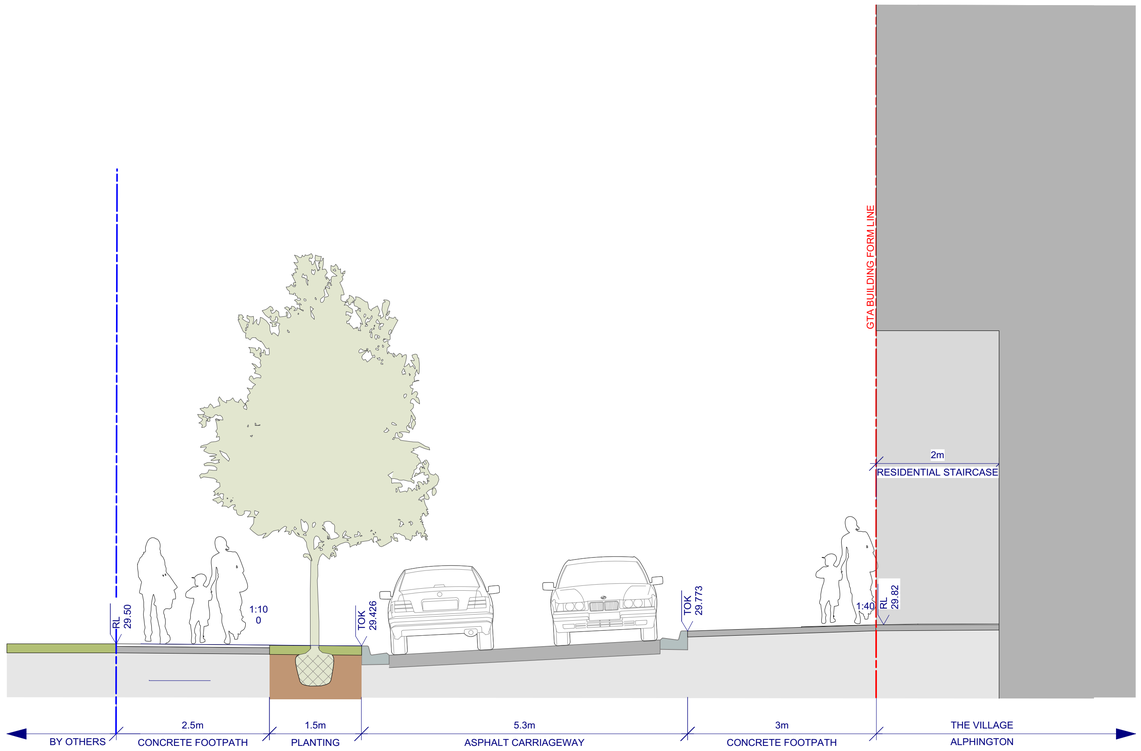
DRAWING
General Arrangement Plan - Access Lane

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:200 1:400

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	L0-101	05

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN DIRECTLY AFFECTED BY REED CIVIL ON HEIDELBERG ROAD & LATROBE AVENUE



1 ACCESS LANE SECTION
1:50 @A1 / 1:100 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATED FOR TOWN PLANNING
16/11/18	04	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

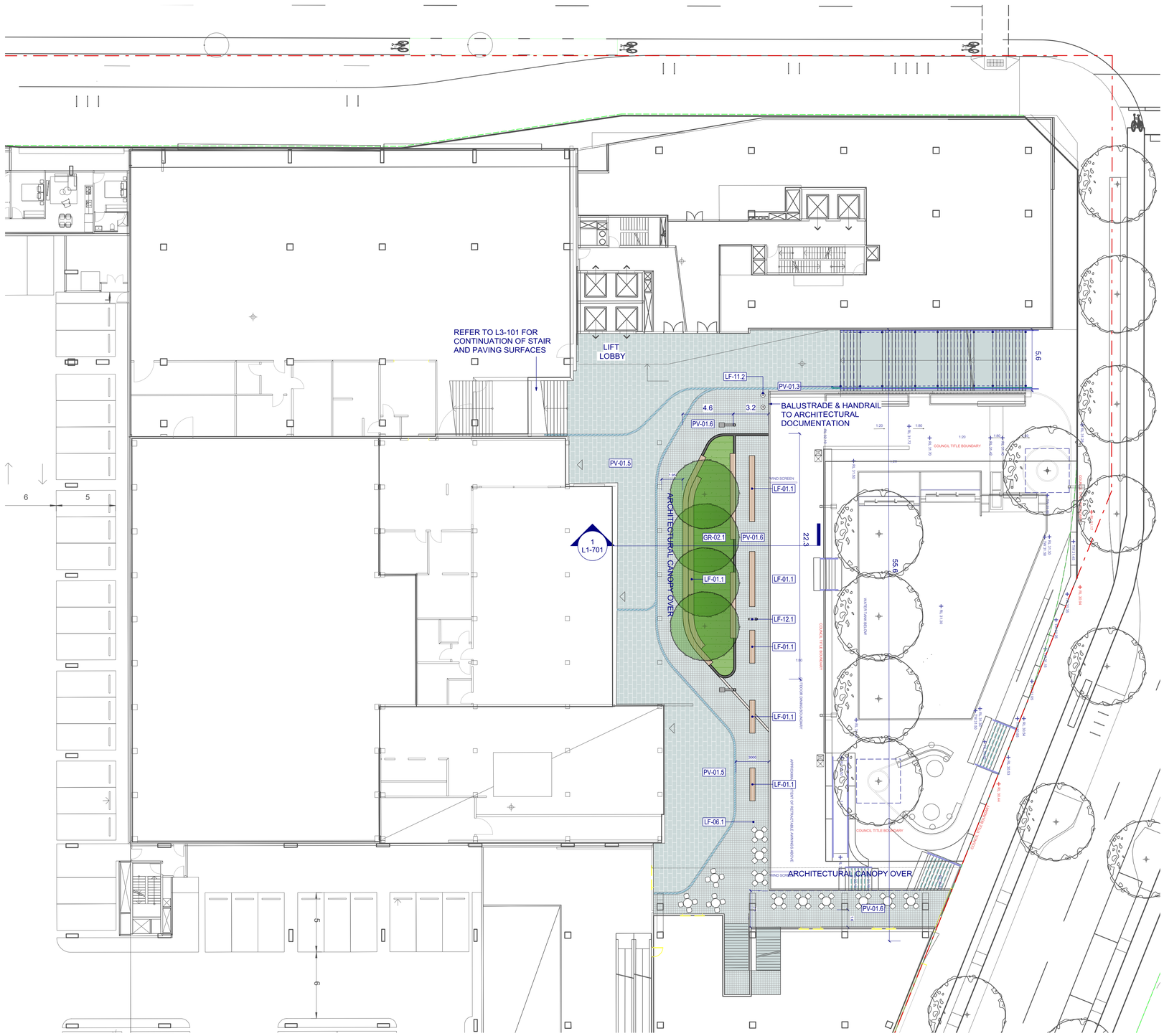
PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Sections - Access Lane

DRAWN	CHECKED	SCALE A1	SCALE A3
DN	NK	1:50	1:100

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN- L0-701		04



1 GENERAL ARRANGEMENT PLAN - LEVEL 1 THE TERRACE
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
13/02/2018	03	INCLUSION OF COURTYARD TREATMENT
12/11/2018	04	UPDATED FOR TOWN PLANNING
13/11/18	05	UPDATED FOR TOWN PLANNING
16/11/18	06	UPDATED FOR TOWN PLANNING

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

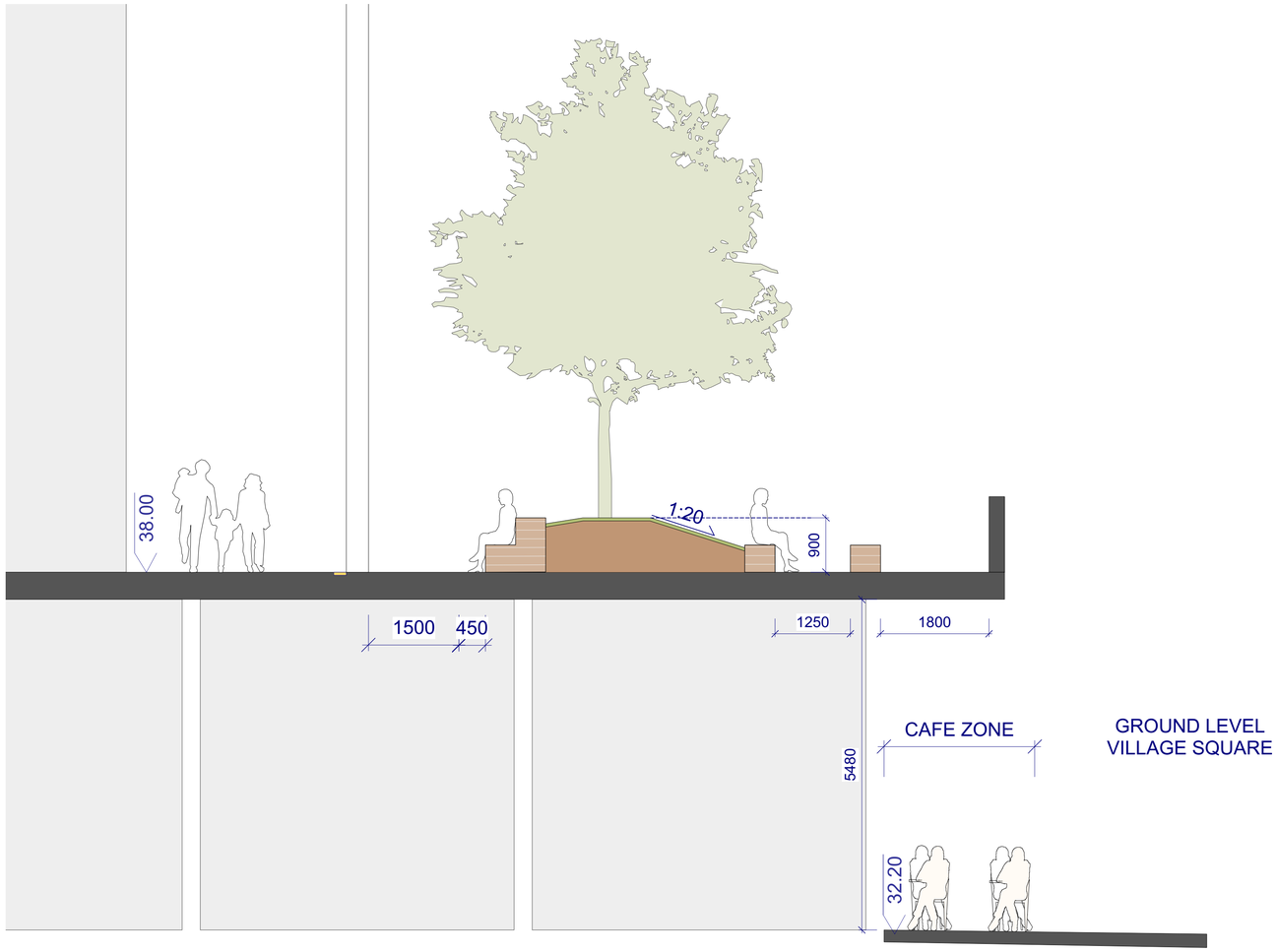
General Arrangement Plan - Level 1
The Terrace

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:200 1:400

STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	L1-101	06



1 SECTION A - LEVEL 1 THE TERRACE
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
16/11/18	01	ISSUED FOR TOWN PLANNING
20/11/18	02	ISSUED FOR TOWN PLANNING
30/11/18	03	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Landscape Sections - Level 1 The Terrace

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:200 1:400

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
	TP-LAN- L1-701	03

REFER TO L3-102 LEVEL 3 RESIDENTIAL GARDENS

1 GENERAL ARRANGEMENT PLAN - LEVEL 3 THE PAPER TRAIL GARDENS
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au®

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
11/2/18	03	WIP UPDATE FOR TOWN PLANNING
12/11/18	04	UPDATE FOR TOWN PLANNING
13/11/18	05	UPDATED FOR TOWN PLANNING
16/11/18	06	UPDATED FOR TOWN PLANNING
19/11/18	07	UPDATED FOR TOWN PLANNING

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

General Arrangement Plan - Level 3
The Paper Trail Gardens

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:200 1:400

STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
	TP-LAN- L3-101	07

1 GENERAL ARRANGEMENT PLAN - LEVEL 3 RESIDENTIAL GARDENS
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
11/2/18	03	WIP UPDATE FOR TOWN PLANNING
12/11/18	04	UPDATE FOR TOWN PLANNING
13/11/18	05	UPDATED FOR TOWN PLANNING
16/11/18	06	UPDATED FOR TOWN PLANNING

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

General Arrangement Plan - Level 3 Residential Gardens

DRAWN	CHECKED	SCALE A1 | SCALE A3	
DN	NK	1:200	1:400

STATUS

PRELIMINARY

NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	L3-151	06

LANDSCAPE LEGEND

WORK BOUNDARIES

- NEW EASEMENT BY REED
- NEW BOUNDARY BY REED
- PERMIT EXTENT BOUNDARY
- GTA BOUNDARY PROPOSED

GENERAL

- ROAD SURFACE WITH LINEMARKING BY OTHERS
- ASPHALT SURFACE BY OTHERS
- CONCRETE KERB BY OTHERS
- SINGLE LANE BICYCLE LANE WITH LINEMARKING BY OTHERS
- STAIRCASE BALUSTRADE. REFER TO ARCHITECTURAL DOCUMENTATION

PAVEMENTS & SURFACES

- PV-01.1 BLUESTONE UNIT PAVER LIGHT VEHICLE GRADE
- PV-01.2 BLUESTONE CLAD STEPS
- PV-01.3 CONTRASTING STAIR NOSING
- PV-01.4 STONE WARNING TGSI
- PV-01.5 BLUESTONE UNIT PAVER - PEDESTRIAN GRADE
- PV-01.6 BLUESTONE SETTS - VEHICLE GRADE
- PV-02.1 DOUBLE THIN-EDGE STAINLESS STEEL WITH FEATURE CONCRETE INLAY WITH HERITAGE INTERPRETATION AS REQUIRED
- PV-02.3 FEATURE METAL INLAY. ALLOWANCE: FOR SITE SALVAGED ARTEFACT INCORP.
- PV-03.1 BRICK UNIT PAVER. CUSTOM COLOUR (A) - VEHICLE GRADE
- PV-03.2 BRICK UNIT PAVER. CUSTOM COLOUR (B) - VEHICLE GRADE
- PV-03.3 STONE UNIT PAVER. ON PEDESTAL - PEDESTRIAN GRADE
- PV-03.4 STONE UNIT PAVER. COLOUR TO MATCH INTERIOR TILE - PEDESTRIAN GRADE
- PV-04.1 CITY OF YARRA STANDARD INSITU CONCRETE PAVING - VEHICLE GRADE
- PV-04.2 CITY OF YARRA STANDARD INSITU CONCRETE PAVING - PEDESTRIAN GRADE
- PV-05.1 GRANITIC GRAVEL - CEMENT STABILISED
- PV-06.1 RUBBER SOFTFALL
- PV-12 POROUS CONCRETE PERMEABLE PAVERS

PAVING EDGES, KERBS, WALLS

- LE-01.1 E1 ALUMINIUM EDGE
- LE-02.1 LOW KICKRAIL EDGE
- LW-01.1 BRONZE PLATED STEEL BLADE WALL
- LW-02.1 300mm WIDE - BLUESTONE CLAD PLANTER WALL
- LW-02.2 500mm WIDE - INSITU CONCRETE RAISED PLANTER WALL
- LW-03.1 VARYING WIDTH - SITE SALVAGED BRICK CLAD RAISED PLANTER
- LW-03.2 VARYING WIDTH - BRICK WITH CONCRETE CAPPING PLANTER WALL

FURNITURE & FIXTURES

- LF-01.1 TIMBER BENCH / SEAT WITH BACKREST AND ARMREST - 5000mm LENGTH UNIT
- LF-01.2 TIMBER BENCH / SEAT WITH BACKREST AND ARMREST - 2500mm LENGTH UNIT
- LF-02.1 TIMBER STACK BENCH WITH STEEL STRAPS - 2200mm LENGHT UNIT
- LF-03.1 SITE SALVAGED BRICK PLATFORM - 2350mm LENGTH UNIT
- LF-03.2 SITE SALVAGED BRICK PLATFORM - 1060mm LENGTH UNIT
- LF-04.1 CUSTOM TIMBER TABLE
- LF-05.1 CUSTOM PRECINCT FURNITURE SUITE (DESIGN TO BE COLLABORATED WITH GLENVILL)
- LF-06.1 PROPRIETARY TABLE SETTING FREE STANDING
- LF-07.1 SALVAGED PAPER ROLLER ELEMENT WITH CLEAR SEALANT
- LF-08.3 STAINLESS STEEL ROUND TREE GRATE FLUSH TO PAVEMENT
- LF-08.3 STAINLESS STEEL SQUARE TREE GRATE FLUSH TO PAVEMENT
- LF-09.1 STAINLESS STEEL BICYCLE HOOPS
- LF-10.1 STAINLESS STEEL HANDRAIL WITH LINEAR LED LIGHTING TO UNDERSIDE
- LF-10.2 STAINLESS STEEL TGSI BUTTONS
- LF-11.1 STAINLESS STEEL BIN ENCLOSURES WITH CUSTOM PATTERN PERFORATIONS
- LF-11.2 W R STAINLESS STEEL BINS
- LF-12.1 DRINKING FOUNTAIN
- LF-13.1 RETRACTABLE BOLLARD
- LF-14.1 CUSTOM PATTERNED TRENCH GRATE
- LF-14.2 SERVICES LIDS REFER TO ENGINEERS DOCUMENTATION NOTE: ALL LIDS TO BE RECESSED WITH PAVING INFILL

FURNITURE & FIXTURES (CONTINUED)

- LF-15.1 S FENCE - STEEL
- LF-15.2 S SECURITY GATE - STEEL
- LF-15.3 T FENCE - TIMBER
- LF-15.4 T SECURITY GATE - TIMBER
- LF-15.5 B STAINLESS STEEL BALUSTRADE REFER TO CIVIL DOCUMENTATION
- LF-16.1 LIGHTWEIGHT CONCRETE CUSTOM POT
- LF-17.1 GREENHOUSE
- LF-18.1 TIMBER AND STEEL FRAMED PLAY TOWER
- LF-19.1 WOODEN PLAY STEPPING LOGS
- LF-20.1 2m x 2m WIND SCREEN WITH UP TO 50% POROSITY
- LF-21 FEATURE METAL BENCH. ALLOWANCE: FOR SITE SALVAGED ARTEFACT INCORP.

SOFTSCAPE SURFACES, MULCHES & TREES

- GR-01.1 INSTANT TURF - ON GROUND
- GR.02.1 SYNTHETIC TURF - ON PODIUM
- GB-01.1 GARDEN BED LOW PLANTING - ORGANIC MULCH - ON GROUND
- GB-01.2 GARDEN BED - INORGANIC MULCH - ON GROUND
- GB-01.3 GARDEN BED LOW PLANTING - ORGANIC MULCH - ON PODIUM STRUCTURE
- GB-01.4 KITCHEN GARDEN PLANTING - ORGANIC MULCH - ON PODIUM STRUCTURE
- GB-01.5 RAIN GARDEN GARDEN PLANTING - INORGANIC MULCH OVER FILTRATION LAYERS
- MEDIUM EVERGREEN TREE
- MEDIUM DECIDUOUS TREE
- SMALL EVERGREEN TREE IN POT (WITH LOW PLANTING TO BASE)
- SMALL DECIDUOUS TREE

LIGHTING SERVICES

- LL-01.1 DOUBLE LIGHT POLE. REFER TO LIGHTING PACKAGES FOR SPECIFICATION
- LL-01.2 SINGLE LIGHT POLES. REFER TO LIGHTING PACKAGES FOR SPECIFICATION
- INGROUND LINEAR LED. REFER TO LIGHTING PACKAGES FOR SPECIFICATION
- FIRE HYDRANT. REFER TO ENGINEER'S DOCUMENTATION FOR SPECIFICATION & LOCATION
- 3P GPO / 3 PHASE POWER. REFER TO ENGINEER'S DOCUMENTATION
- TP WATER TAPPING POINT. REFER TO ENGINEER'S DOCUMENTATION

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATE FOR TOWN PLANNING
13/11/18	04	UPDATED FOR TOWN PLANNING
16/11/18	05	UPDATED FOR TOWN PLANNING
3/1218	06	UPDATED FO RTOWN PLANNING

CONSULTANTS

NOTE:
REFER TO WAYFINDING PACKAGES FOR SPECIFICATION & LOCATIONS.

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Overall Legend

DRAWN	CHECKED	SCALE A1 | SCALE A3	
DN	NK	NA	NA

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	00-002	06

1 OVERALL GENERAL ARRANGEMENT PLAN - GROUND & LOWER GROUND LEVEL
1:500 @A1 / 1:1000 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

Overall General Arrangement Plan - Ground & Lower Ground Level

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:500 1:1000

STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	00-101	01

1 OVERALL GENERAL ARRANGEMENT PLAN - LEVEL 1
1:500 @A1 / 1:1000 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
20/02/2018	03	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	04	UPDATED FOR TOWN PLANNING
13/11/18	05	UPDATED FOR TOWN PLANNING
16/11/18	06	UPDATED FOR TOWN PLANNING
30/11/18	07	UPDATED FOR TOWN PLANNING

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

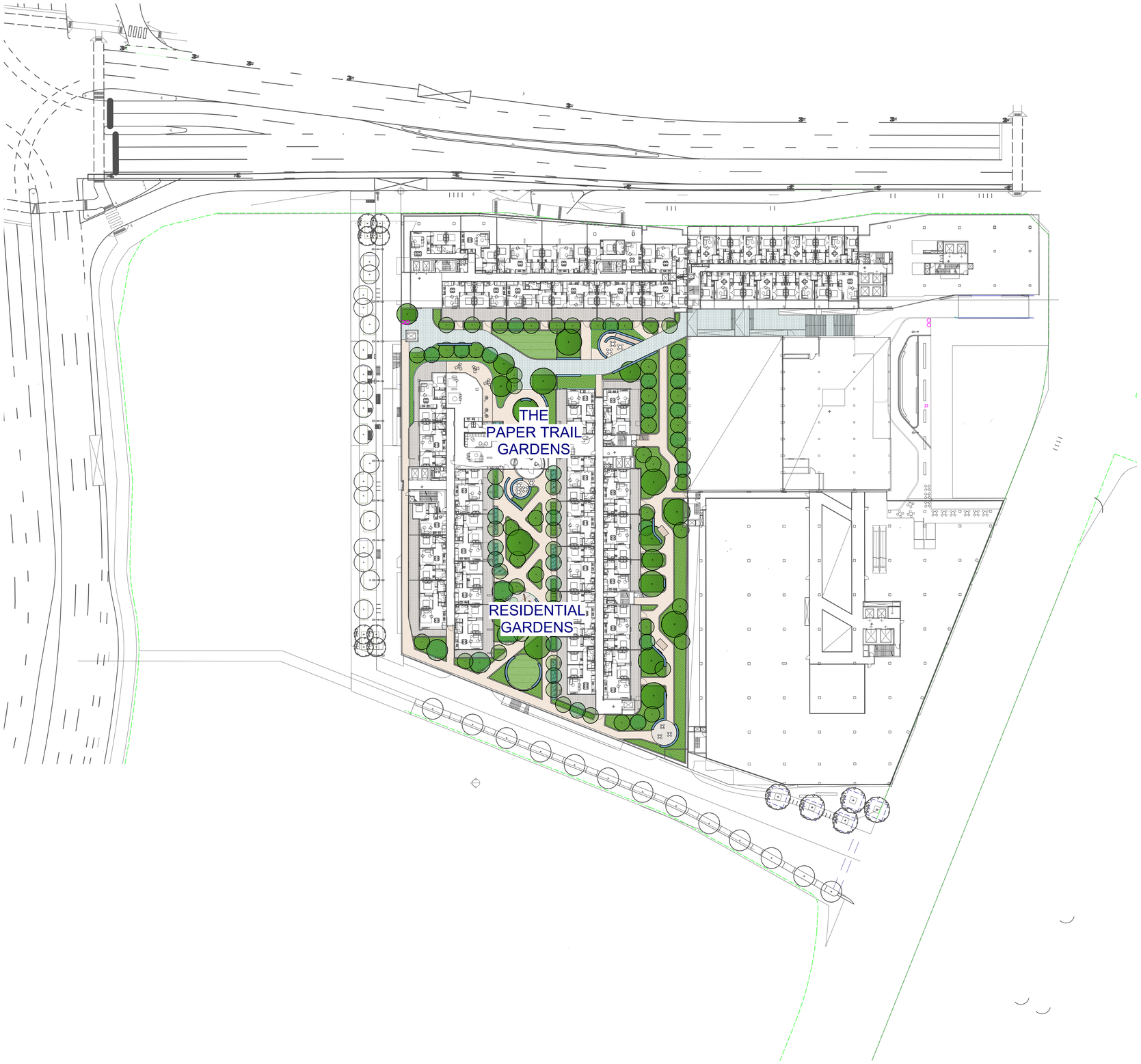
PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Overall General Arrangement Plan - Level 1

DRAWN	CHECKED	SCALE A1	SCALE A3
DN	NK	1:500	1:1000

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
	TP-LAN- 00-102	07



1 OVERALL GENERAL ARRANGEMENT PLAN - LEVEL 3
1:500 @A1 / 1:1000 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au®

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
8/11/18	03	WIP UPDATE FOR TOWN PLANNING
12/11/18	04	UPDATED FOR TOWN PLANNING
13/11/18	05	UPDATED FOR TOWN PLANNING
16/11/18	06	UPDATED FOR TOWN PLANNING
19/11/18	07	UPDATED FOR TOWN PLANING
30/11/18	08	UPDATED FOR TOWN PLANNING

CONSULTANTS

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

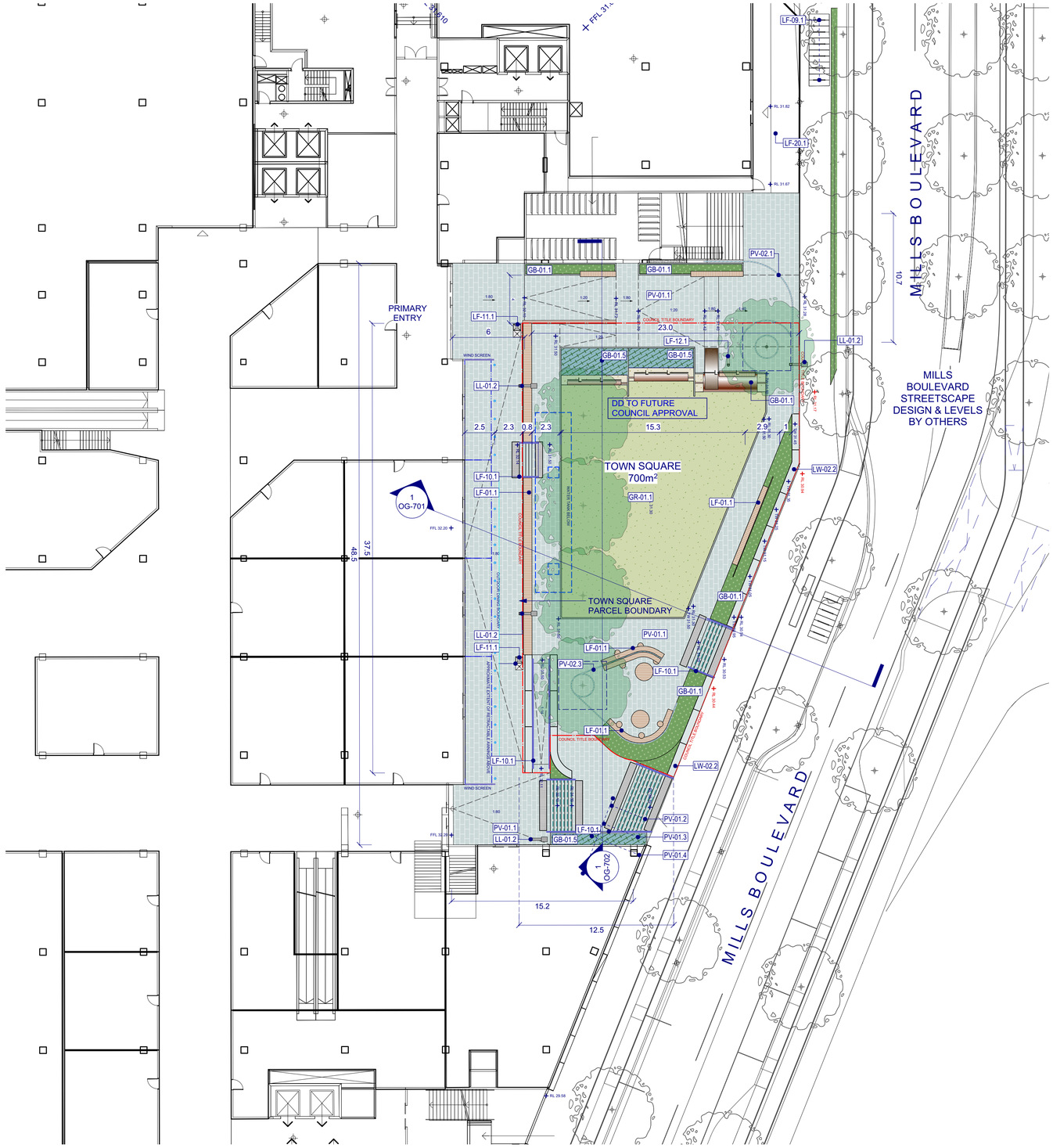
Overall General Arrangement Plan - Level 3

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:500 1:1000

STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
	TP-LAN- 00-103	08



1 GENERAL ARRANGEMENT PLAN - THE VILLAGE SQUARE
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
20/02/2018	03	ISSUED IN RESPONSE TP COUNCIL RFI
11/12/18	04	UPDATED FOR TOWN PLANNING
13/11/18	05	UPDATED FOR TOWN PLANNING
16/11/18	06	UPDATED FOR TOWN PLANNING
19/11/18	07	UPDATED FOR TOWN PLANNING
3/12/18	08	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

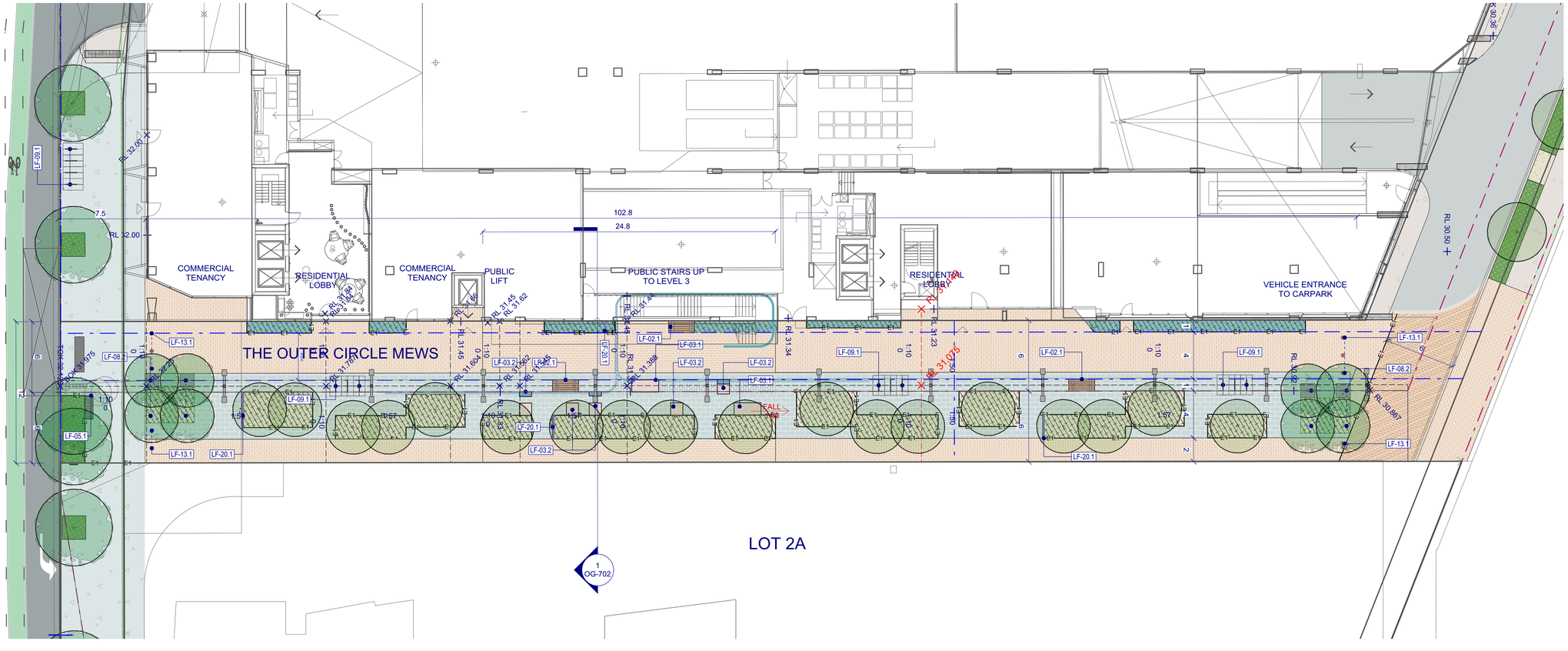
General Arrangement Plan - The Village Square

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:200 1:400

STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
	TP-LAN- 0G-101	08



1 GENERAL ARRANGEMENT PLAN - THE OUTER CIRCLE MEWS
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATED FOR TOWN PLANNING
13/11/18	04	UPDATED FOR TOWN PLANNING
16/11/18	05	UPDATED FOR TOWN PLANNING
11/19/18	06	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT

M16085
THE VILLAGE ALPHINGTON

DRAWING

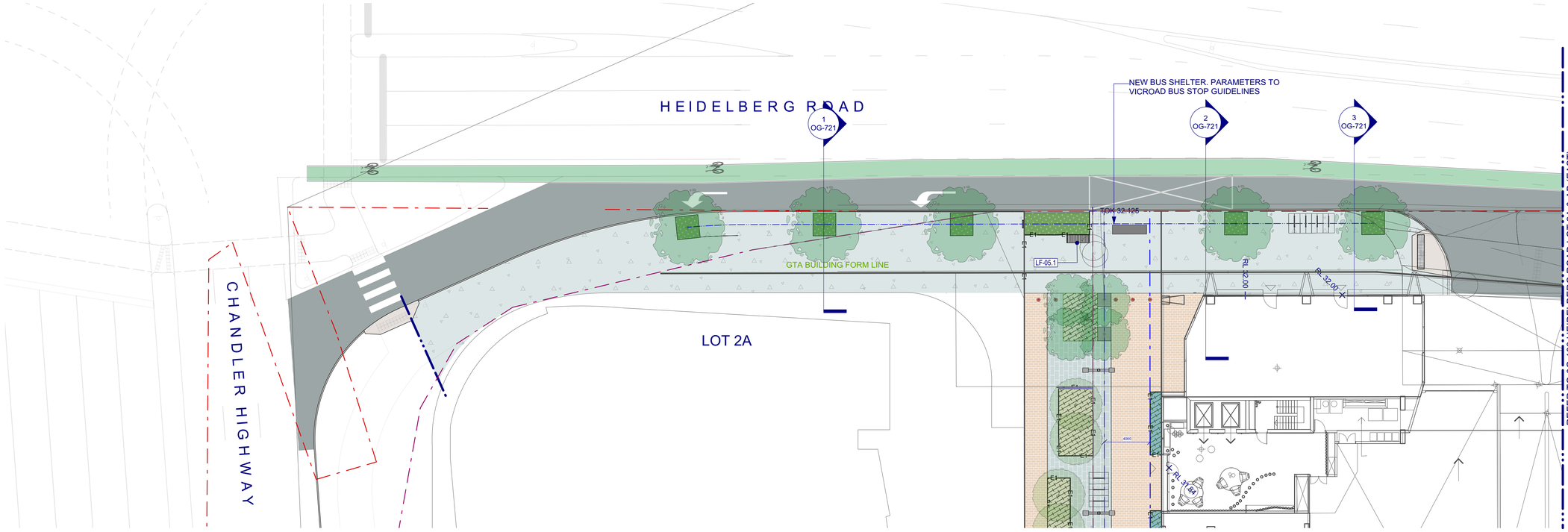
General Arrangement Plan - The Outer Circle Mews

DRAWN	CHECKED	SCALE A1	SCALE A3
DN	NK	1:200	1:400

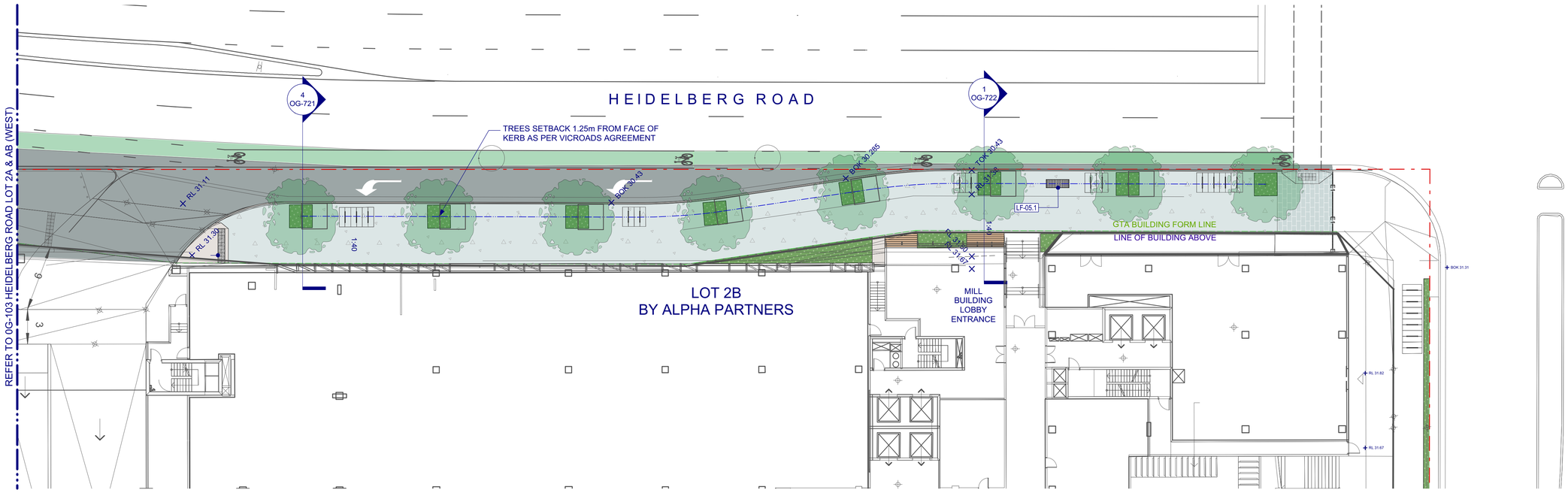
STATUS

PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	0G-102	06



1 GENERAL ARRANGEMENT PLAN - HEIDELBERG ROAD LOT 2A & AB (WEST)
1:200 @A1 / 1:400 @A3



2 GENERAL ARRANGEMENT PLAN - HEIDELBERG ROAD LOT 2A & AB (EAST)
1:200 @A1 / 1:400 @A3

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
11/12/18	03	UPDATE FOR TOWN PLANNING
13/11/18	04	UPDATED FOR TOWN PLANNING
16/11/18	05	UPDATED FOR TOWN PLANNING
19/11/18	06	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

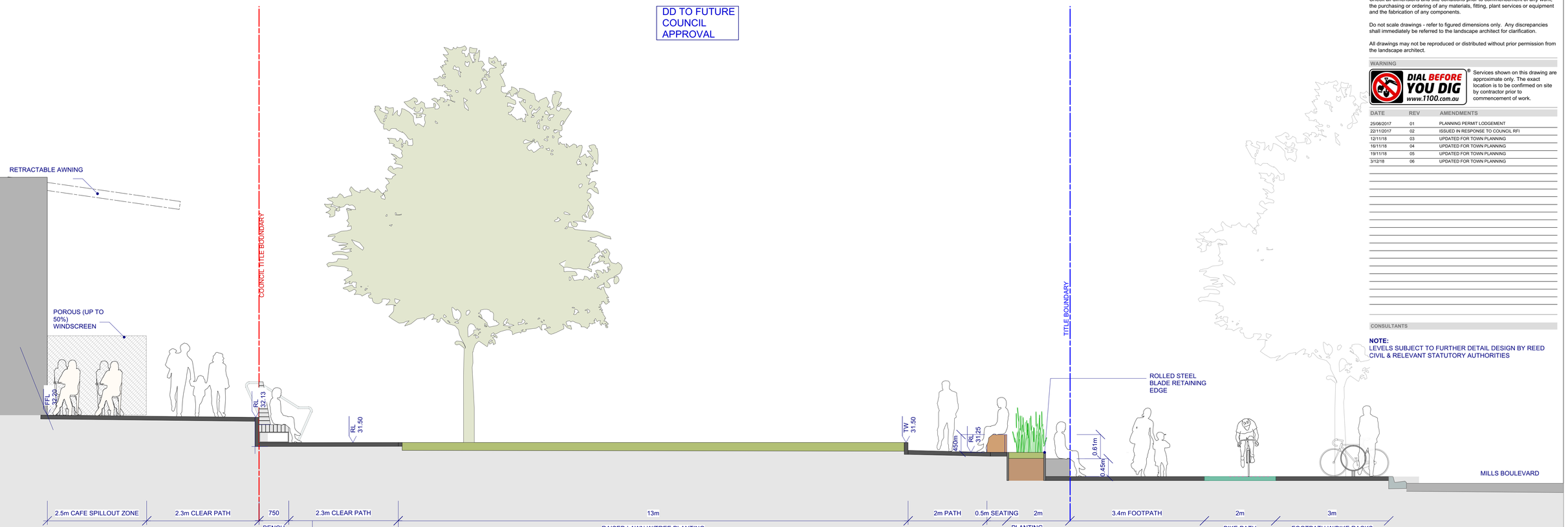
DRAWING
General Arrangement Plan -
Heidelberg Road Lot 2A & 2B

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:200 1:400

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
	TP-LAN- 0G-103	06

DD TO FUTURE COUNCIL APPROVAL



1 VILLAGE SQUARE SECTION AA
1:50 @A1 / 1:100 @A3

ILLUSTRATIVE 3D IMAGE: BIRD'S EYE VIEW OF THE VILLAGE SQUARE

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
12/11/18	03	UPDATED FOR TOWN PLANNING
16/11/18	04	UPDATED FOR TOWN PLANNING
19/11/18	05	UPDATED FOR TOWN PLANNING
3/12/18	06	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Sections - The Village Square AA

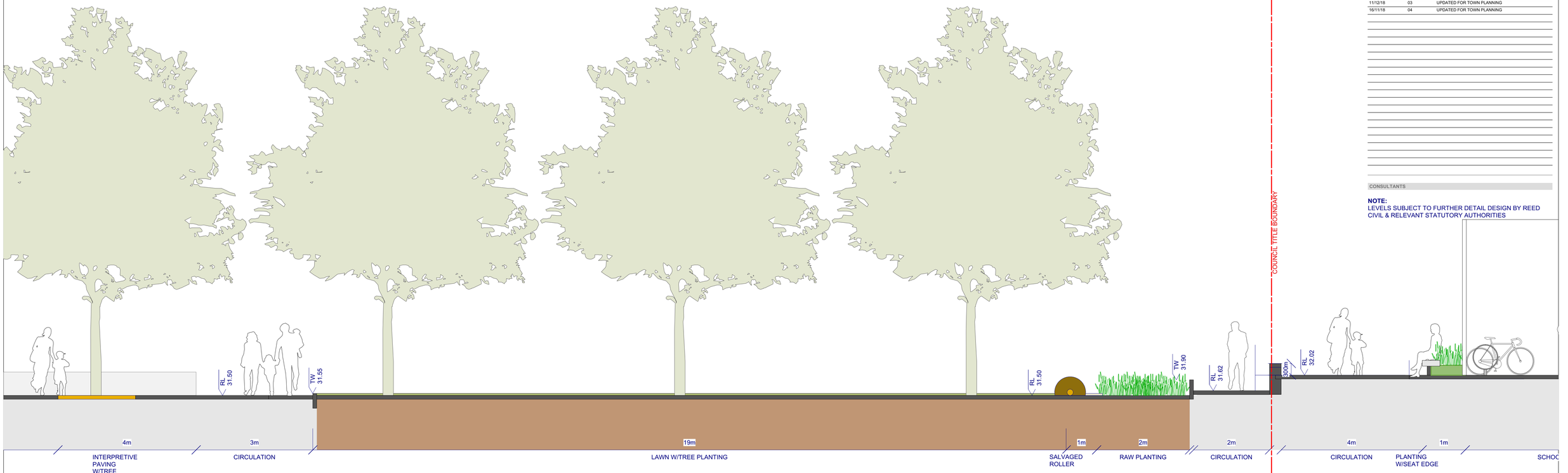
DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:50 1:100

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	0G-701	06

DD TO FUTURE COUNCIL APPROVAL

1 VILLAGE SQUARE SECTION BB
1:50 @A1 / 1:100 @A3



ILLUSTRATIVE 3D IMAGE: BIRD'S EYE VIEW OF THE VILLAGE SQUARE

NOTES

Check all dimensions and site conditions prior to commencement of any work, the purchasing or ordering of any materials, fitting, plant services or equipment and the fabrication of any components.

Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the landscape architect for clarification.

All drawings may not be reproduced or distributed without prior permission from the landscape architect.

WARNING

DIAL BEFORE YOU DIG www.1100.com.au

Services shown on this drawing are approximate only. The exact location is to be confirmed on site by contractor prior to commencement of work.

DATE	REV	AMENDMENTS
25/08/2017	01	PLANNING PERMIT LODGEMENT
22/11/2017	02	ISSUED IN RESPONSE TO COUNCIL RFI
11/12/18	03	UPDATED FOR TOWN PLANNING
16/11/18	04	UPDATED FOR TOWN PLANNING

CONSULTANTS

NOTE:
LEVELS SUBJECT TO FURTHER DETAIL DESIGN BY REED CIVIL & RELEVANT STATUTORY AUTHORITIES

ASPECT Studios™
ASPECT Studios Pty Ltd
Level 1, 30-32 Easey Street
Collingwood VIC 3066
Australia
T 03 9417 6844
F 03 9417 6855
www.aspect.net.au
aspectmelbourne@aspect.net.au
ABN 11 120 219 561
MELBOURNE

CLIENT

ALPHA PARTNERS

PROJECT
M16085
THE VILLAGE ALPHINGTON

DRAWING
Sections - The Village Square BB

DRAWN	CHECKED	SCALE A1 | SCALE A3
DN	NK	1:50 1:100

STATUS
PRELIMINARY
NOT FOR CONSTRUCTION

ACONEX REF. NO.	DRAWING NO.	REVISION
TP-LAN-	0G-702	04

THE VILLAGE ALPHINGTON
DRAWING REGISTER

Document Register	
No.	**Name**
TP-2E-000	Cover Sheet & Drawing Register
TP-2E-010	Existing Site Plan
TP-2E-100	Proposed Site Plan
TP-2E-200	B1 - Basement Car Park Plan
TP-2E-201	Lower Ground Plan
TP-2E-202	Ground Floor Level
TP-2E-203	Level 1
TP-2E-204	Level 2
TP-2E-205	Level 3 Podium
TP-2E-206	Level 4
TP-2E-207	Level 5
TP-2E-208	Level 6
TP-2E-209	Level 7
TP-2E-210	Level 8
TP-2E-211	Level 9
TP-2E-212	Level 10
TP-2E-213	Level 11
TP-2E-214	Level 12
TP-2E-215	Level 13
TP-2E-216	Level 14 Roof Plan
TP-2E-500	Elevations - North and East Street Frontages
TP-2E-501	Elevations - South and West Street Frontages
TP-2E-502	Miscellaneous Elevations
TP-2E-503	Miscellaneous Elevations
TP-2E-504	Miscellaneous Elevations
TP-2E-505	Miscellaneous Elevations
TP-2E-506	Miscellaneous Elevations
TP-2E-600	Overall Sections - Sheet 1 (North - South)
TP-2E-601	Overall Sections - Sheet 2 (North - South)
TP-2E-602	Overall Sections - Sheet 3 (East - West)
TP-2E-650	Facade Details - The Mill
TP-2E-651	Facade Details - The Machinery Hall & Atrium
TP-2E-652	Facade Details - The Food Market & Specialty
TP-2E-653	Facade Details - Machinery Hall
TP-2E-654	Facade Details - South Access Lane
TP-2E-655	Facade Details - The Mews
TP-2E-656	Facade Details - Sculptural Building
TP-2E-657	Facade Details - Urban Anchor
TP-2E-658	Facade Details - Living Matrix
TP-2E-659	Facade Details - Urban Anchor
TP-2E-800	Shadow Diagrams 01
TP-2E-800A	Shadow Diagrams 02
TP-2E-801	Schedules - Materials & Finishes_Sheet 1
TP-2E-802	Schedules - Materials & Finishes_Sheet 2
TP-2E-803	Schedules - Materials & Finishes_Sheet 3
TP-2E-804	Apartment Types - BADS Compliance
TP-2E-805	Apartment Types - BADS Compliance

Area Description		
	Zone Category	**Area Sqm**
COMMERCIAL		
	CHILDCARE CENTRE	975.09
	COMMERCIAL	678.35
	GYMNASIUM	892.33
	OFFICE	9,196.76
COMMUNITY		
	COMMUNITY	2,281.52
RETAIL		
	F & B	337.17
	SPECIALTY	4,062.92
	SUPERMARKET	5,797.36
SCHOOL		
	SCHOOL	4,052.30
		28,273.80 m²

Apartment Mix - North	Apartment Mix - West	Apartment Mix - East
Zone Name	**Zone Name**	**Zone Name**
1B	**1B**	**1B**
23	10	10
2B	**2B**	**2B**
125	84	48
148	**3B**	**3B**
	9	4
	103	***62***

Apartment Mix	
Apt	**Qty**
1B	**43**
	43
2B	**257**
	257
3B	**13**
	13
	313

Serviced Apartment
Zone Name
AB
35
BC
4
D
1
40

CARPARK TOTAL SUMMARY	
Story	Qty
Basement 1	112
Lower Ground	402
Level L01	275
Level L02	229
	1018

*** NOTE:**
PROVISION OF 40 ELECTRICAL VEHICLE CHARGING POINTS AS SHOWN ON PLANS (EV)

BIKES - RESIDENTIAL	
Story	Qty
Basement 1	62
Lower Ground	251
	313

BIKES - PUBLIC/VISITOR	
Home Story	Quantity
Lower Ground	128
Ground	88
	216

BIKES - STAFF	
Home Story	Quantity
Basement 1	56
	56

BIKES - SERVICED APTS	
Home Story	Quantity
Lower Ground	4
	4

BIKES - SCHOOL	
Home Story	Quantity
Ground	38
	38

BIKES - TOTAL	
Home Story	Quantity
Basement 1	118
Lower Ground	383
Ground	126
	627

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.lotlc.private - BIM Server 21/01234 TVA EC3 Structure
Plot Date: 27/11/18 2:57 pm

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

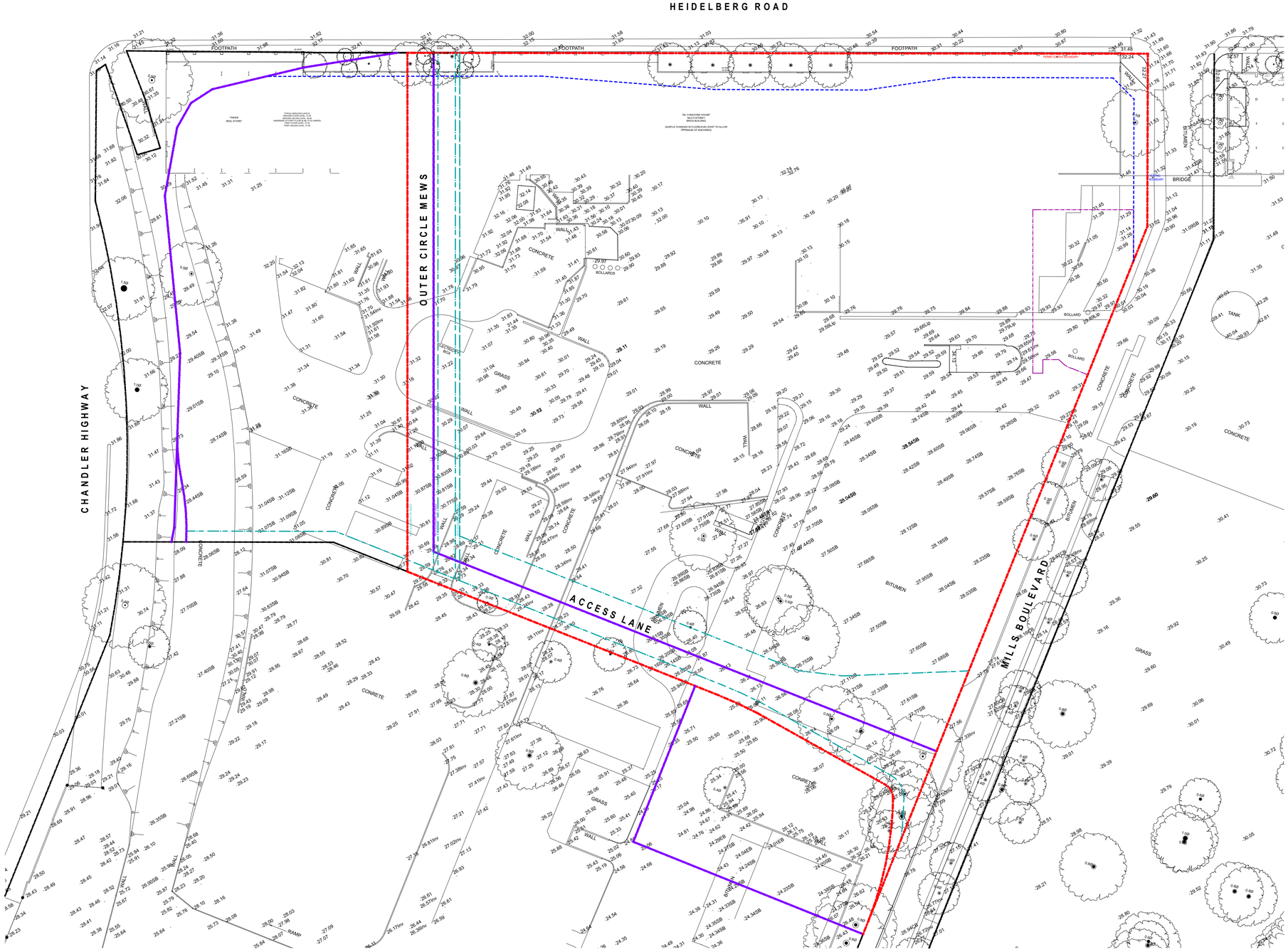
Drawing Name

Project Information

Cover Sheet & Drawing Register

Checked By	Drawn By	Scale @ A1
MK	TW	

Project Number	Drawing Number	Revision
01234	TP-2E-000	04



Extraction of Plan of Features and Levels Ref 22185 Version C from Reeds dated 12/08/2013

1 Existing Site Plan

1:500

0 10 15 20 25m 50m

1:250

BIM Server: \\bh-server.bdc.private - BIM Server 21\01334 TVA EO Structure
Plot Date: 26/11/18 10:28 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Existing Site
Existing Site Plan

Checked By	Drawn By	Scale @ A1
MK	TW	1:500

Project Number	Drawing Number	Revision
01234	TP-2E-010	04

LANDSCAPE:
REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL RELATED TO PRIVATE AND PUBLIC OPEN SPACES.

Proposed Site & Roof Plan

1 — 1:500

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24 TVA ECI Structure
Plot Date: 26/11/18 10:27 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture

Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000

Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects

66 Market Street
Southbank Victoria
3006 Australia

Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au

Bird de la Coeur
Architects Pty Ltd
ABN 44 074 504 573

architectus™

Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000

T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

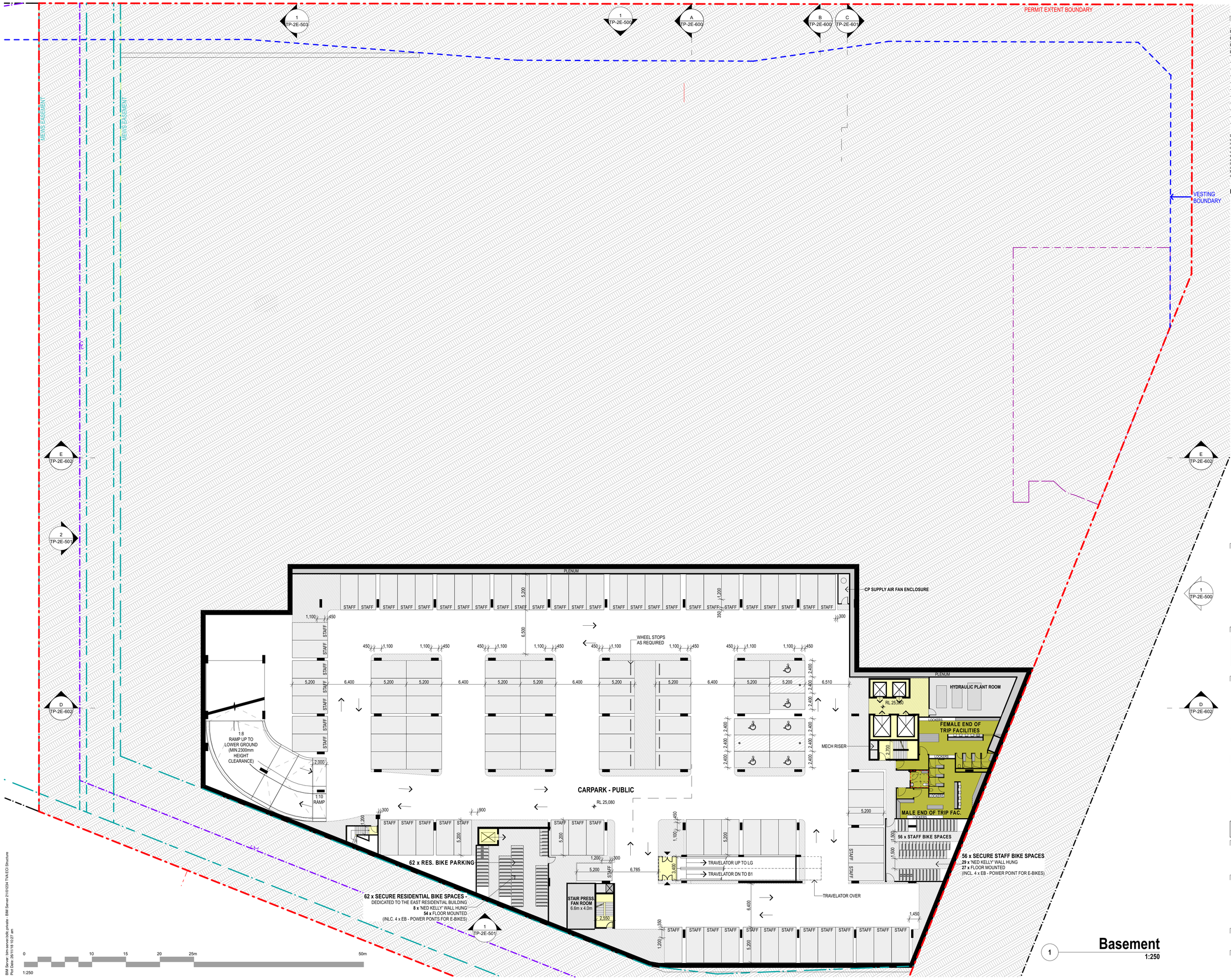
Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Proposed Site

Proposed Site Plan

Checked By	Drawn By	Scale @ A1
MK	TW	1:500
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-100	04



1 **Basement**
1:250

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

General Arrangement Plans
B1 - Basement Car Park Plan

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-200	04

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA ECI Structure
Plot Date: 26/11/18 10:27 am

PERMIT EXTENT BOUNDARY

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Lower Ground Plan

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	Drawing Number	Revision
01234	TP-2E-201	04

1 Lower Ground
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21\01234-TVA ECI Structure
Plot Date: 26/11/18 3:37 pm

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

ACCESS LANE

MILLS BOULEVARD

VESTING BOUNDARY

COMMERCIAL
A: 183 m²
RL 32,000

RESIDENTIAL LOBBY
RL 31,840

ENTRY

6 NO. BIKE SPACES

8 NO. BIKE SPACES

MECH RISER

ROLLER DOOR

BIN ROOM - 29m²

REFER CIVIL ENGINEERS DRAWINGS FOR VEHICULAR ENTRY/EXIT DESIGN

23,300 BUILDING TO BUILDING

1:26 RAMP

1:8 RAMP DOWN TO LOWER GROUND (MIN. 2300mm HEIGHT CLEARANCE)

SERVICES

SUPERMARKET
A: 1,612 m²

RESIDENTIAL LOADING

LANDSCAPE - REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

COMMERCIAL
A: 221 m²
RL 31,730

LOADING DOCK
RL 32,200

SUBSTATION
32,200

STAIR OVER

2 x REFUSE COMPACTORS. SIZE AS SPECIFIED IN WASTE REPORT

CHAIN MESH FENCE

BIN WASH DOWN AREA

BIN STORE AREA
12 x SPARE BINS FOR ORGANIC WASTE

BIN ROOM - 20m²

RESIDENTIAL LOBBY
RL 31,230

BIN STORE - 65m²
26 x BINS FOR COMMERCIAL, COMMUNITY & SCHOOL

BOH

SUPERMARKET BOH

SUPERMARKET
A: 4,185 m²
RL 32,200

COMMERCIAL
A: 275 m²
RL 31,230

RAMP UP TO LEVEL 1 (MIN. 2300mm HEIGHT CLEARANCE)

1:6 RAMP

1:8 RAMP

ROLLER DOOR

MEZZANINE PLANT ROOM / PLATFORM OVER

FIRE PATH RAMP 1:12 TO BASEMENT LOWER GROUND

RL 30,250

2.5m x 9m PEDESTRIAN VISIBILITY SPLAY

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

TRAVELATOR UP TO GD

TRAVELATOR DN TO LG

TROLLEY HOIST

SPECIALTY
A: 145 m²

MALL / CIRCULATION

SPECIALTY
A: 84 m²

SPECIALTY
A: 61 m²

SPECIALTY
A: 54 m²

SPECIALTY
A: 68 m²

SPECIALTY
A: 65 m²

SPECIALTY
A: 83 m²

SPECIALTY
A: 78 m²

SPECIALTY
A: 102 m²

SPECIALTY
A: 108 m²

SPECIALTY
A: 350 m²

SPECIALTY
A: 66 m²

SPECIALTY
A: 65 m²

SPECIALTY
A: 65 m²

SPECIALTY
A: 65 m²

SPECIALTY
A: 125 m²

SPECIALTY
A: 87 m²

SPECIALTY
A: 119 m²

SPECIALTY
A: 240 m²

SPECIALTY
A: 111 m²

SPECIALTY
A: 21 m²

SPECIALTY
A: 220 m²

SPECIALTY
A: 272 m²

SPECIALTY
A: 432 m²

SERVICED APARTMENT LOBBY
RL 32,200

SPECIALTY
A: 45 m²

SPECIALTY
A: 82 m²

SPECIALTY
A: 289 m²
31,610

TERRACE

MECH RISER

OFFICE LOBBY
32,200

DEDICATED SCHOOL BIKES
38 x FLOOR MOUNTED SCHOOL BIKE PARKING SPACES. 22 x LOCATED ON FOOTPATH

38 x SECURE SCHOOL BIKES

STAIRS OVER

CP EX
5 m²

STAIRS ACCESS TO FIRE SERVICES

BUILDING LINE ABOVE

12 NO. BIKE SPACES

8 NO. BIKE SPACES

LANDSCAPE - REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

VILLAGE SQUARE
MIN. 700 m²

WATER TANK BELOW

OPEN STAIR DOWN TO GROUND

ESCALATOR UP TO GD

ESCALATOR DN TO LG

FS TO LG

DDA PLATFORM LIFT

COMM. STORE

AMENITIES

MANAGEMENT CENTRE

NOTE:
68 x VISITOR BIKES LOCATED ON FOOTPATH. REFER TO ASPECT DRAWINGS FOR LOCATIONS.

ACCESS LANE INTERFACE- REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

Ground
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21/01234 TVA EC0 Structure
Plot Date: 27/11/18 3:12 pm

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone
Facsimile
www.bdlc.com.au
03 9682 4566
03 9682 4577
Bird de la Coeur
Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Ground Floor Level

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-202	04

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

ACCESS LANE

MILLS BOULEVARD

VESTING BOUNDARY

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

LANDSCAPE - REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

CARPARK ACCESS

CARPARK

BOH / STORAGE

Remote Coln

CP EX. FAN ROOM

TYPE N 1B A: 50 m²

TYPE A.2 1B A: 50 m²

TYPE A.2 1B A: 50 m²

TYPE A.3 1B A: 56 m²

TYPE A.4 1B A: 51 m²

TYPE A.4 1B A: 81 m²

TYPE A.5 1B A: 50 m²

TYPE B.3 2B A: 74 m²

TYPE M 2B A: 110 m²

COMMUNITY OUTDOOR A: 67 m²

COMMUNITY ACTIVITY A: 957 m² Level 1

COMMUNITY MULTIPURPOSE A: 865 m² Level 1

COMMUNITY PAVILLION A: 459 m² Level 1

SCHOOL Level 1 A: 321 m²

COMMERCIAL OFFICE A: 580 m² Level 1

SERVICED APARTMENT LOBBY

OFFICE LOBBY

AMENITIES

OUTLINE OF BUILDING ABOVE

L1 TERRACE

FUTURE FITOUT

STAIR OVER

LANDSCAPE - REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

VILLAGE SQUARE BELOW

OPEN STAIR DOWN TO GROUND

F & B A: 337 m² Level 1

VOID

ESCALATOR DN TO GD

ESCALATOR UP TO L1

SERVICES RISER

COMMERCIAL GYMNASIUM A: 892 m² Level 1

SUPERMARKET CONDENSER RL 38,000

STAIR ACCESS TO BELOW

STAIR ACCESS

MECH RISER

WHEEL STOPS AS REQUIRED

PLANTER

1:6 RAMP DOWN TO STREET LEVEL (MIN. 2300mm HEIGHT CLEARANCE)

1:6 RAMP UP TO LEVEL 2 (MIN. 2300mm HEIGHT CLEARANCE)

1:8

RL 38,000

38,000

STAFF

EV

152,400

24,000

12,000

4,000

6,000

1,000

5,350

8,300

8,400

5,440

5,600

19,350

31,060

9,730

71,150

12,000

9,960

2,000

575

6,050

6,025

5,901

6,400

1,750

1,100

650

7,400

6,350

6,800

5,800

5,400

6,000

6,300

8,000

6,200

1,000

2,400

2,000

1,800

2,100

2,150

2,450

1,650

1,600

2,800

500

425

300

325

350

400

450

850

575

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/07/234-TVA ECO Structure
Plot Date: 26/11/18 9:19 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Level 1

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-203	04

1 Level L01
1:250

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

LANDSCAPE - REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

TYPE A.2 1B A: 50 m²
TYPE A.2 1B A: 50 m²
TYPE A.2 1B A: 50 m²
TYPE A.3 1B A: 56 m²
TYPE A.4 1B A: 51 m²
TYPE A.4 1B A: 51 m²
TYPE A.5 1B A: 50 m²
TYPE B.3 2B A: 74 m²
TYPE N 1B A: 50 m²
TYPE M 2B A: 110 m²
A: 14 m²
A: 13 m²
A: 13 m²
A: 15 m²
A: 15 m²
A: 10 m²
A: 10 m²
A: 16 m²
A: 8 m²
A: 10 m²

RL 41,400
Remote Con.
CARPARK ACCESS
CP EX. FAN ROOM
STORAGE CUPBOARD TYPICAL
OVER BONET STORAGE TYPICAL
OBSOBS
CARPARK - PRIVATE
RL 41,400
1:8
1:6 RAMP DOWN TO LEVEL 1 (MIN. 2300mm HEIGHT CLEARANCE)
WHEEL STOPS AS REQUIRED
CARPARK ACCESS
13m² BIN ROOM
SMALL CAR SPACE
SMALL CAR SPACE
OBS
S.C

AMENITIES
Amenities
A: 32 m²
SA
Luggage /PABX
A: 28 m²
SA
Gym
A: 50 m²
SA
Staff Room
A: 50 m²
SA
Manager
A: 20 m²
SA
Conference Room
A: 80 m²
A: 20 m²

RAMP AND STAIR OVER
RL 42,000
42,000
STORE
AMMENITIES
AMMENITIES
RL 42,000
COMMERCIAL
OFFICE
A: 676 m²
Level 2

VESTING BOUNDARY

VOID TO LEVEL 1 MULTIPURPOSE
CEILING VOID TO LEVEL 1

LANDSCAPE - REFER TO ASPECT DRAWINGS FOR FURTHER DETAIL

VOID
ESCALATOR DN TO L1
ESCALATOR UP TO L2
SERVICES RISER
COMMERCIAL
OFFICE
A: 3,001 m²
Level 2
41,800
RL 41,800
AMENITIES
A: 154 m²
COMMERCIAL
OUTDOOR
A: 200 m²
COMMERCIAL
OUTDOOR
A: 74 m²
CP EX. FAN ROOM

MILLS BOULEVARD

NEW EASEMENT BY REED
NEW BOUNDARY BY REED
NEW EASEMENT BY REED

ACCESS LANE
STAIR ACCESS

EXTERNAL STORAGE PROVISIONS FOR APARTMENTS WHERE REQUIRED:
OBS = OVER BONET STORAGE TYP. 3.2m²
S.C = STORAGE CUPBOARD TYP. 5m²

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21\01234 TVA EC\ Structure
Plot Date: 26/11/18 9:29 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

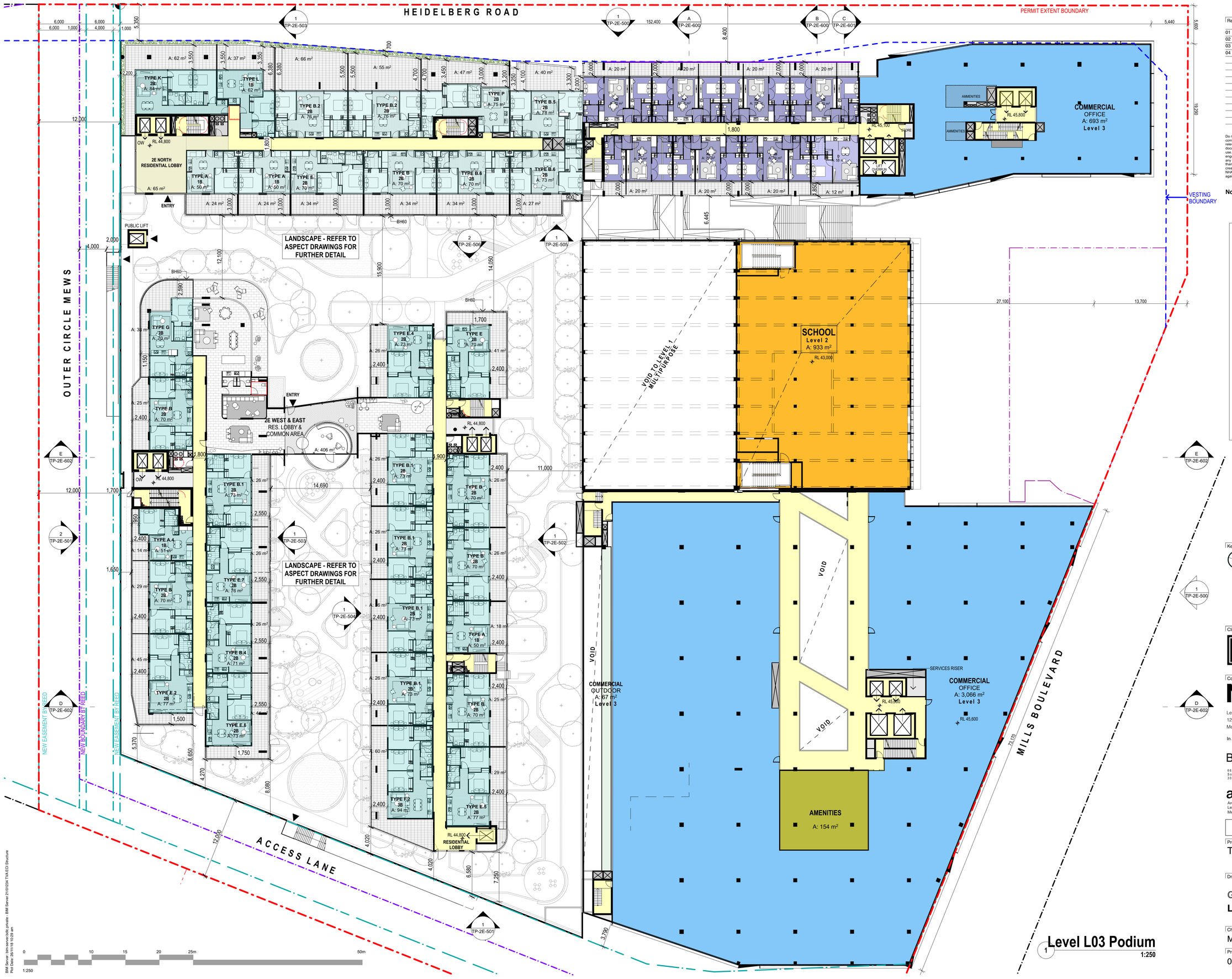
Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Level 2

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-204	04

1 Level L02
1:250



Level L03 Podium
1:250

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Level 3 Podium

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-205	04

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA ECI Structure
Plot Date: 26/11/18 10:29 am

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

ACCESS LANE

MILLS BOULEVARD

VESTING BOUNDARY

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

CEILING VOID THE MILL L03

CEILING VOID MACHINERY HALL L03

VOID TO LEVEL 1 MULTIPURPOSE

VOID

SCHOOL
Level 3
A: 933 m²
RL 47,500

RL 48,200

RL 47,900

RL 47,900

OW

1,800

11,300

27,100

13,700

6,445

8,400

15,200

15,330

12,000

5,360

2,200

2,100

4,480

1,800

1,900

5,440

5,600

5,190

8,850

8,000

8,300

11,640

7,400

3,330

7,020

2,850

2,950

3,860

12,000

73,170

1,900

1,800

1,550

150,200

1,250

3,200

2,750

1,200

3,900

2,400

2,000

2,600

2,070

2,800

2,000

2,400

2,000

2,000

2,000

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

ACCESS LANE

MILLS BOULEVARD

VESTING BOUNDARY

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

TYPE J 2B A: 78 m² | TYPE J.2 2B A: 82 m² | TYPE D 2B A: 74 m² | TYPE D 2B A: 74 m² | TYPE D 2B A: 74 m² | TYPE J.1 2B A: 83 m² | TYPE B.5 2B A: 79 m² | TYPE E.2 2B A: 76 m² | TYPE E.2 2B A: 76 m² | TYPE E 2B A: 70 m² | TYPE B 2B A: 70 m² | TYPE B 2B A: 70 m² | TYPE B.6 2B A: 73 m²

TYPE G 2B A: 70 m² | TYPE H 2B A: 72 m² | TYPE B 2B A: 70 m² | TYPE B.1 2B A: 73 m² | TYPE A.4 1B A: 51 m² | TYPE E.7 2B A: 76 m² | TYPE B 2B A: 70 m² | TYPE B.4 2B A: 71 m² | TYPE E.2 2B A: 77 m² | TYPE E.6 2B A: 73 m²

TYPE E.4 2B A: 73 m² | TYPE E 2B A: 70 m² | TYPE B.1 2B A: 73 m² | TYPE A.1 1B A: 52 m² | TYPE A 1B A: 50 m² | TYPE B 2B A: 70 m² | TYPE F.1 3B A: 97 m² | TYPE E.5 2B A: 79 m²

COMMERCIAL OFFICE A: 705 m² Level 4

AMMENITIES

CHILDCARE CENTRE A: 975 m² Level 4

CHILDCARE CENTRE OUTDOOR A: 759 m² Level 4

VOID TO LEVEL 1 MULTIPURPOSE

CEILING VOID LEVEL 3 SCHOOL

PLANT ENCLOSURE

LOUVERED PLANT ENCLOSURE - ACOUSTIC LOUVERS AS REQUIRED

VOID

SERVICES RISER

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street Southbank Victoria 3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Level 5

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-207	04

Level L05 1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TYA EC\ Structure
Plot Date: 26/11/18 10:20 am

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

VESTING BOUNDARY

OUTER CIRCLE MEWS

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

ACCESS LANE

MILLS BOULEVARD

COMMERCIAL
OFFICE
A: 476 m²
Level 5

SCHOOL
OUTDOOR
A: 811 m²
RL 52.000

SCHOOL
Level 4
A: 933 m²
RL 52.000

GLASS ROOF

PLANT ENCLOSURE

SP FAN ENCLOSURE 28 m²

LIFT LID

VOID TO OUTDOOR PLAY BELOW

VOID TO PLANT BELOW

Level L06
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24-TVA ECO Structure
Plot Date: 26/11/18 10:30 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

General Arrangement Plans
Level 6

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	Drawing Number	Revision
01234	TP-2E-208	04

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

VESTING BOUNDARY

MILLS BOULEVARD

ACCESS LANE

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

VOID TO SCHOOL OUTDOOR

SCHOOL
Level 5
A: 933 m²
RL 56,500

LIFT LID

PLANT ENCLOSURE

RL 57,500

RL 57,200

OW

1,800

15,330

15,200

11,300

6,445

8,400

152,400

12,000

5,350

5,600

5,440

5,600

14,240

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street Southbank Victoria 3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

General Arrangement Plans
Level 7

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	Drawing Number	Revision
01234	TP-2E-209	04

Level L07
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TW.EO Structure
Plot Date: 26/11/18 10:30 am

0 10 15 20 25m 50m
1:250

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

ACCESS LANE

MILLS BOULEVARD

VESTING BOUNDARY

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

TYPE J 2B A: 78 m²

TYPE J.2 2B A: 82 m²

TYPE D 2B A: 74 m²

TYPE D 2B A: 74 m²

TYPE D 2B A: 74 m²

TYPE J.1 2B A: 85 m²

TYPE E.2 2B A: 76 m²

TYPE E.2 2B A: 76 m²

TYPE E 2B A: 70 m²

TYPE B 2B A: 70 m²

TYPE E 2B A: 70 m²

RESIDENTIAL COMMUNAL ROOF GARDEN 60.800

PLANT ENCLOSURE

PLANT ENCLOSURE

RL 60.600

OW

TYPE G 2B A: 70 m²

TYPE H 2B A: 72 m²

TYPE B 2B A: 70 m²

TYPE B.1 2B A: 73 m²

RL 60.300

TYPE B.1 2B A: 73 m²

TYPE A.6 1B A: 51 m²

TYPE B.1 2B A: 73 m²

TYPE E.1 3B A: 94 m²

TYPE E.6 2B A: 73 m²

STAIR PRESS. FAN ROOM 8.4m x 2.7m

60.300RL

LIFT OVER RUN

STAIR PRESS. FAN ROOM 8.4m x 2.7m

SCHOOL OUTDOOR BELOW

PROVISION OF 24 kWp SOLAR CAPACITY ON SCHOOL ROOF

SCHOOL ROOF RL 60.600

VOID

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

General Arrangement Plans
Level 8

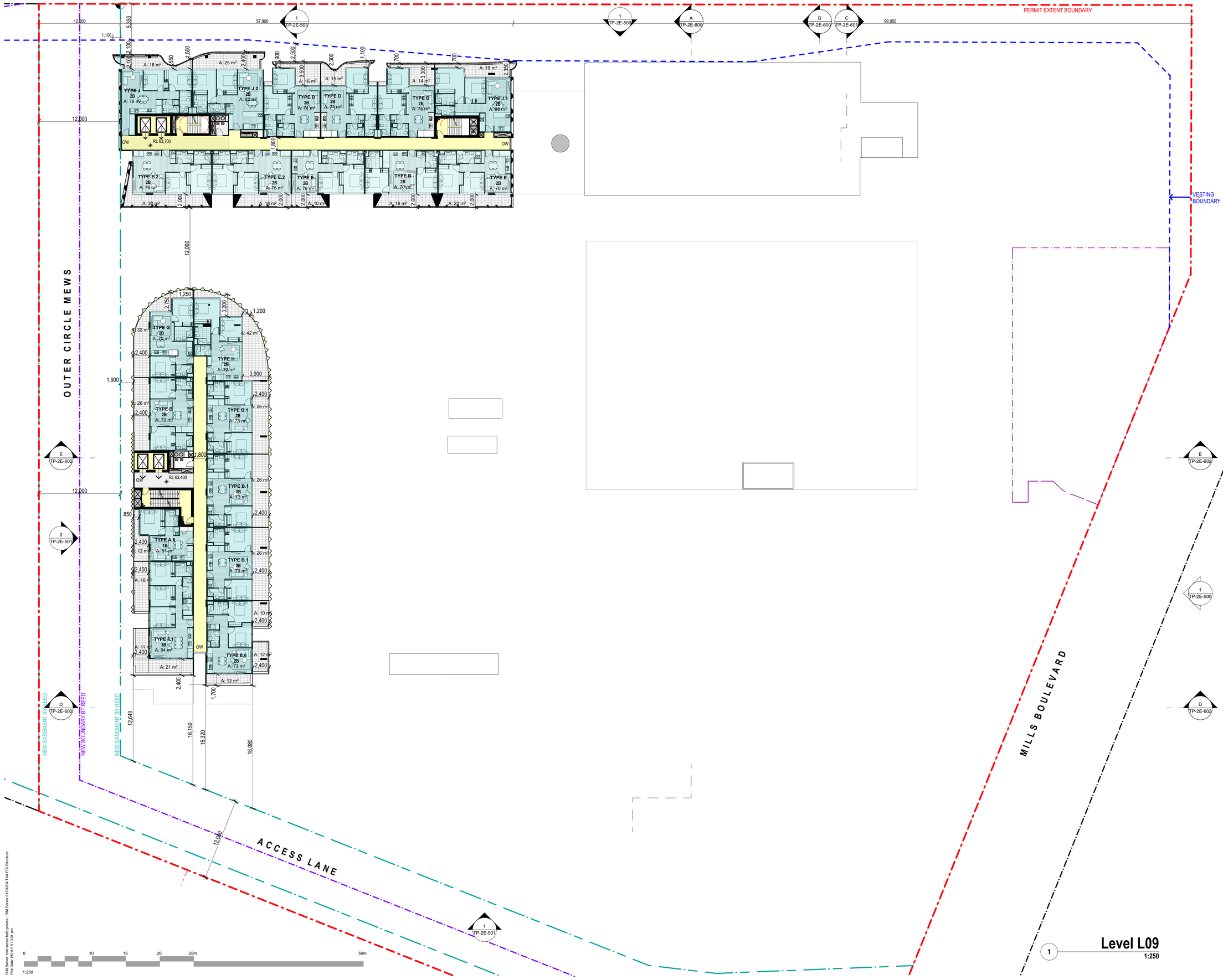
Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-210	04

Level L08
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.pvt.site - BIM Server 21/01234 TVA EO Structure
Plot Date: 26/11/18 10:31 am



Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture

Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000

Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects

66 Market Street
Southbank Victoria
3006 Australia

Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au

Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™

Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000

T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

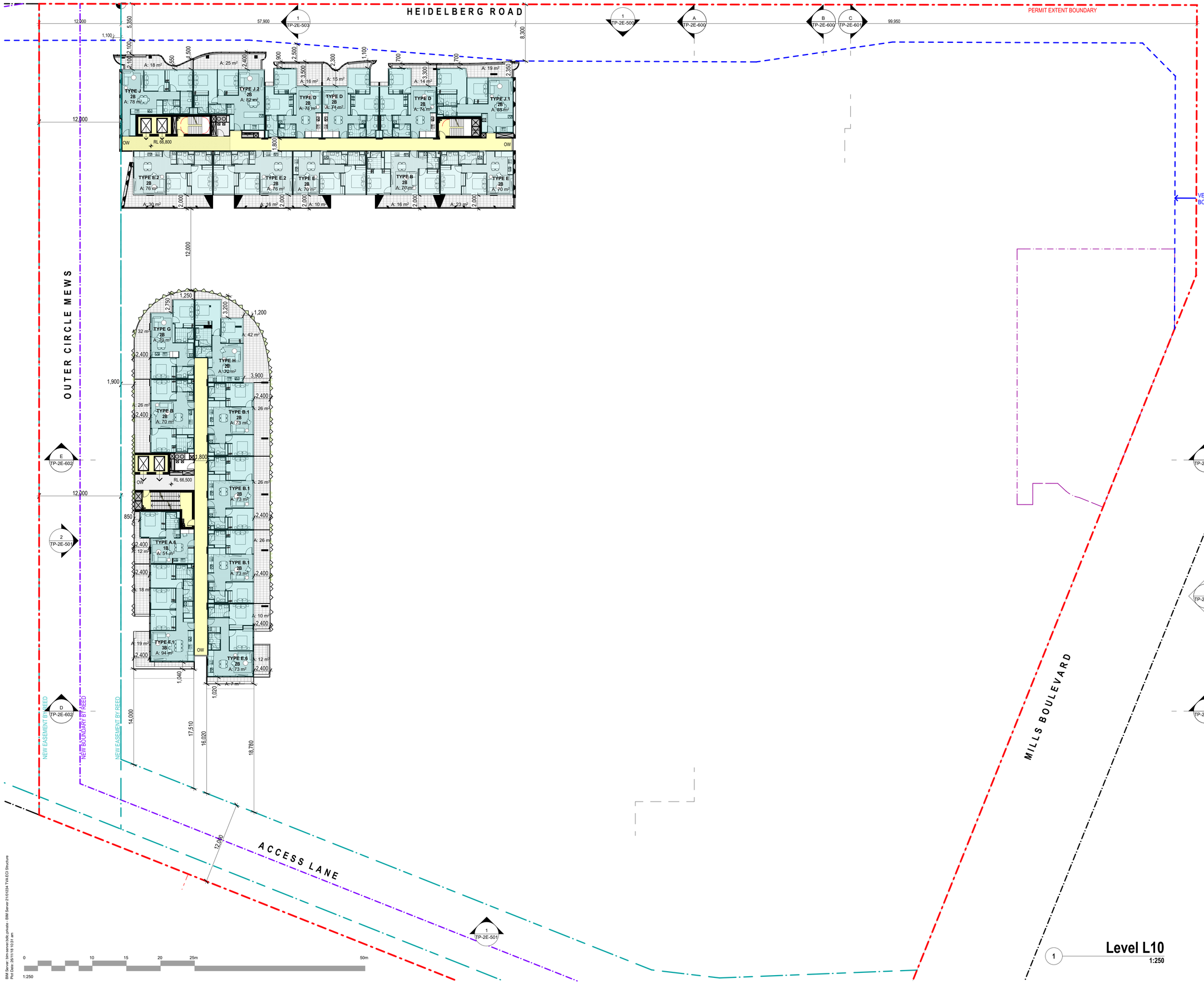
Project Name
THE VILLAGE ALPHINGTON

Drawing Name

General Arrangement Plans
Level 9

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-211	04

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA EO Structure
Plot Date: 26/11/18 10:31 am



Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Level L10
1:250

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Level 10

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	Drawing Number	Revision
01234	TP-2E-212	04

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA EO Structure
Plot Date: 26/11/18 10:31 am

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

VESTING BOUNDARY

OUTER CIRCLE MEWS

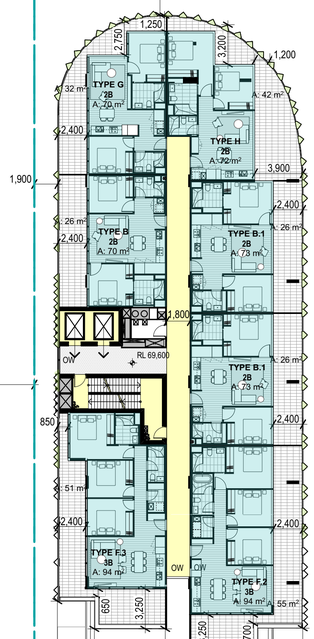
MILLS BOULEVARD

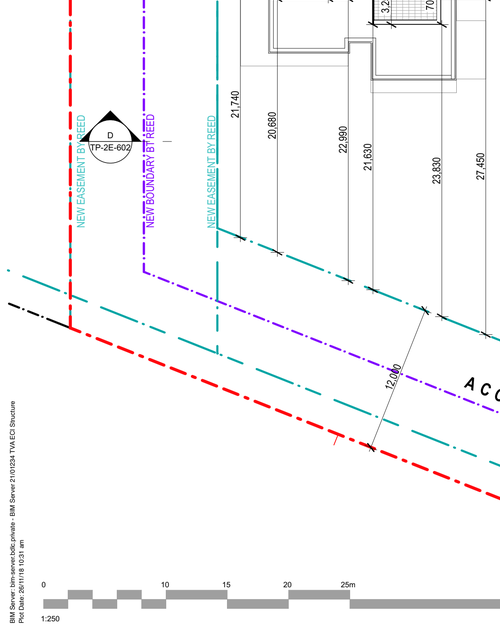
ACCESS LANE

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED





BIM Server: bim-server.bdc.private - BIM Server 21/01234 TVA EO Structure
Plot Date: 26/11/18 10:31 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

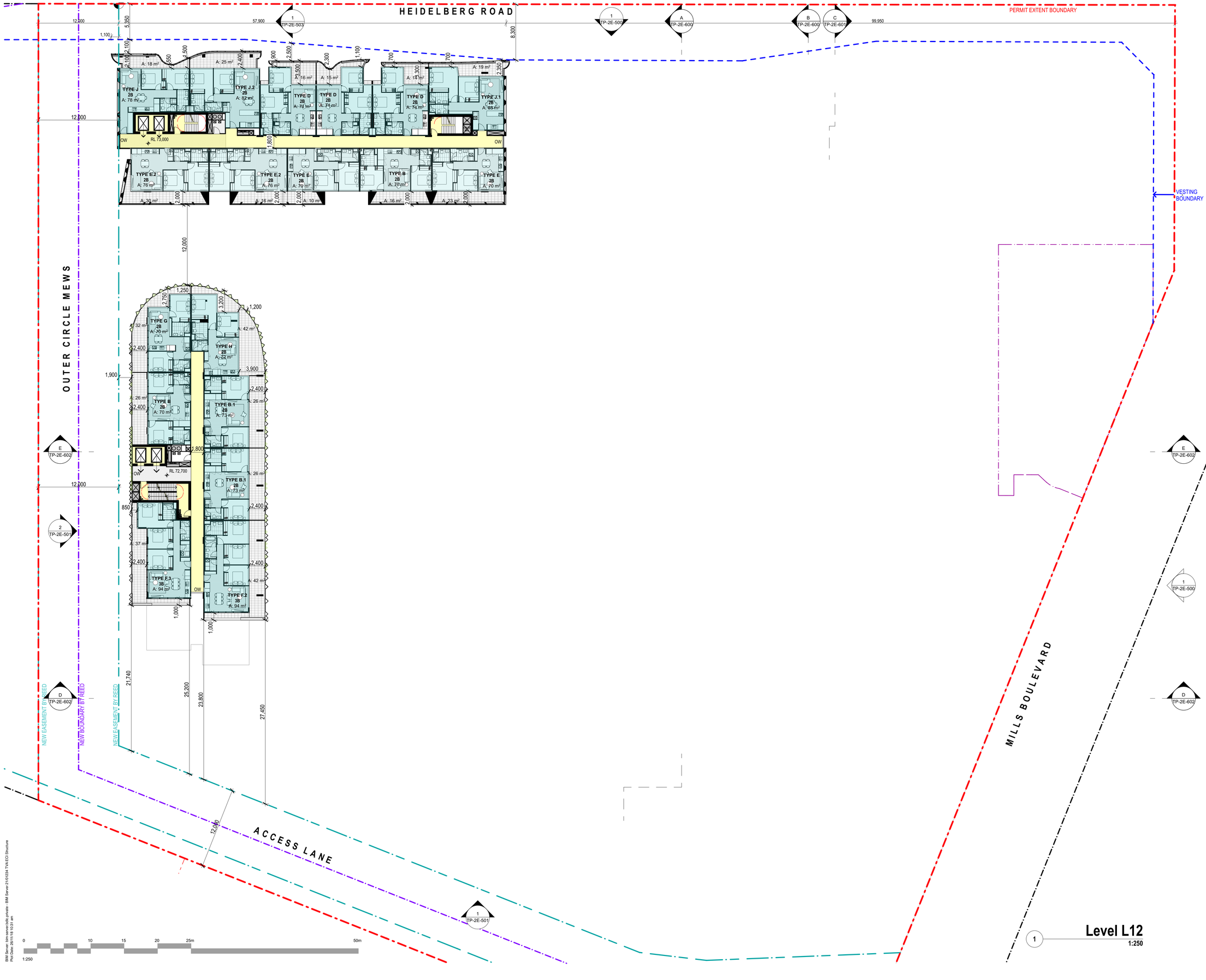
Drawing Name

General Arrangement Plans
Level 11

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-213	04

1 Level L11
1:250



Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

General Arrangement Plans
Level 12

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-214	04

1 Level L12
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24-TVA EO Structure
Plot Date: 26/11/18 10:31 am

HEIDELBERG ROAD

PERMIT EXTENT BOUNDARY

OUTER CIRCLE MEWS

VESTING BOUNDARY

NEW EASEMENT BY REED

NEW BOUNDARY BY REED

NEW EASEMENT BY REED

ACCESS LANE

MILLS BOULEVARD

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
General Arrangement Plans
Level 13

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-215	04

1 Level L13
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21\01234 TVA EO Structure
Plot Date: 26/11/18 10:22 am

HEIDELBERG ROAD

OUTER CIRCLE MEWS

MILLS BOULEVARD

ACCESS LANE

PERMIT EXTENT BOUNDARY

VESTING BOUNDARY

12,000 | 5,350 | 1,100 | 2,100 | 57,900 | 8,300 | 99,950

1 TP-2E-503 | 1 TP-2E-500 | A TP-2E-600 | B TP-2E-600 | C TP-2E-601

LIFT OVER RUN

S.P FAN ENCLOSURE

HW PLANT

PLANT ENCLOSURE

AREA FOR SOLAR HOT WATER PANELS SHOWN GREY

STAIR PRESS FAN ENCLOSURE

SP

SOLAR 15kW

LOUVERED PLANT ENCLOSURE

LOUVERED PLANT ENCLOSURE

PROVISION OF 61 kWp
SOLAR CAPACITY ON APARTMENT ROOFS.

1,900

HW PLANT

LOUVERED PLANT ENCLOSURE

PLANT ENCLOSURE

LIFT OVER RUN

AREA FOR SOLAR HOT WATER PANELS SHOWN GREY

STAIR PRESS. FAN ENCLOSURE

12,000

E TP-2E-602

2 TP-2E-501

D TP-2E-602

12,000

12,000

E TP-2E-602

1 TP-2E-500

D TP-2E-602

12,000

1 TP-2E-501

1 Level L14
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA ECI Structure
Plot Date: 26/11/18 10:22 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND

- SUPERMARKET
- SPECIALTY
- F & B
- COMMERCIAL
- COMMUNITY
- SCHOOL
- OUTDOOR
- SERVICED APARTMENT
- RESIDENTIAL
- AMENITIES
- CARPARK
- CIRCULATION
- ENTRY POINTS
- PERMIT EXTENT BOUNDARY
- EXISTING TITLE BOUNDARY
- NEW LOT BY REED
- NEW EASEMENT BY REEDS
- NEW VESTING BOUNDARY BY REEDS

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 9480
www.architectus.com.au

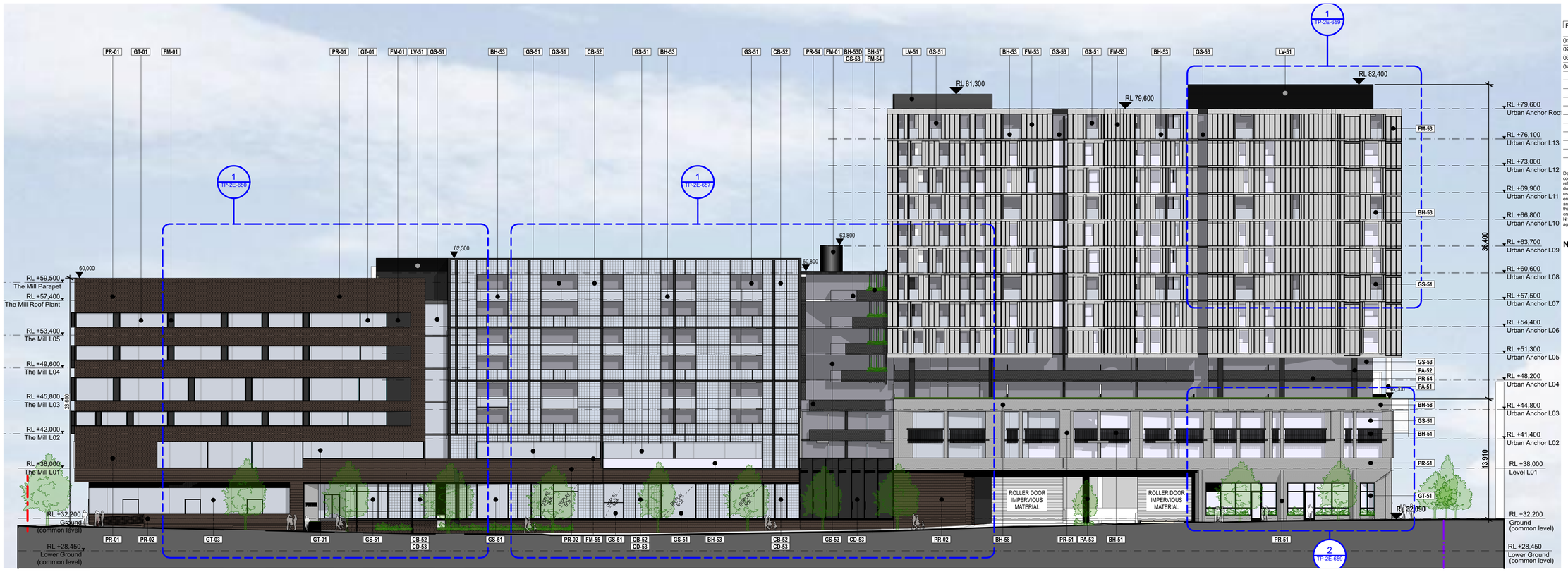
TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

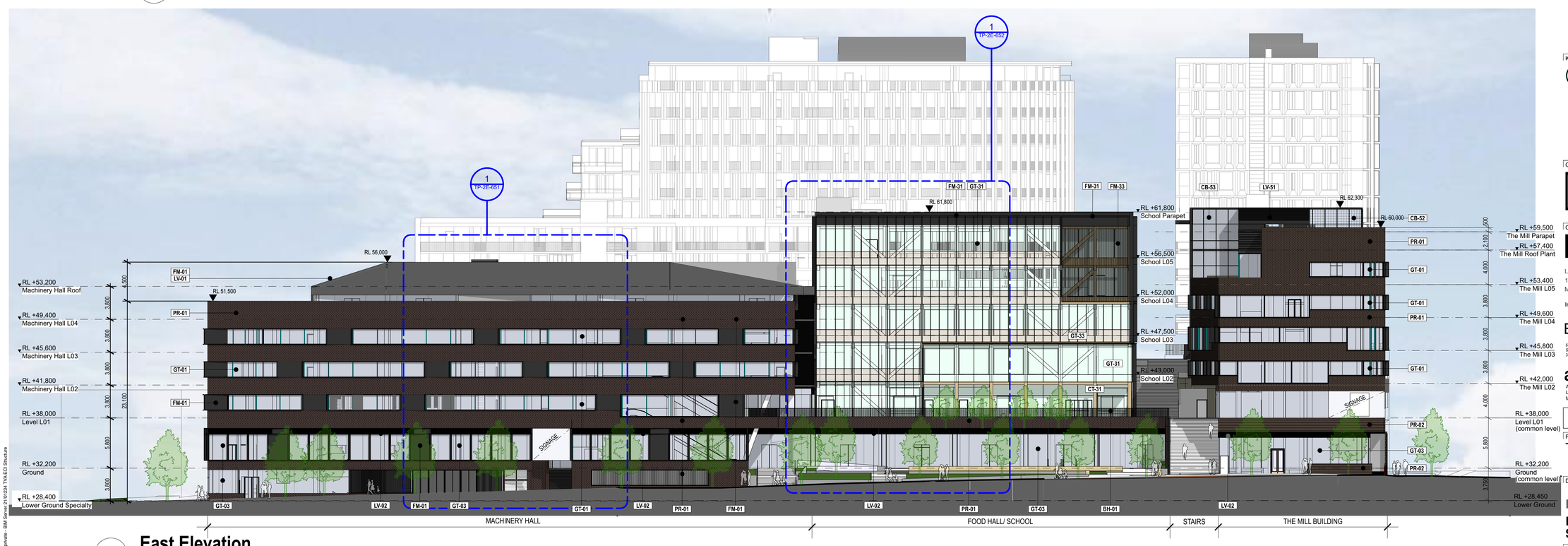
Drawing Name

General Arrangement Plans
Level 14 Roof Plan

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-216	04



1 **North Elevation**
1:250



2 **East Elevation**
1:250

0 10 15 20 25m 50m
1:250

BIM Server: \\tm-server.bdc.private - BIM Server 21\01234 TVA EO Structure
Plot Date: 26/11/18 3:38 pm

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Elevations
Elevations - North and East Street Frontages

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-500	04

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

1 South Elevation

1:250

2 West Elevation

1:250

0 5 10 15 20 25m 50m

1:250

BIM Server: \\bh-server.bdc.private - BIM Server 21\01234 TVA EO Structure
Plot Date: 26/11/18 9:23 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

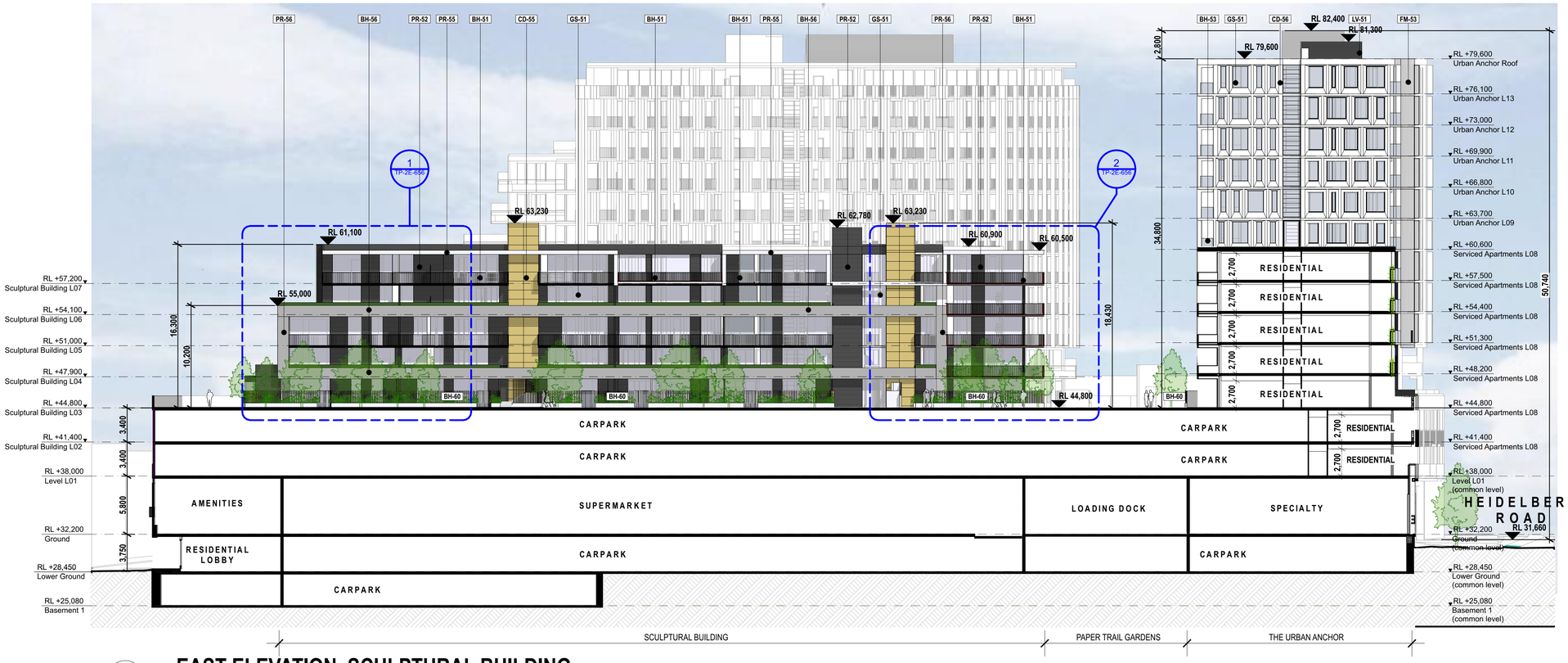
TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Elevations
Elevations - South and West Street Frontages

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-501	04



1 EAST ELEVATION_SCULPTURAL BUILDING

1:250

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24 TV AECI Structure
Plot Date: 26/11/18 9:26 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

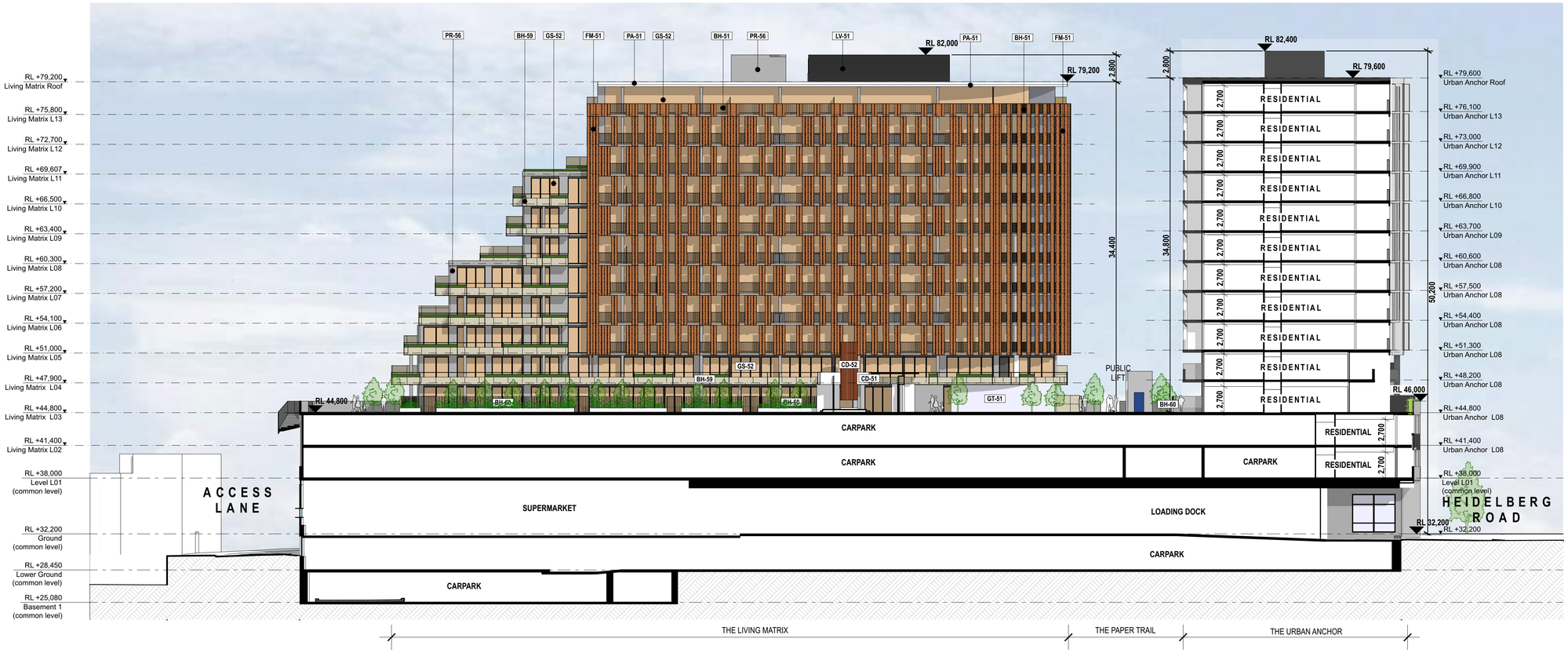
Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Elevations

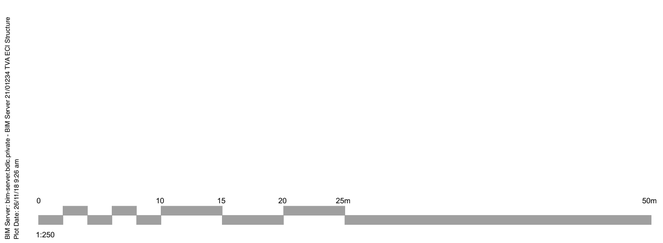
Miscellaneous Elevations

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-502	04



1 East Elevation - Living Matrix & Urban Anchor

1:250



BIM Server: bim-server.bdc.pl/site - BIM Server 21/01234 TVA E/2 Structure
Plot Date: 26/11/18 9:26 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

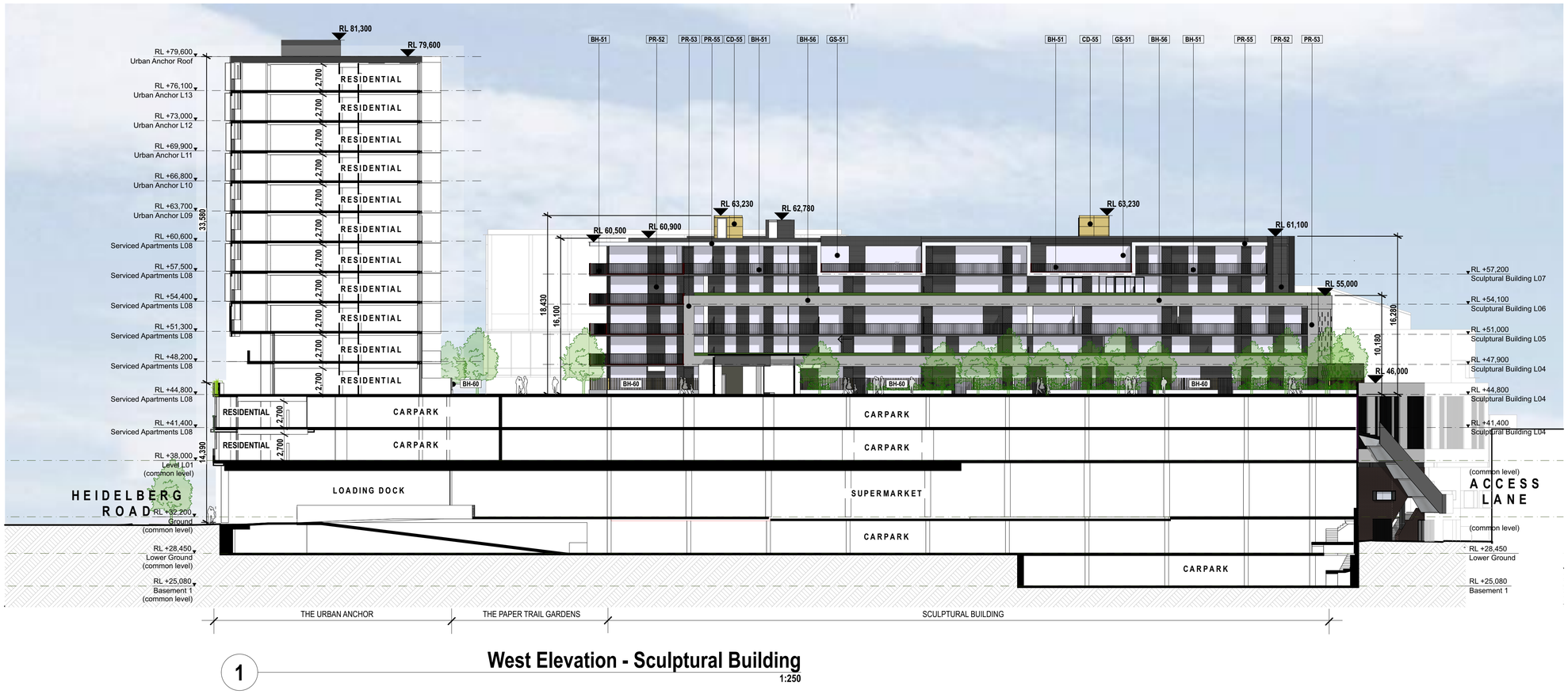
Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Elevations

Miscellaneous Elevations

Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-503	04



1

West Elevation - Sculptural Building

1:250

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234-TW.EO Structure
Plot Date: 26/11/18 9:27 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Elevations

Miscellaneous Elevations

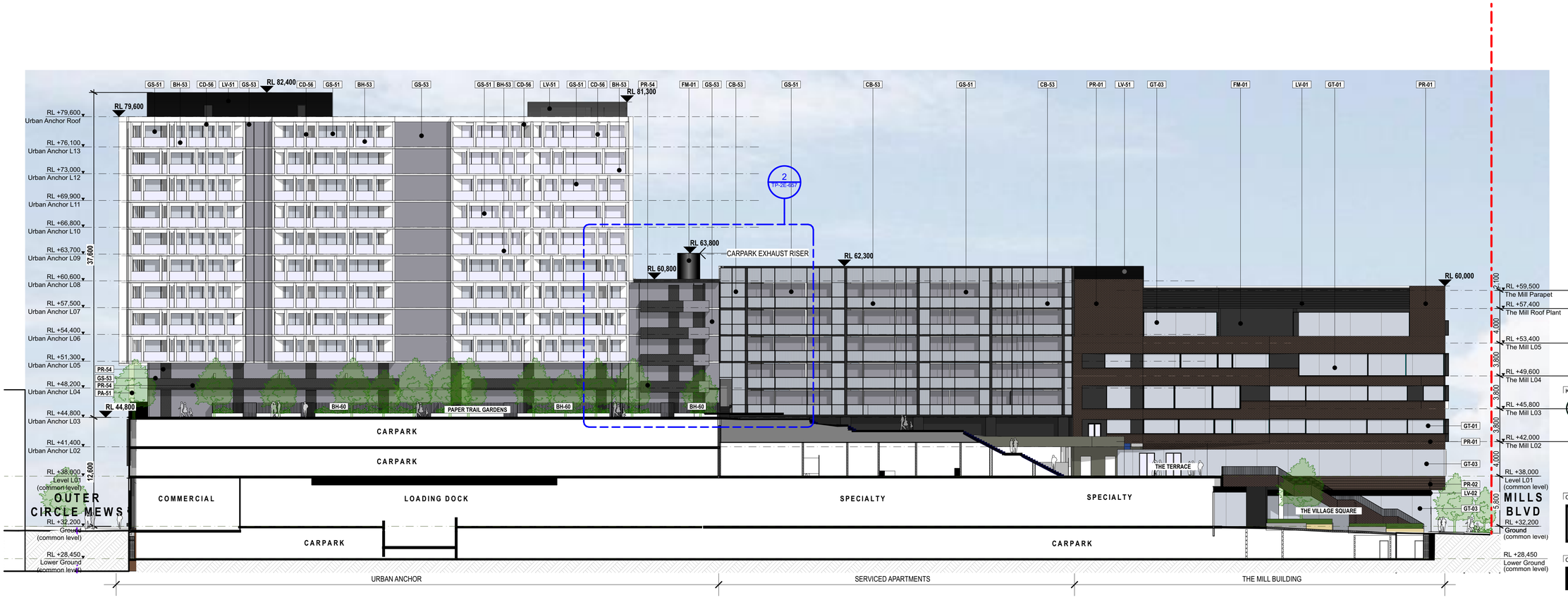
Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-504	04

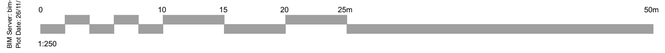
Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.



1 **South Elevation - Urban Anchor**
1:250



Key Plan

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Elevations
Miscellaneous Elevations

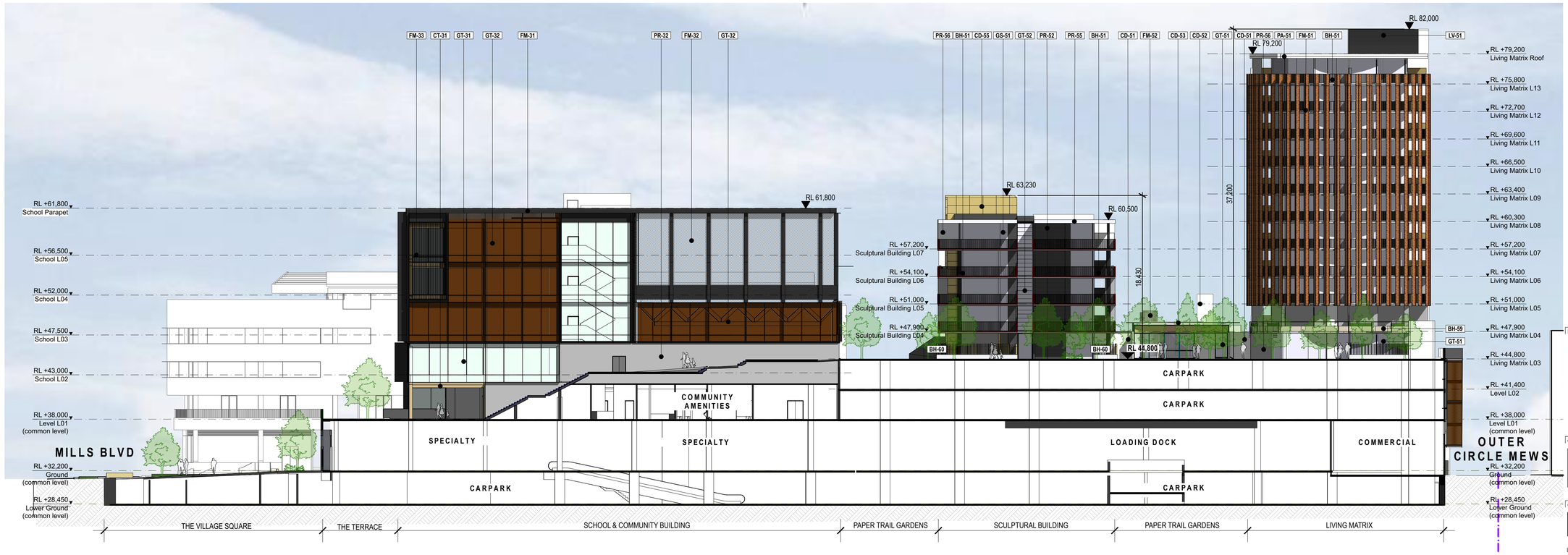
Checked By	Drawn By	Scale @ A1
MK	TW	1:250
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-505	04

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA ECI Structure
Plot Date: 26/11/18 9:27 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.



1 North Elevation - Sculptural Building & Living Matrix

1:250

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234-TVA EO Structure
Plot Date: 26/11/18 9:28 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

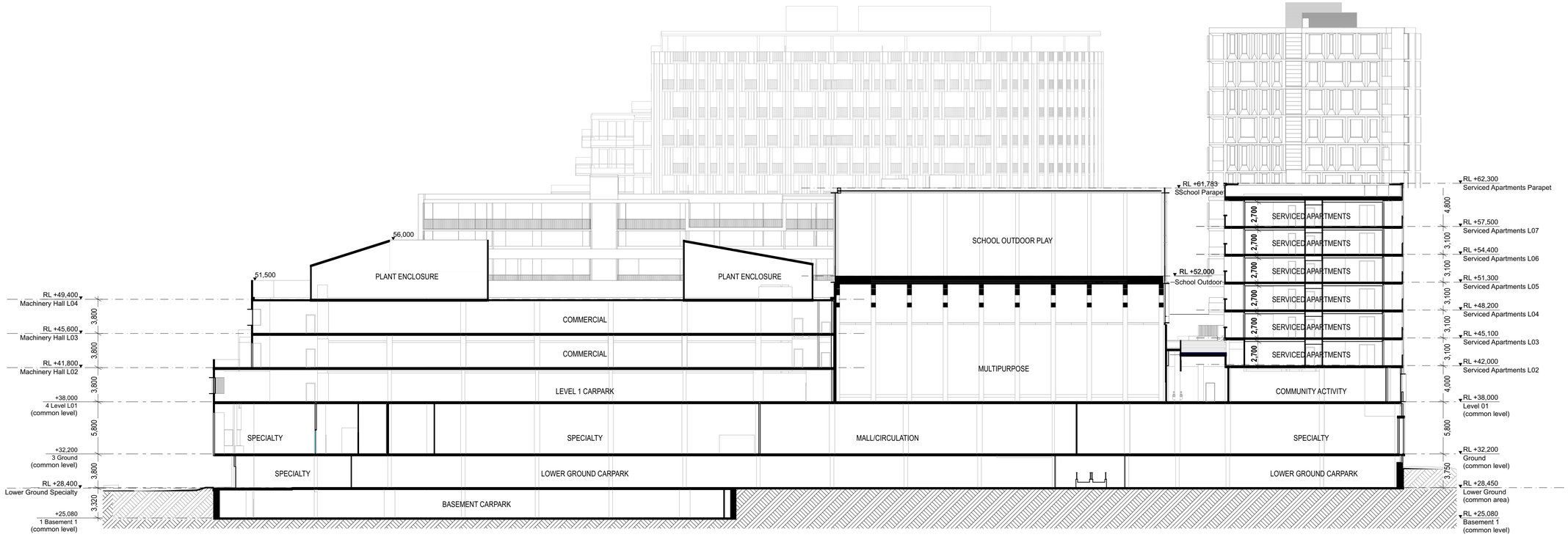
Drawing Name

Elevations

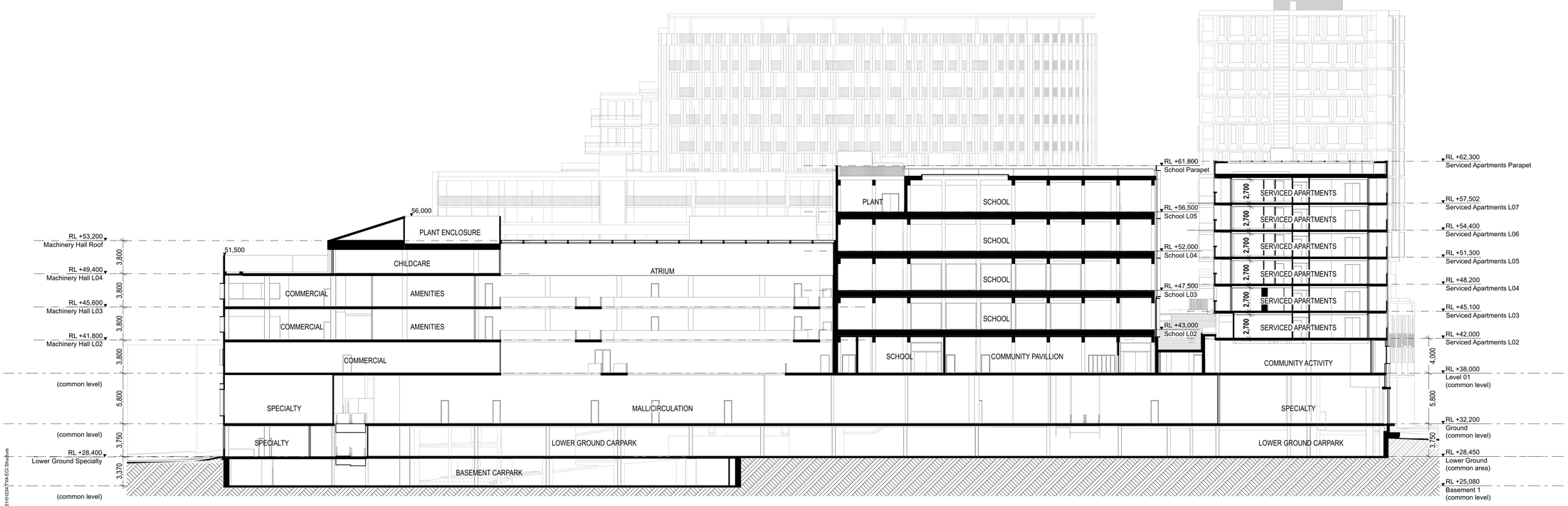
Miscellaneous Elevations

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-506	04



A **Section A**
1:250



B **Section B**
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21\01234\TVA EO Structure
Plot Date: 26/11/18 9:29 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Sections

Overall Sections - Sheet 1 (North - South)

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-600	04

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

C **Section C**
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234-TYA.EG Structure
Plot Date: 26/11/18 9:29 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

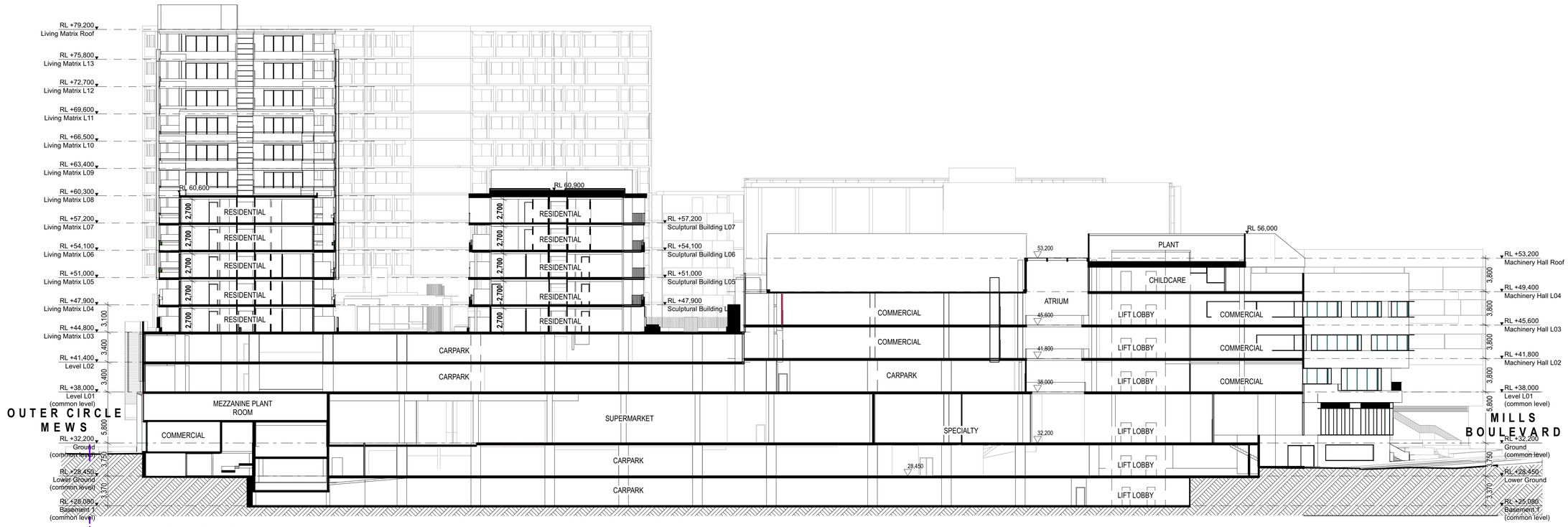
Drawing Name

Sections

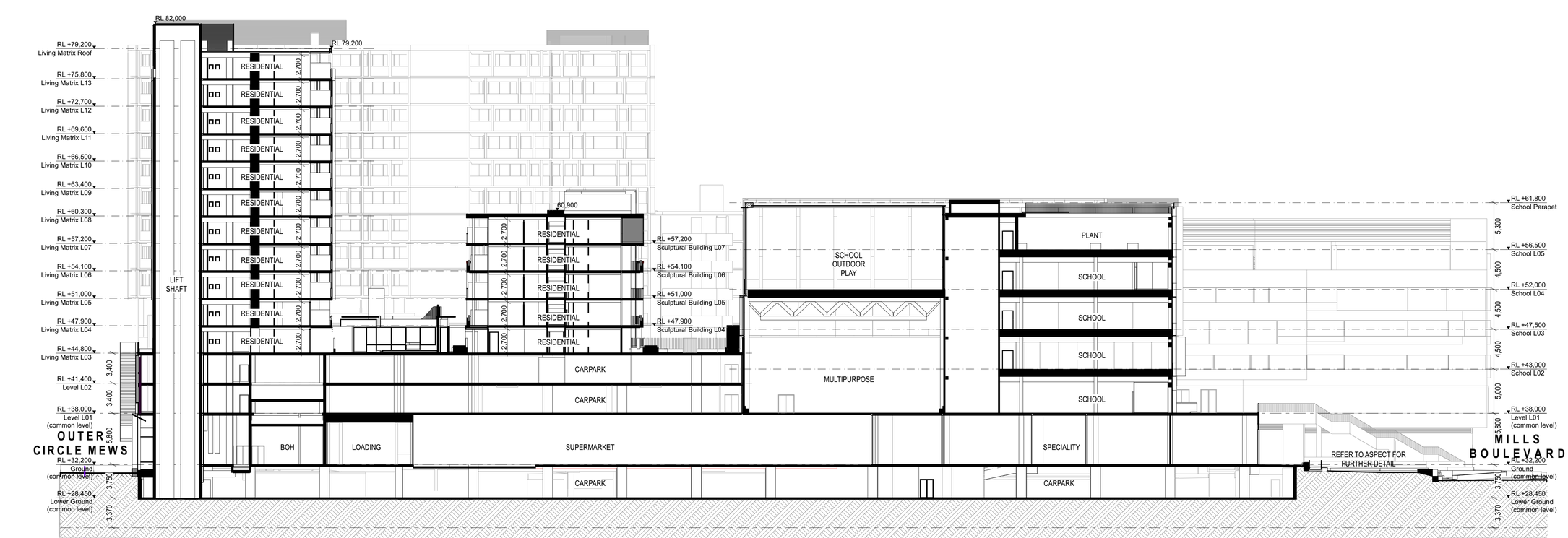
Overall Sections - Sheet 2 (North - South)

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-601	04



D **Section D**
1:250



E **Section E**
1:250

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21\01234 TYA ECI Structure
Plot Date: 26/11/18 9:29 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

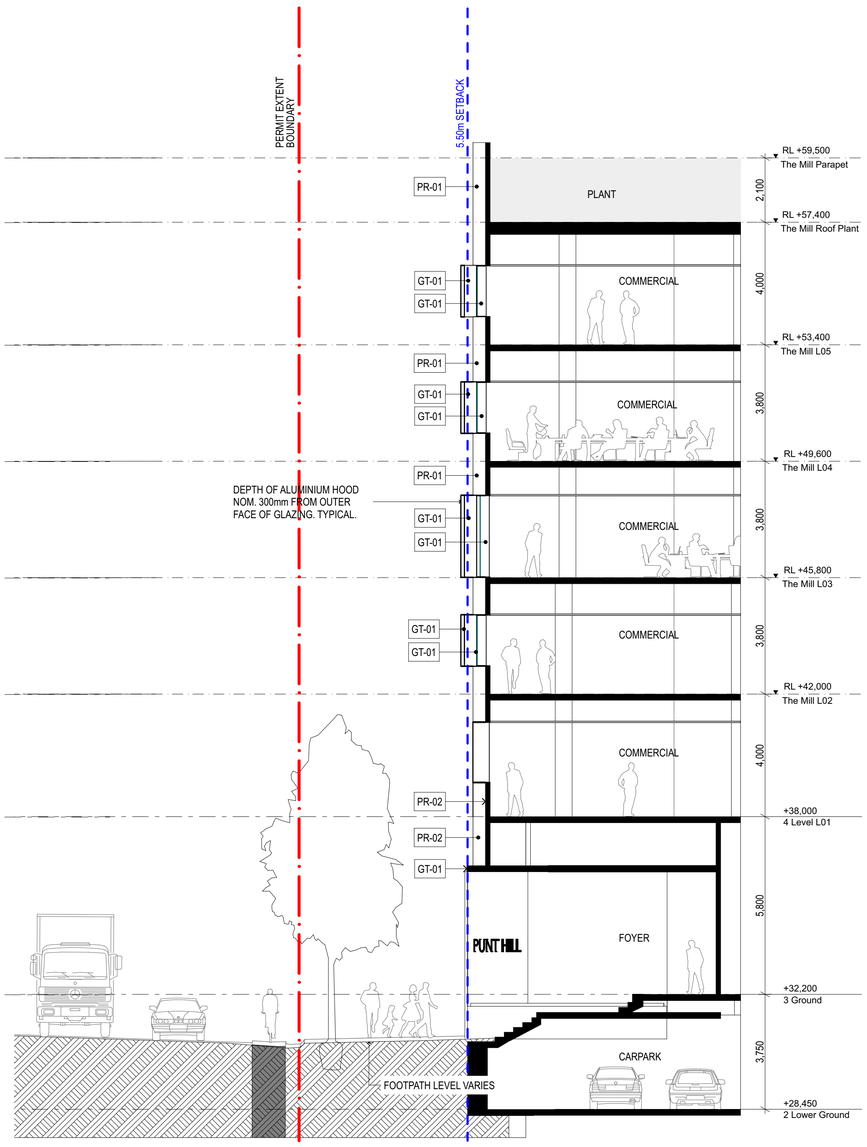
Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Sections
Overall Sections - Sheet 3 (East - West)

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-602	04

1 **The Mills Facade Elevation Detail**
1:100



2 **Section Detail - The Mill Facade**
1:100

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21\01234 TYA ECI Structure
Plot Date: 26/11/18 9:30 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants
NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:
BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Facade Details
Facade Details - The Mill

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

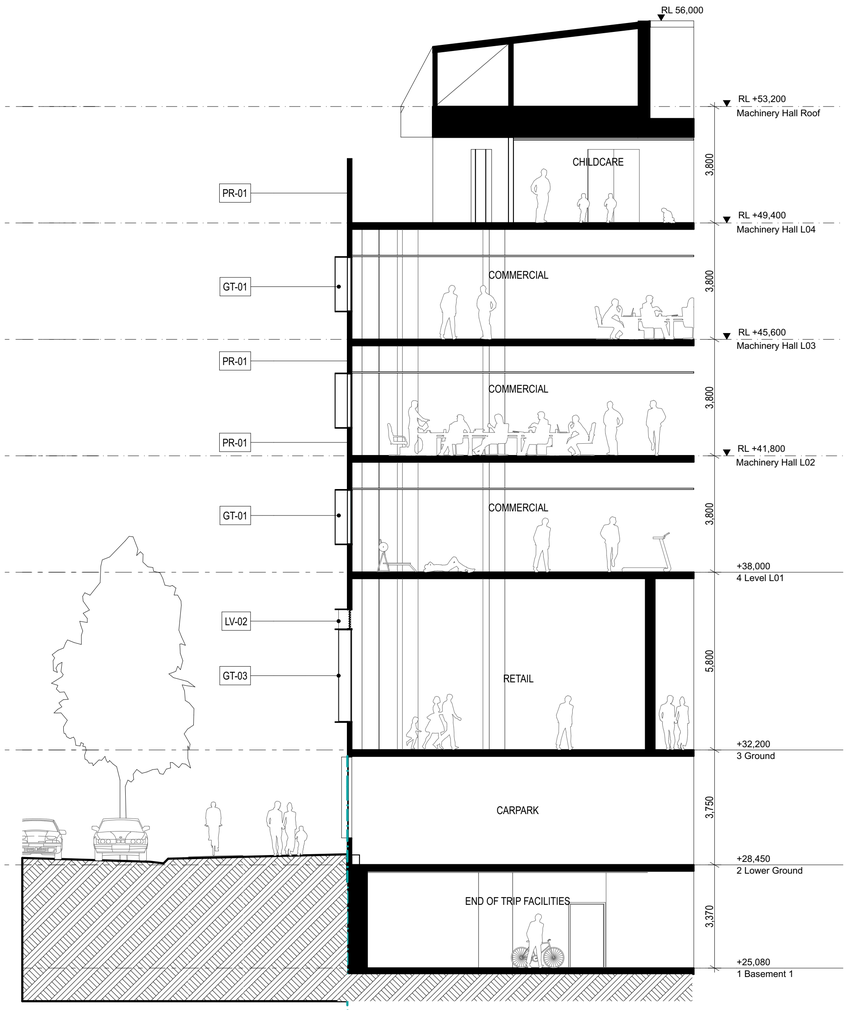
Project Number	Drawing Number	Revision
01234	TP-2E-650	04

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

1 **The Machinery Hall - Facade Elevation Detail**



2 **Section Detail - The Machinery Hall**
1:100

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.lotic.private - BIM Server 21/01234 TVA ECI Structure
Plot Date: 26/11/18 9:31 am

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Facade Details

Facade Details - The Machinery Hall & Atrium

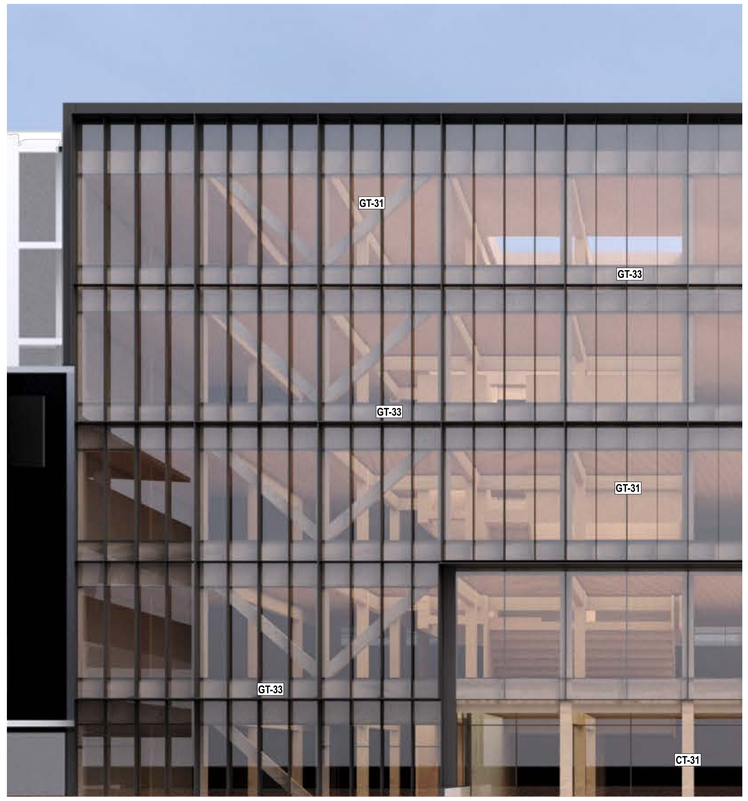
Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-651	04

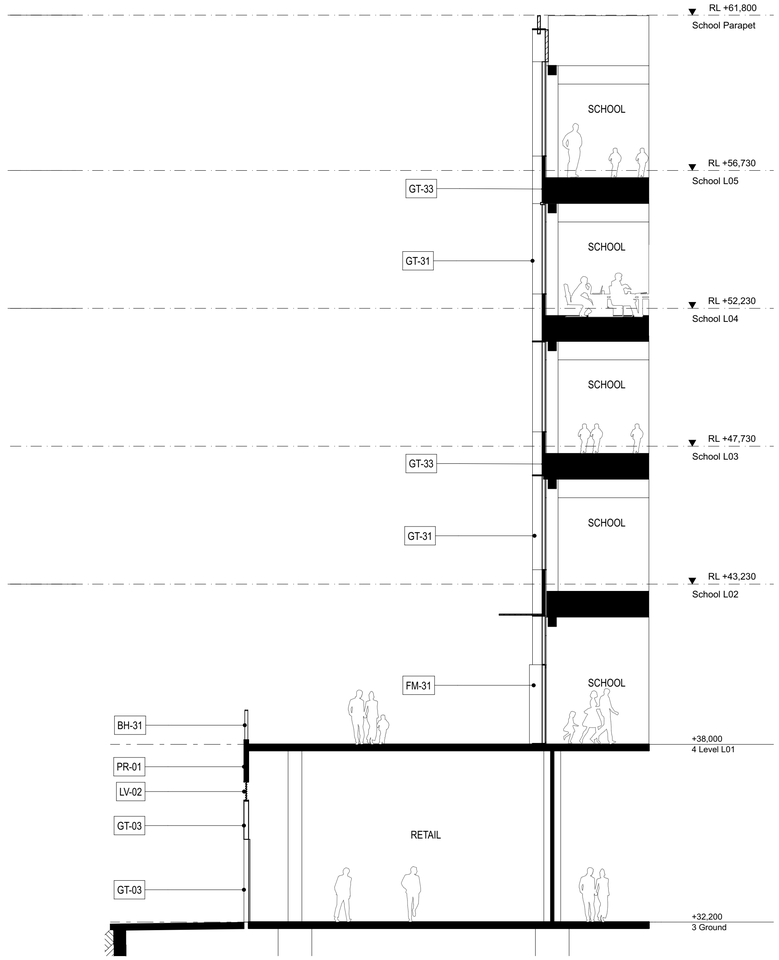
Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.



1 **School Facade Detail**



2 **Section Detail - Specialty & School**
1:100

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21\01234 TVA EO\ Structure
Plot Date: 26/11/18 9:31 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Facade Details

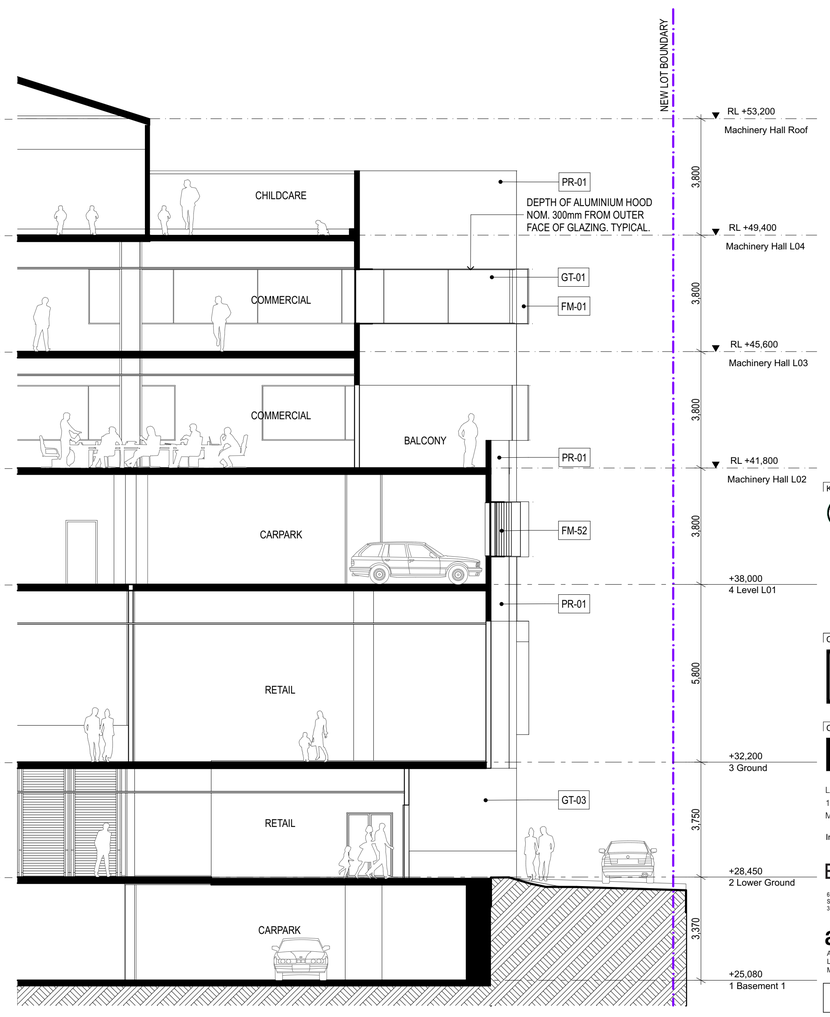
Facade Details - The Food Market & Specialty

Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-652	04

3 The Machinery Hall - South Facade Elevation Detail

1:100



1 Facade Details - South Entry

1:100

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.tolic.private - BIM Server 21\01234-TVA ECI Structure
Plot Date: 26/11/18 3:39 pm

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Facade Details

Facade Details - Machinery Hall

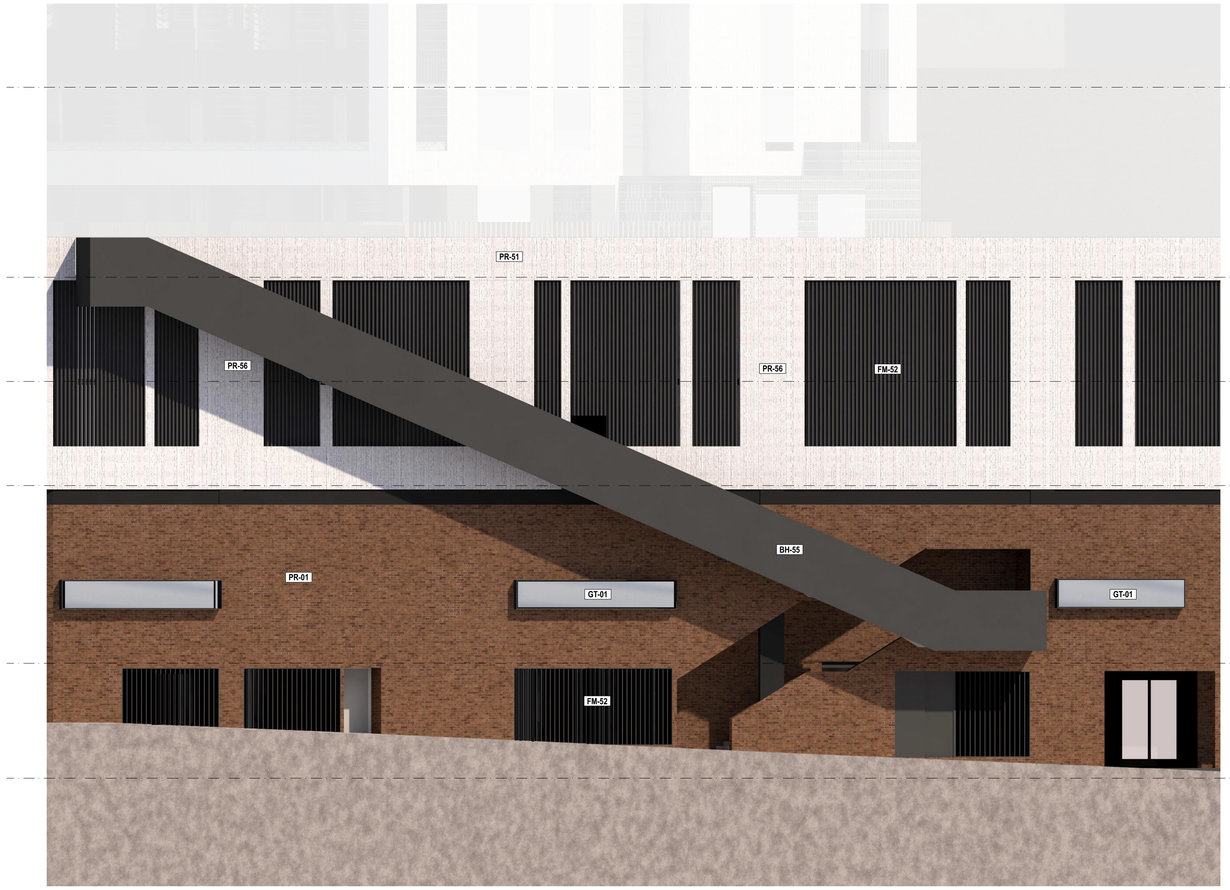
Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-653	04

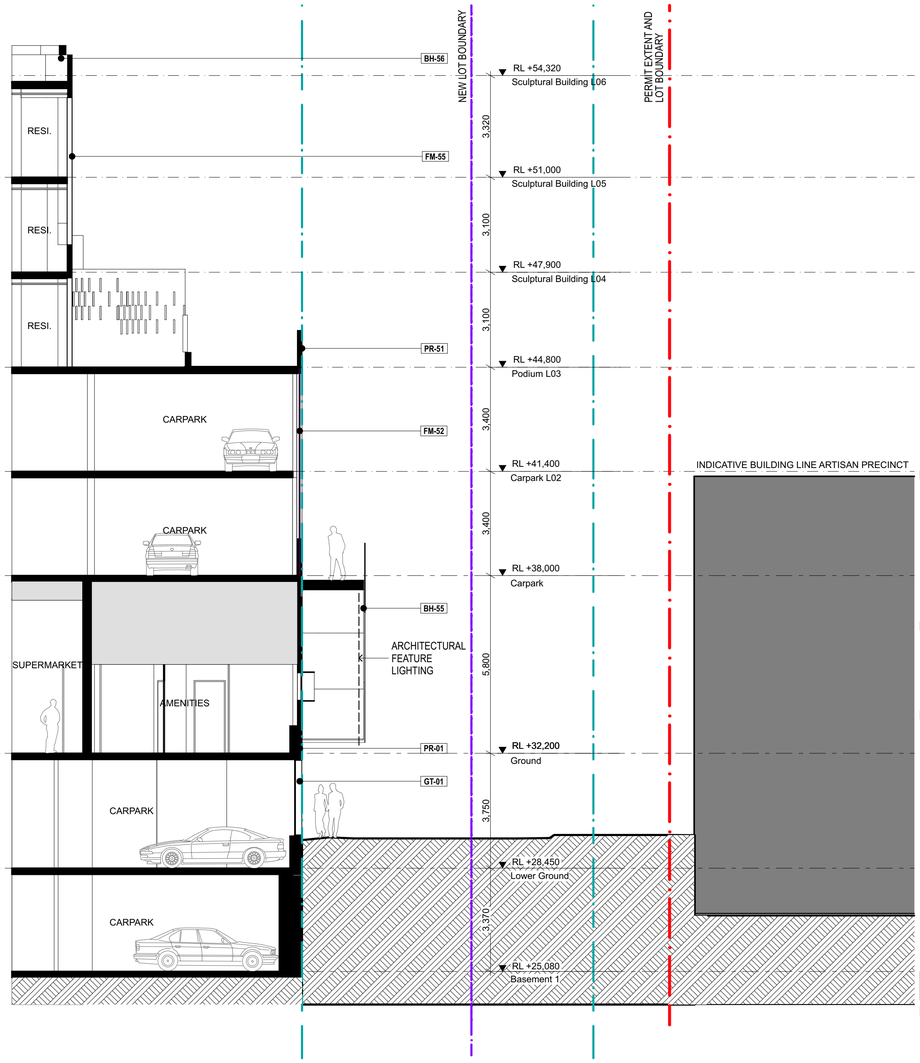
Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.



1 **Elevation Detail- Access Lane Facade**



2 **Section Detail - Access Lane Facade**
1:100

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24-TVA EG Structure
Plot Date: 26/11/18 9:22 am

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Facade Details
Facade Details - South Access Lane

Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-654	04

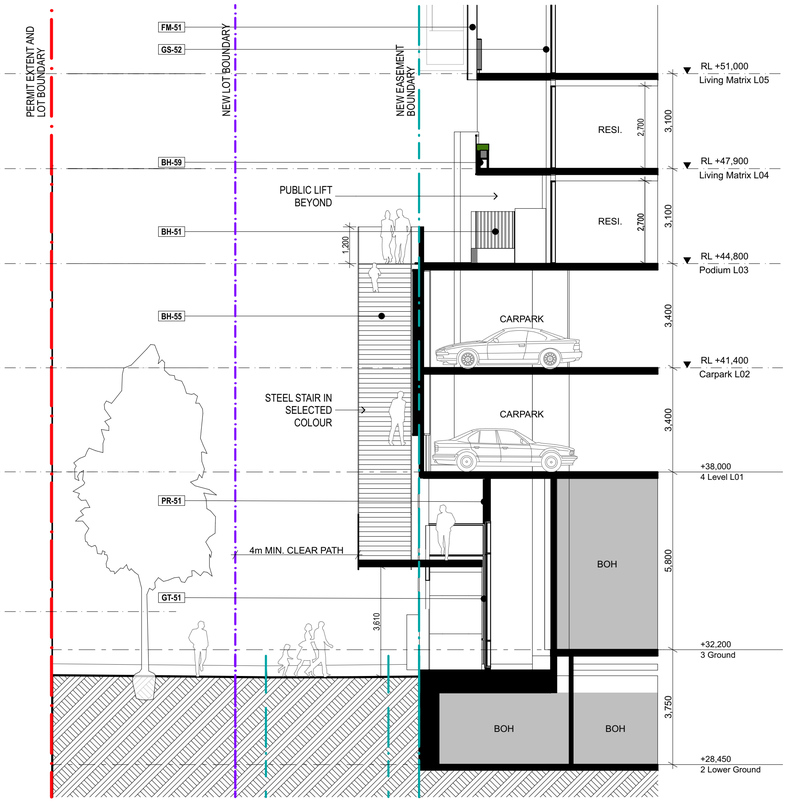
Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

1 **Elevation Details - The Mews**

2 **Elevation Details - The Mews**



3 **Section Detail - The Mews Facade**
1:100

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 21\01234 TYA ECI Structure
Plot Date: 26/11/18 9:33 am

Key Plan

THE VILLAGE ALPHINGTON

Client
ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Facade Details
Facade Details - The Mews

Checked By	Drawn By	Scale @ A1
MK	TW	1:100
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-655	04

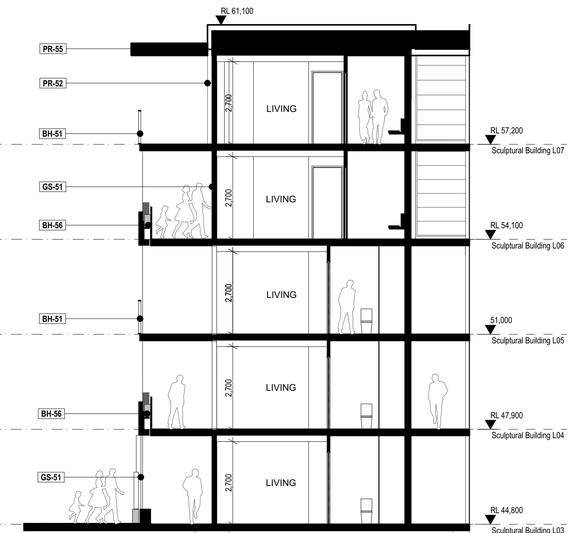
Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

1 **Sculptural Building Facade Detail - South**

2 **Sculptural Building Facade Detail - North**



3 **Section Detail - Access Lane Facade**
1:100

0 10 15 20 25m 50m
1:250

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 9480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Facade Details
Facade Details - Sculptural Building

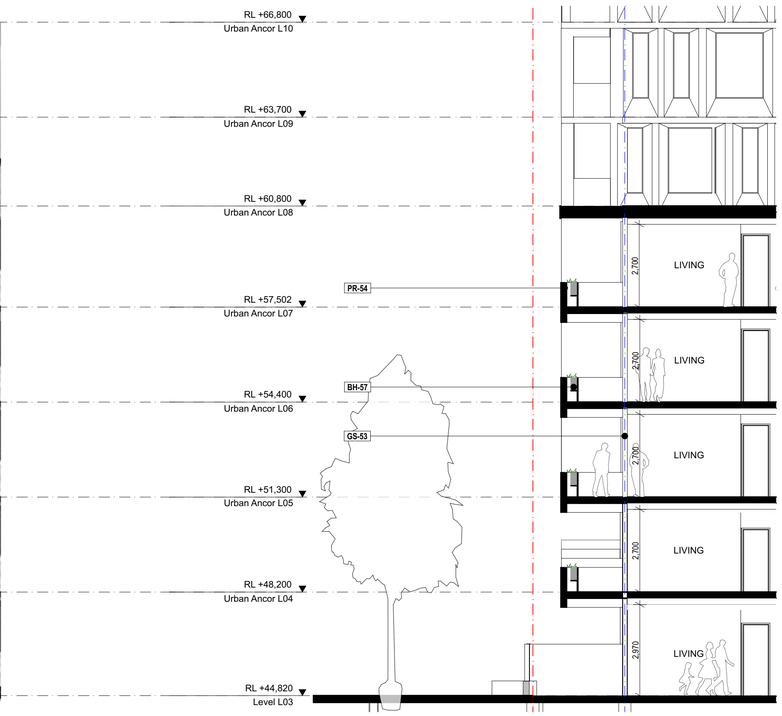
Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-656	04

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TYA ECI Structure
Plot Date: 26/11/18 9:33 am

1 **Urban Anchor Facade Details - North**

2 **Urban Anchor Facade Details - South**



3 **Section Detail - Urban Anchor**
1:100

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.pvt.site - BIM Server 21/01/24 TVA EG Structure
Plot Date: 26/11/18 9:24 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

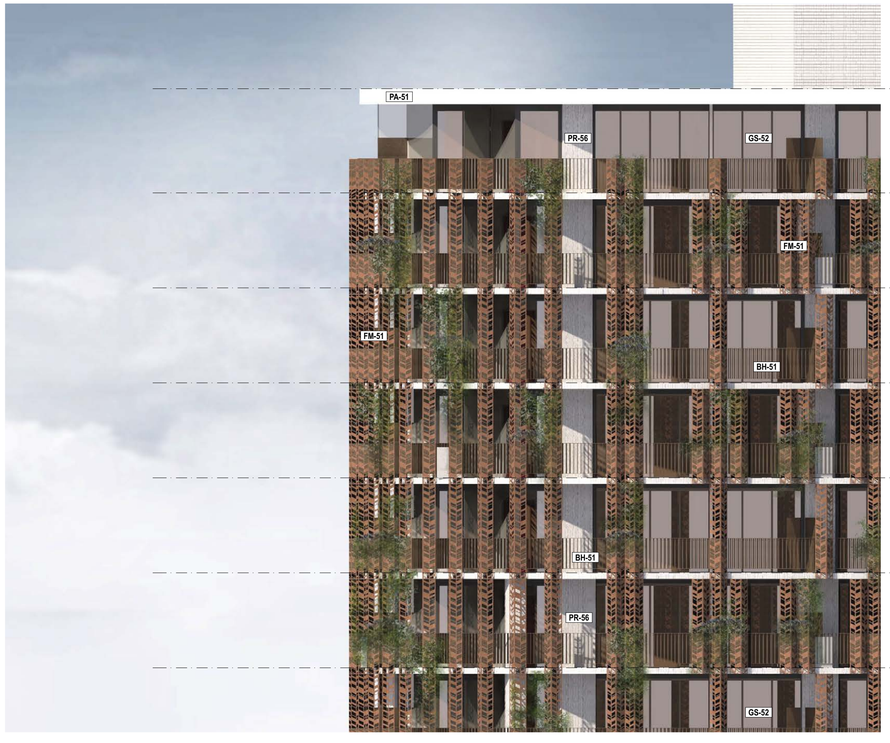
Drawing Name

Facade Details

Facade Details - Urban Anchor

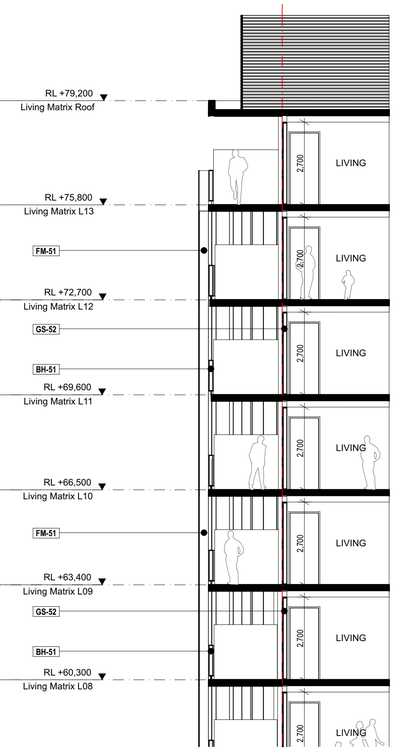
Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-657	04



1

Living Matrix Facade Detail - West North



2

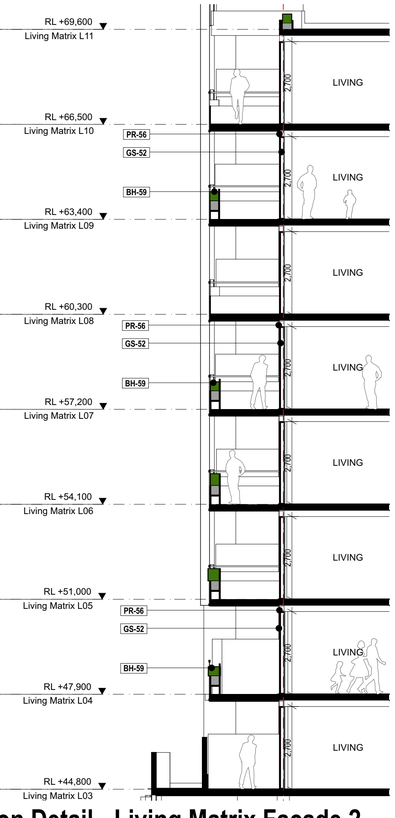
Section Detail - Living Matrix Facade

1:100

ARTIST IMPRESSION

3

Living Matrix Facade Details - West South



4

Section Detail - Living Matrix Facade 2

1:100

0 10 15 20 25m 50m

1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24 TVA EG Structure
Plot Date: 26/11/18 9:24 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

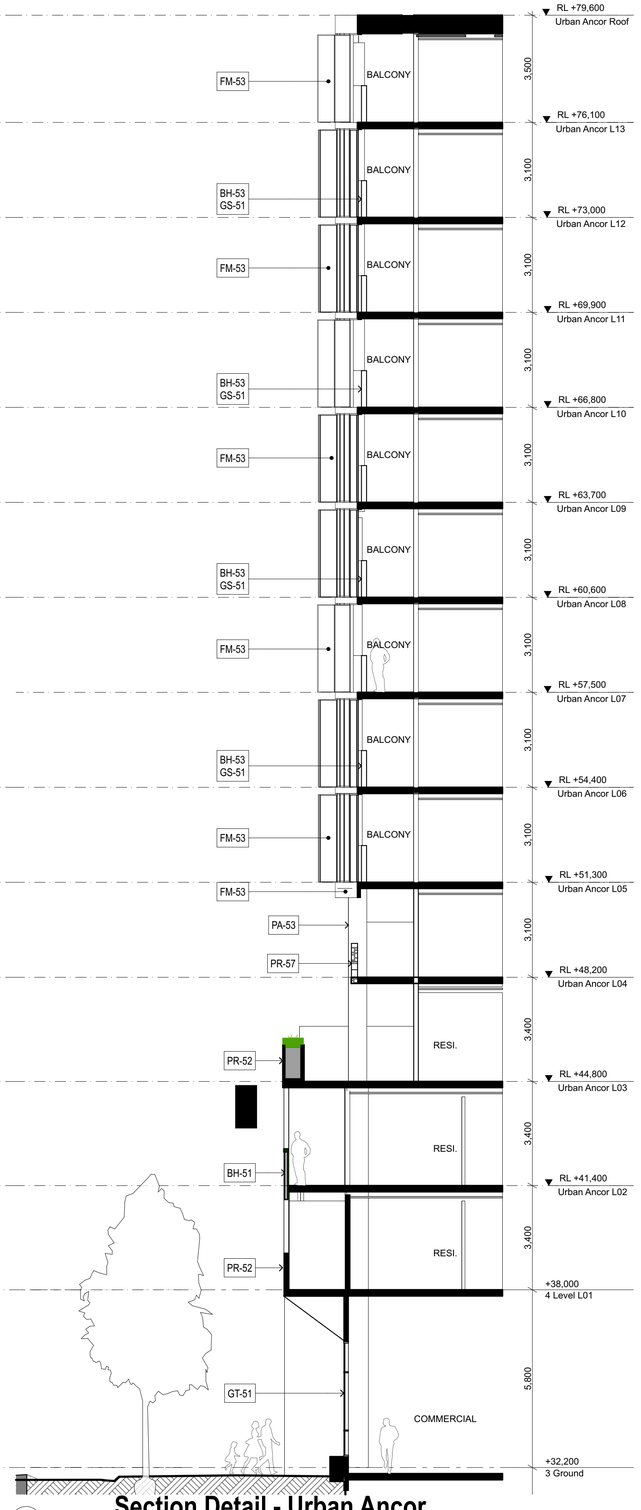
Facade Details

Facade Details - Living Matrix

Checked By	Drawn By	Scale @ A1
MK	TW	1:100
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-658	04

1 **Facade Details - Urban Anchor**

2 **Heidelberg Rd Podium Facade Detail- North**



3 **Section Detail - Urban Ancor**
1:100

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 904 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 9480
www.architectus.com.au

TOWN PLANNING

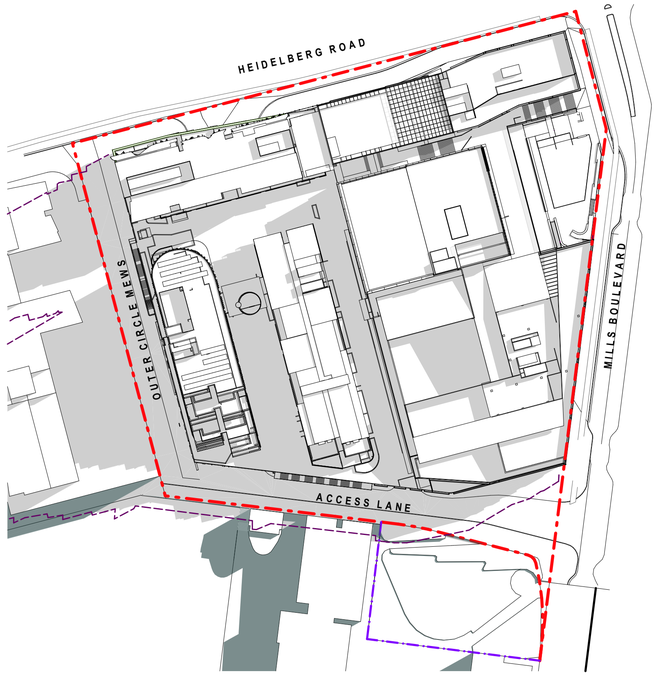
Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Facade Details
Facade Details - Urban Anchor

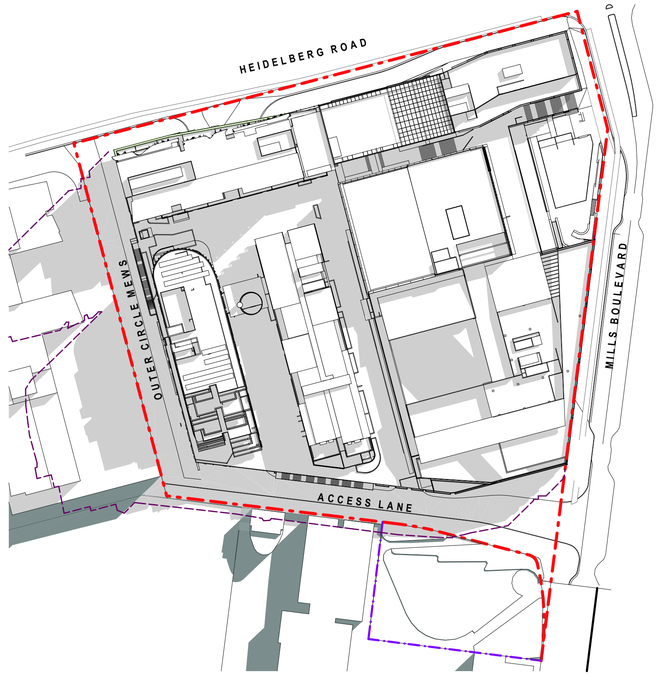
Checked By	Drawn By	Scale @ A1
MK	TW	1:100
Project Number	**Drawing Number**	**Revision**
01234	TP-2E-659	04

0 10 15 20 25m 50m
1:250

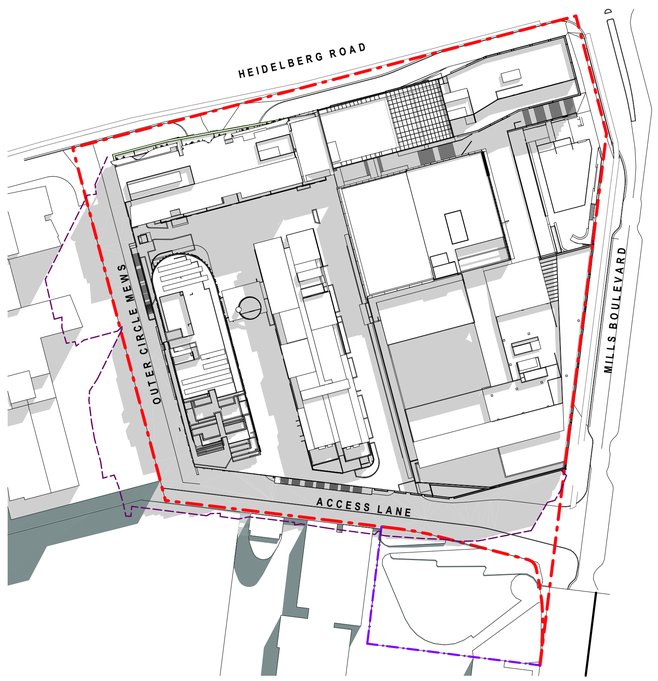
BIM Server: bim-server.bdlc.private - BIM Server 21/01/34 TYA ECI Structure
Plot Date: 26/11/18 9:34 am



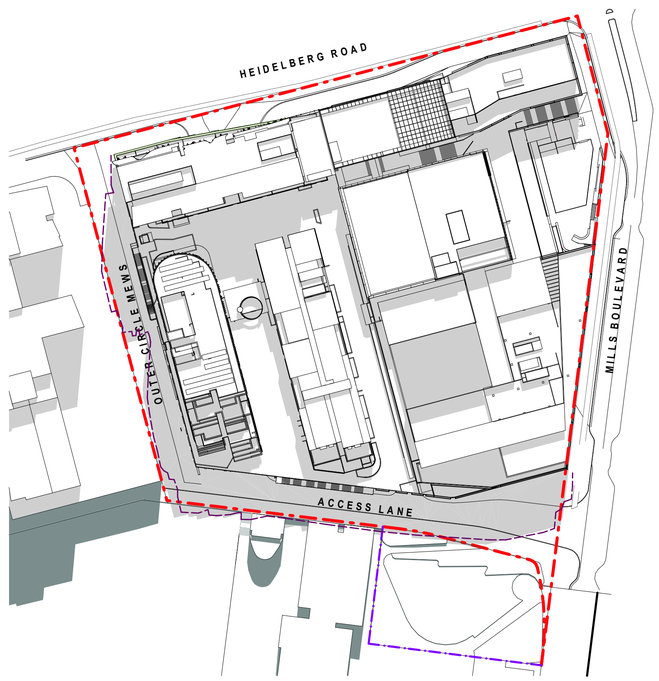
1 Shadow 22/09 9am 1:1000



2 Shadow 22/09 10am 1:1000



3 Shadow 22/09 11am 1:1000



4 Shadow 22/09 12pm 1:1000

SHADOW OF PROPOSED BUILDING

SHADOW OF ADJOINING BUILDINGS

SHADOW OF EXISTING PLANNING PERMIT PLN17/0703 BUILDING
REFER TO TP-TR-800 REV.03 SUBMISSION

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.pvt.site - BIM Server 21/01234-TVA EG Structure
Plot Date: 26/11/18 9:24 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

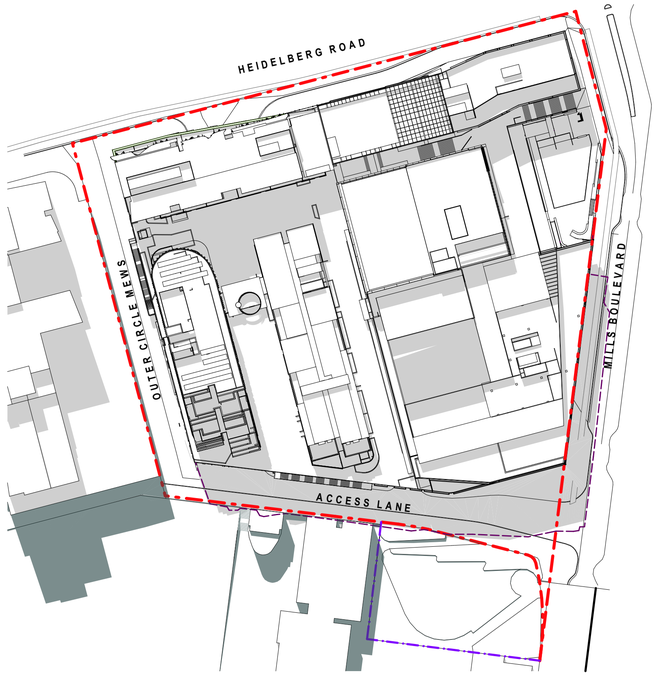
Project Name
THE VILLAGE ALPHINGTON

Drawing Name

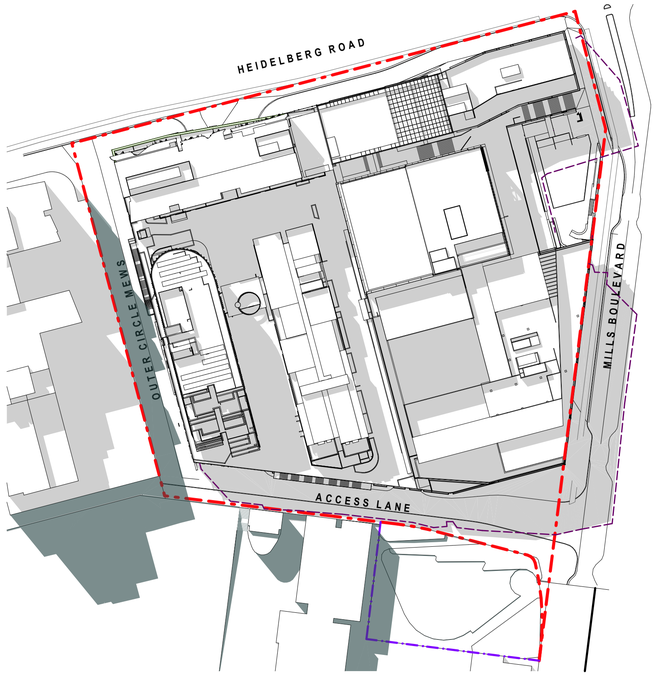
Shadow Diagrams & Schedules
Shadow Diagrams 01

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

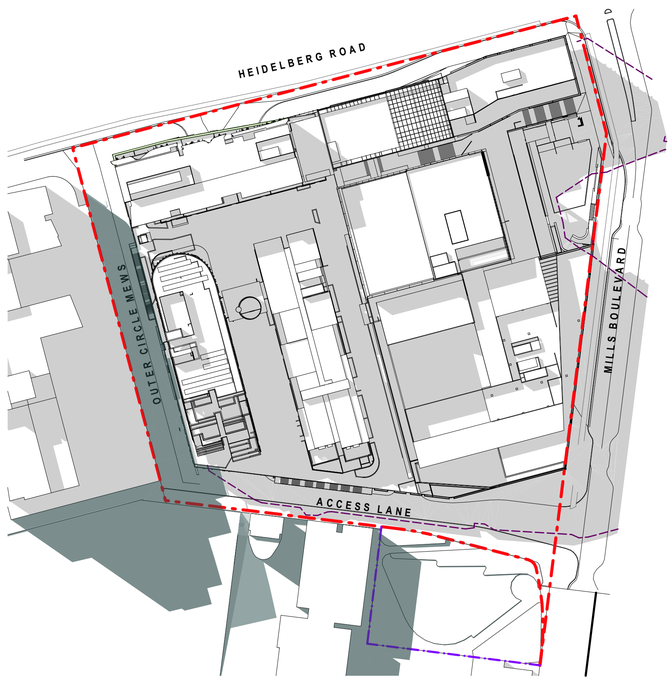
Project Number	Drawing Number	Revision
01234	TP-2E-800	04



1 Shadow 22/09 1pm 1:1000



2 Shadow 22/09 2pm 1:1000



3 Shadow 22/09 3pm 1:1000

0 10 15 20 25m 50m
1:250

SHADOW OF PROPOSED BUILDING

SHADOW OF ADJOINING BUILDINGS

SHADOW OF EXISTING PLANNING PERMIT PLN17/0703 BUILDING
REFER TO TP-TR-800A REV.02 SUBMISSION

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Shadow Diagrams & Schedules
Shadow Diagrams 02

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-800A	04

BIM Server: bim-server.bdlc.private - BIM Server 21\01234-TVA EG Structure
Plot Date: 26/11/18 9:25 am

BH-01
METAL BALUSTRADE

GT-01
SMOKE GREY TINTED GLAZING WITH ALUMINIUM HOOD PROJECTING FROM FACADE. POWDER COAT FINISH

GT-02
FULL HEIGHT SMOKE GREY TINTED GLAZING. POWDER COAT FINISH

GT-03
SHOPFRONT CLEAR GLAZING POWDER COAT FINISH (CL)

GT-04
SKYLIGHT GLAZING WITH TRANSLUCENT INFILL & STEEL FRAME IN POWDER COATED FINISH

FM-01
POWDER COATED STEEL
BLACK OR SIMILAR

LV-01
PLANT LOUVRES. - FULL CHEVRON LOUVRE SYSTEM SIMILAR TO LOUVRECLAD "VENUS SERIES" POWDER COATED FINISH [INCORPORATE ACOUSTIC LOUVRES TO PLANT AREAS AS REQUIRED]

LV-02
FLAT ALUMINIUM PANELS WITH CONTINUOUS STRIP PERFORATION ABOVE TENANCY SHOPFRONT

PR-01
BRICK SNAP CLADDING
"RUSTIC TAN" OR SIMILAR

PR-02
BRICK VENEER CLADDING IN ARTICULATED STACK BOND

RA-01
RETRACTABLE AWNING

RF-01
METAL ROOF

TL-01
GRANITE FLOOR TILE

TL-02
BLUESTONE FLOOR TILE

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND:

BH - BALUSTRADE & HANDRAILS
CB - CUSTOM BRICK CLADDING
CT - CARPENTRY
CD - CLADDING
FM - FABRICATED METALWORK
GS - GLASS TYPES
GT - GLAZING & FACADE TYPE
LV - LOUVRES
PA - PAINT
PR - PRECAST CLADDING
RA - RETRACTABLE AWNING
RF - ROOFING
TL - TILING

0 10 15 20 25m 50m
1:250

BM Server: bim-server.bdc.private - BIM Server 21\01234.TVA.EO Structure
Plot Date: 26/11/18 9:26 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannone House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

Shadow Diagrams & Schedules

Schedules - Materials & Finishes_Sheet 1

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-801	04

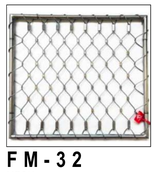
BH-31
METAL BALUSTRADE

CT-31
GLULAM STRUCTURAL MEMBER

CT-32
CLT FLOOR SLAB

CT-33
SOLID CORE TIMBER DOOR,
PAINT FINISH

FM-31
POWDER COATED STEEL
BLACK OR SIMILAR



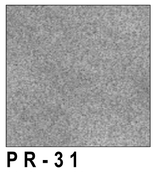
FM-32
MESH

FM-33
STEEL CABLE GUARDING

GT-31
GLASS

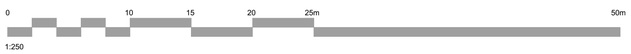
GT-32
EXTERNAL GLAZING WITH
EXPANDED METAL LAYER

GT-33
EXTERNAL GLAZING WITH
TIMBER/COLOUR BACKED
SPANDREL PANEL



PR-31
CONCRETE ROOF

PR-32
CONCRETE WALLS



1:250

BIM Server: bim-server.bdlc.private - BIM Server 21\01234-TVA EG Structure
Plot Date: 26/11/18 9:25 am

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND:

BH - BALUSTRADE & HANDRAILS
CB - CUSTOM BRICK CLADDING
CT - CARPENTRY
CD - CLADDING
FM - FABRICATED METALWORK
GS - GLASS TYPES
GT - GLAZING & FACADE TYPE
LV - LOUVRES
PA - PAINT
PR - PRECAST CLADDING
RA - RETRACTABLE AWNING
RF - ROOFING
TL - TILING

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Shadow Diagrams & Schedules
Schedules - Materials & Finishes_Sheet 2

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-802	04

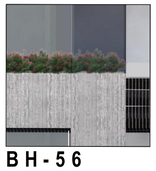
BH-51
METAL BALUSTRADE

BH-52
SOLID UPSTAND WITH GLAZING

BH-53
GLASS BALAUSTRADE
D - DARK GLASS

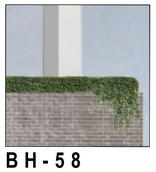
BH-54
SOLID METAL UPSTAND WITH GLAZING

BH-55
10mm STEEL PLATE BALUSTRADE



BH-56
PLANTER BALUSTRADE WITH PR-56

BH-57
PLANTER BALUSTRADE WITH PR-54

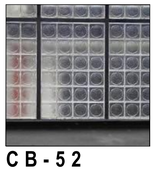


BH-58
PLANTER BALUSTRADE WITH PR-51

BH-59
PLANTER BALUSTRADE WITH TIMBER LOOK CLADDING OR SIMILAR.

BH-60
1700mm HIGH MAX 25% TRANSPARENCY TIMBER FENCE ON PLINTH TO FUTURE LANDSCAPE DETAIL

CB-51
SPECIALTY BRICKWORK



CB-52
GLASS BLOCK IN BLACK 'C' CHANNEL & METAL FRAME AS SHOWN

CB-53
FLUTED GLASS IN BLACK 'C' CHANNEL & METAL FRAME AS SHOWN

CD-51
CLADDING
LIGHT GREY

CD-52
OXIDE STEEL
BRONZE
OR SIMILAR

CD-53
STAINLESS STEEL
BLACK
OR SIMILAR

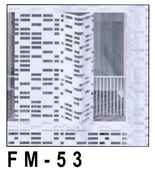
CD-54
METAL CLADDING WITH STANDING SEAM
LIGHT GREY/SILVER
OR SIMILAR

CD-55
TIMBER LOOK
CLADDING
OR SIMILAR

CD-56
EQUITONE - WHITE
OR SIMILAR

FM-51
PERFORATED METAL SCREEN
GOLDEN COLOUR OR SIMILAR
WITH INTEGRATED PLANTER BOXES

FM-52
FEATURE SCREEN
METAL BATTENS / "Z" PURLINS
OR SIMILAR



FM-53
OPERABLE METAL SCREEN
MATT WHITE OR SIMILAR

FM-54
STAINLESS STEEL WIRES FOR PLANTS

FM-55
5mm BLACK STEEL SHROUD

GS-51
CLEAR GLASS
C - CLEAR
F - FROSTED

GS-52
BRONZE GLASS WITH BRONZE FRAME OR SIMILAR
C - CLEAR

GS-53
DARK GLASS
C - CLEAR
F - FROSTED

GT-51
BLACK STEEL
FRAMED GLASS

GT-52
GLAZED LOUVRES

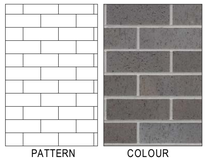
GT-53
WINDOW GLAZING SYSTEM

LV-51
PLANT LOUVRE - FULL CHEVRON LOUVRE SYSTEM SIMILAR TO LOUVRECLAD "VENUS SERIES"
MATTE BLACK

PA-51
PAINT FINISH
MATTE WHITE

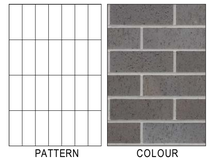
PA-52
PAINT FINISH
CHARCOAL GREY

PA-53
PAINT FINISH
BLACK



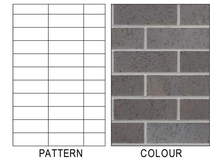
PATTERN COLOUR

PR-51
BRICK SNAP CLADDING
STRETCHER BOND
"MIDNIGHT BLUE" OR SIMILAR



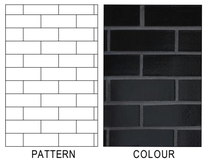
PATTERN COLOUR

PR-52
BRICK SNAP CLADDING
VERTICAL STACK BOND
"MIDNIGHT BLUE" OR SIMILAR



PATTERN COLOUR

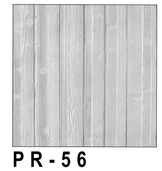
PR-53
BRICK SNAP CLADDING
STACK BOND
"MIDNIGHT BLUE" OR SIMILAR



PATTERN COLOUR

PR-54
BRICK SNAP CLADDING
STRETCHER BOND
GLAZED BLACK OR SIMILAR

PR-55
CONCRETE WITH WHITE ADDITIVE



PR-56
CONCRETE FORMLINER

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

LEGEND:

BH - BALUSTRADE & HANDRAILS
CB - CUSTOM BRICK CLADDING
CT - CARPENTRY
CD - CLADDING
FM - FABRICATED METALWORK
GS - GLASS TYPES
GT - GLAZING & FACADE TYPE
LV - LOUVRES
PA - PAINT
PR - PRECAST CLADDING
RA - RETRACTABLE AWNING
RF - ROOFING
TL - TILING

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01/24-TVA EG Structure
Plot Date: 26/11/18 9:25 am

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture

Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000

Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects

66 Market Street
Southbank Victoria
3006 Australia

Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au

Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™

Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000

T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name

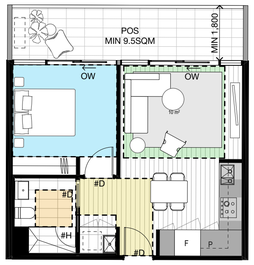
Shadow Diagrams & Schedules

Schedules - Materials & Finishes_Sheet 3

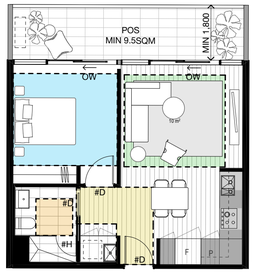
Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-803	04

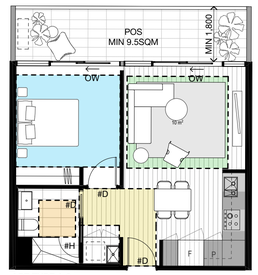
A Apt Types



APT TYPE A - TYPICAL
1 BED **INTERNAL STORAGE:** 6m3 min.
50sqm



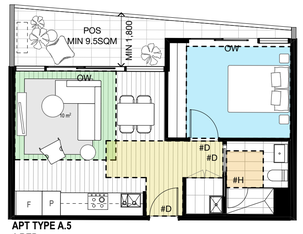
APT TYPE A.1
1 BED **INTERNAL STORAGE:** 6m3 min.
52sqm



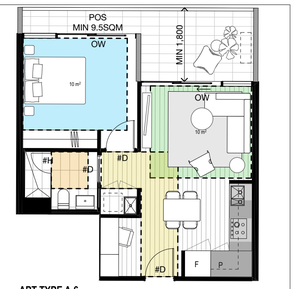
APT TYPE A.2
1 BED **INTERNAL STORAGE:** 6m3 min.
50sqm

APT TYPE A.3
1 BED **INTERNAL STORAGE:** 6m3 min.
56sqm

APT TYPE A.4
1 BED **INTERNAL STORAGE:** 6m3 min.
51sqm

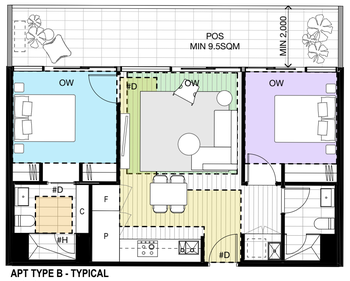


APT TYPE A.5
1 BED **INTERNAL STORAGE:** 6m3 min.
50sqm

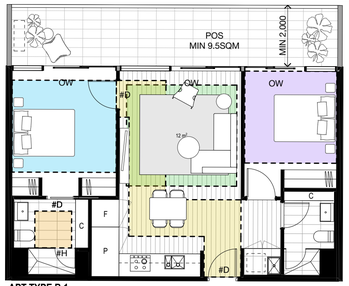


APT TYPE A.6
1 BED **INTERNAL STORAGE:** 6m3 min.
50sqm

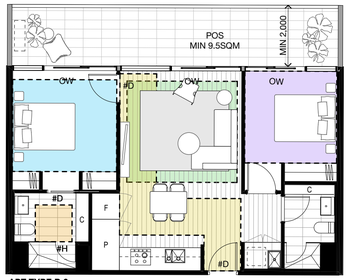
B Apt Types



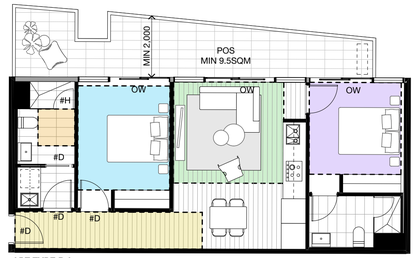
APT TYPE B - TYPICAL
2 BED **INTERNAL STORAGE:** 9m3 min.
70sqm



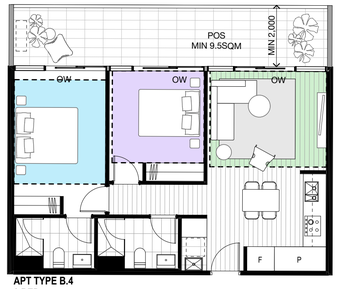
APT TYPE B.1
2 BED **INTERNAL STORAGE:** 9m3 min.
73sqm



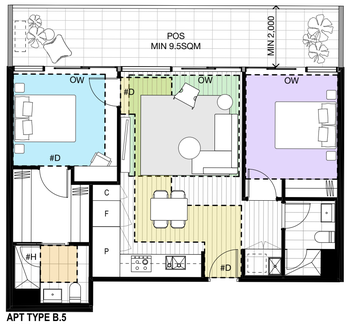
APT TYPE B.2
2 BED **INTERNAL STORAGE:** 9m3 min.
76sqm



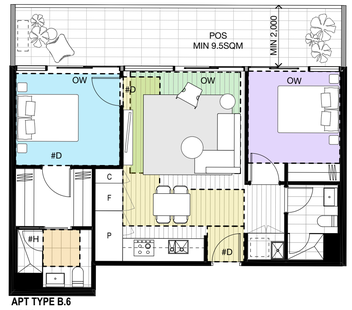
APT TYPE B.3
2 BED **INTERNAL STORAGE:** 9m3 min.
74sqm



APT TYPE B.4
2 BED **INTERNAL STORAGE:** 9m3 min.
71sqm

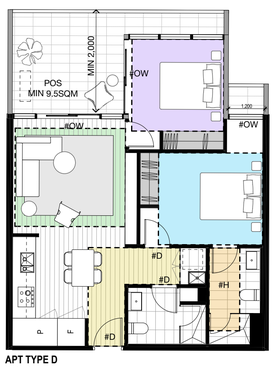


APT TYPE B.5
2 BED **INTERNAL STORAGE:** 9m3 min.
78sqm



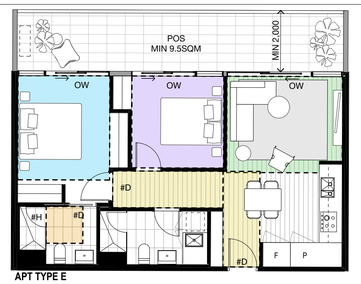
APT TYPE B.6
2 BED **INTERNAL STORAGE:** 9m3 min.
73sqm

D Apt Types

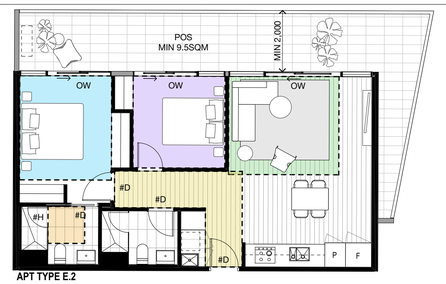


APT TYPE D
2 BED **INTERNAL STORAGE:** 9m3 min.
74sqm

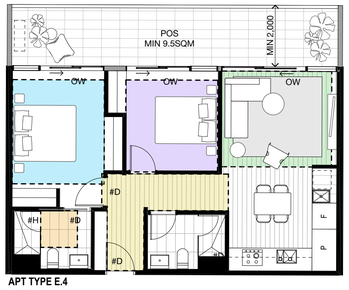
E Apt Types



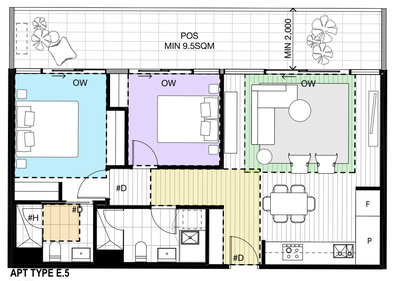
APT TYPE E
2 BED **INTERNAL STORAGE:** 9m3 min.
70sqm



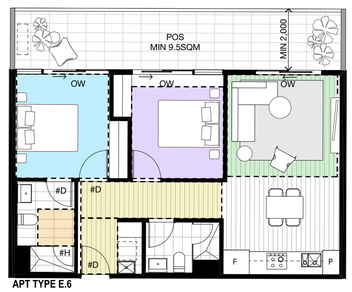
APT TYPE E.2
2 BED **INTERNAL STORAGE:** 9m3 min.
76sqm



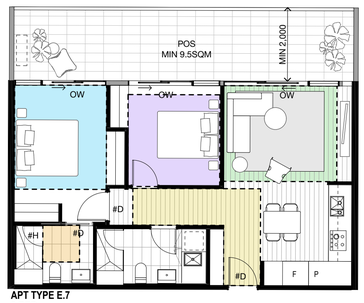
APT TYPE E.4
2 BED **INTERNAL STORAGE:** 9m3 min.
73sqm



APT TYPE E.5
2 BED **INTERNAL STORAGE:** 9m3 min.
79sqm



APT TYPE E.6
2 BED **INTERNAL STORAGE:** 9m3 min.
73sqm



APT TYPE E.7
2 BED **INTERNAL STORAGE:** 9m3 min.
76sqm

0 10 15 20 25m
50m
1:250

BIM Server: bim-server.bdlc.private - BIM Server 21/01234 TVA ECI Structure
Plot Date: 26/11/18 4:48 pm

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorised use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Legend

- MAIN BEDROOM MIN. 3000X3400MM
- BEDROOM MIN. 3000X3000MM
- 10SQM/12SQM MIN. AREA LIVING ROOM
- 1200MM CLEAR CORIDOOR
- 1200MM CLEAR CIRCULATION SPACE
- #D 850MM CLEAR DOOR OPENING
- #H HOBLESS STEP FREE SHOWER
- ← SLIDING DOOR
- #OW OPERABLE WINDOW OR DOOR
- #RH REMOVABLE HINGE/DOOR

General Notes

APARTMENT FACADES SHOWN VARY. REFER TO GENERAL ARRANGEMENT PLANS FOR SPECIFIC DETAIL.

ALL CEILING HEIGHTS ARE MINIMUM 2700MM CLEAR. ALL HABITABLE ROOMS ARE FITTED WITH OPERABLE WINDOW OR DOOR.

BATHROOMS, ENSUITES, LAUNDRYS AND LOCALISED BAULKHEADS ARE 2400MM IN HEIGHT.

MINIMUM PRIVATE OPEN SPACES AS PER BADS. SIZES VARY, REFER TO GENERAL ARRANGEMENT PLANS FOR SPECIFIC AREA PROVISION AND LOCATION. ALLOW FOR 1800MM HEIGHT OPAQUE GLASS SCREENING DEVICES BETWEEN ABUTTING BALCONIES TO PREVENT OVERLOOKING.

ALL APARTMENTS PROVIDE THE MINIMUM REQUIRED INTERNAL STORAGE AS PER BADS, ADDITIONAL SECURED STORAGE IS PROVIDED IN THE CARPRK LEVELS TO MEET THE OVERALL STORAGE REQUIREMENT.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture

Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000

Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects

66 Market Street
Southbank Victoria
3006 Australia

Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au

Bird de la Coeur
Architects Pty Ltd
ABN 44 074 504 573

architectus™

Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000

T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

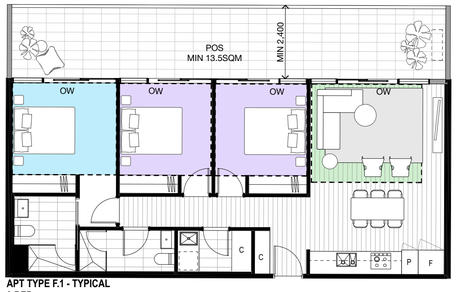
Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Shadow Diagrams & Schedules
Apartment Types - BADS Compliance

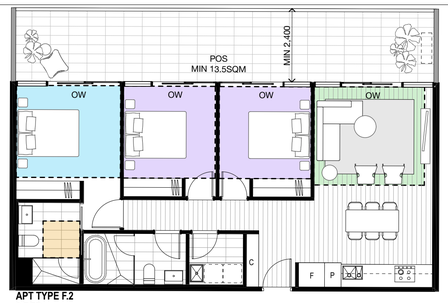
Checked By	Drawn By	Scale @ A1
MK	TW	1:100

Project Number	Drawing Number	Revision
01234	TP-2E-804	04

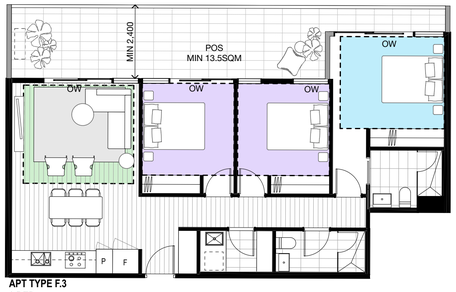
F Apt Types



APT TYPE F.1 - TYPICAL
3 BED
94sqm **INTERNAL STORAGE:** 12m3 min.

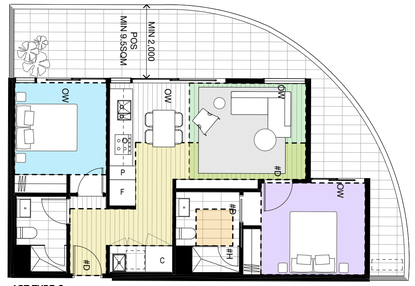


APT TYPE F.2
3 BED
94sqm **INTERNAL STORAGE:** 12m3 min.



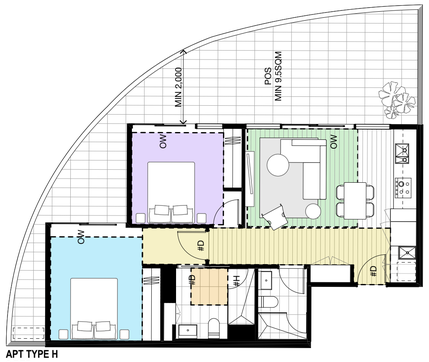
APT TYPE F.3
3 BED
94sqm **INTERNAL STORAGE:** 12m3 min.

G Apt Types



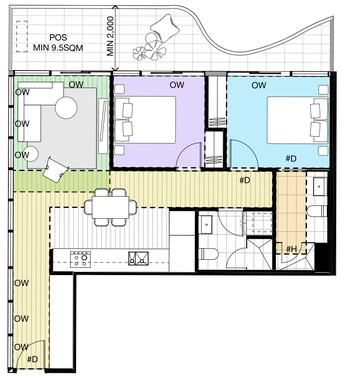
APT TYPE G
2 BED
70sqm **INTERNAL STORAGE:** 9m3 min.

H Apt Types

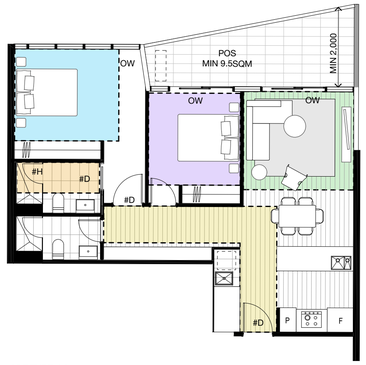


APT TYPE H
2 BED
72sqm **INTERNAL STORAGE:** 9m3 min.

J Apt Types



APT TYPE J
2 BED
78sqm **INTERNAL STORAGE:** 9m3 min.



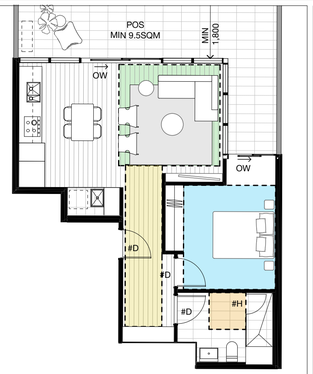
APT TYPE J.1
2 BED
86sqm **INTERNAL STORAGE:** 9m3 min.

APT TYPE J.2
2 BED
82sqm **INTERNAL STORAGE:** 9m3 min.

K Apt Types

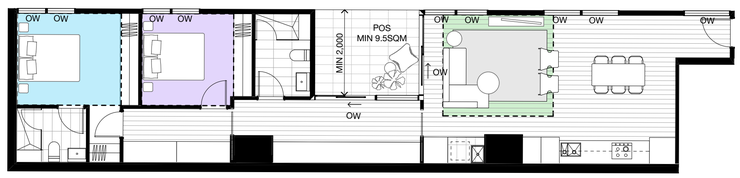
APT TYPE K
2 BED
84sqm **INTERNAL STORAGE:** 9m3 min.

L Apt Types



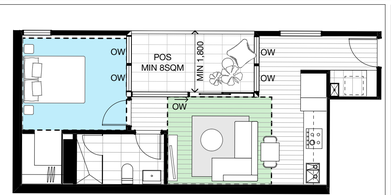
APT TYPE L
1 BED
62sqm **INTERNAL STORAGE:** 6m3 min.

M Apt Types



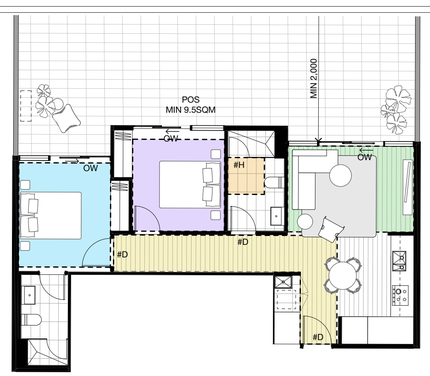
APT TYPE M
2 BED
110sqm **INTERNAL STORAGE:** 9m3 min.

N Apt Types



APT TYPE N
1 BED
50sqm **INTERNAL STORAGE:** 9m3 min.

P Apt Types



APT TYPE P
2 BED
75sqm **INTERNAL STORAGE:** 9m3 min.

0 10 15 20 25m 50m
1:250

BIM Server: bim-server.bdc.private - BIM Server 2101234-TVA ECI Structure
Plot Date: 26/11/18 4:48 pm

Rev	Date	Description
01	25/08/17	PLANNING PERMIT LODGEMENT
02	22/11/17	RESPONSE TO COUNCIL RFI
03	23/02/18	RESPONSE TO COUNCIL RFI
04	26/11/18	S72 LODGEMENT

Do not scale drawings. Use figured dimensions only. All dimensions must be verified on site before commencing work. This document must be read in conjunction with all technical specifications and all relevant documents from other disciplines and consultants. Any conflict between these and other documents, or the site conditions must be notified to NHArchitecture immediately in writing and prior to use. © Copyright NHArchitecture Pty Ltd 2015. Written authority (including under the terms of engagement of NHArchitecture for the Project) is required for any: 1. reproduction of this document by any means; 2. use prior to payment in full of all NHArchitecture fees for the Project; or 3. use other than for the Project and for the express purpose & by or on behalf of the entity for which it has been created. Any unauthorized use of this document is at the user's sole risk and without limiting NHArchitecture's rights to the fullest extent permitted by law the user indemnifies NHArchitecture against all loss, liability and damage so arising.

Note: 1. All external levels are subject to further design by Reeds Civil and the relevant Authority.
2. All RL's shown on Plans & Elevations are structural levels.

Legend

- MAIN BEDROOM MIN. 3000X3400MM
- BEDROOM MIN. 3000X3000MM
- 10SQM/12SQM MIN. AREA LIVING ROOM
- 1200MM CLEAR CORIDOOR
- 1200MM CLEAR CIRCULATION SPACE
- #D 850MM CLEAR DOOR OPENING
- #H HOBLESS STEP FREE SHOWER
- ← SLIDING DOOR
- #OW OPERABLE WINDOW OR DOOR
- #RH REMOVABLE HINGE/DOOR

General Notes

APARTMENT FACADES SHOWN VARY. REFER TO GENERAL ARRANGEMENT PLANS FOR SPECIFIC DETAIL.

ALL CEILING HEIGHTS ARE MINIMUM 2700MM CLEAR. ALL HABITABLE ROOMS ARE FITTED WITH OPERABLE WINDOW OR DOOR.

BATHROOMS, ENSUITES, LAUNDRYS AND LOCALISED BAULKHEADS ARE 2400MM IN HEIGHT.

MINIMUM PRIVATE OPEN SPACES AS PER BADS. SIZES VARY, REFER TO GENERAL ARRANGEMENT PLANS FOR SPECIFIC AREA PROVISION AND LOCATION. ALLOW FOR 1800MM HEIGHT OPAQUE GLASS SCREENING DEVICES BETWEEN ABUTTING BALCONIES TO PREVENT OVERLOOKING.

ALL APARTMENTS PROVIDE THE MINIMUM REQUIRED INTERNAL STORAGE AS PER BADS. ADDITIONAL SECURED STORAGE IS PROVIDED IN THE CARPRK LEVELS TO MEET THE OVERALL STORAGE REQUIREMENT.

Key Plan

THE VILLAGE ALPHINGTON

Client

ALPHA PARTNERS

Consultants

NHArchitecture
Level 7 Cannons House
12-20 Flinders Lane
Melbourne, Australia 3000
Telephone +613 9654 4955
Facsimile +613 9654 4983
www.nharchitecture.net

In Association with:

BIRD de la COEUR architects
66 Market Street
Southbank Victoria
3006 Australia
Telephone 03 9682 4566
Facsimile 03 9682 4577
www.bdlc.com.au
Bird de la Coeur Architects Pty Ltd
ABN 44 074 504 573

architectus™
Architectus Melbourne
Level 25 385 Bourke Street
Melbourne VIC 3000
T +61 3 9429 5733
F +61 3 9429 8480
www.architectus.com.au

TOWN PLANNING

Project Name
THE VILLAGE ALPHINGTON

Drawing Name
Shadow Diagrams & Schedules
Apartment Types - BADS Compliance

Checked By	Drawn By	Scale @ A1
MK	TW	1:250

Project Number	Drawing Number	Revision
01234	TP-2E-805	04

11.2 Community Transport - Social Support Group Activity

Trim Record Number: D19/59222
Responsible Officer: Director Community Wellbeing

Executive Summary

Purpose

The purpose of this report is to advise Council of the outcome of consultations regarding the incorporation of a component of the Community Transport service within the Commonwealth Home Support Program (CHSP) and to recommend Council endorsement of this change, including introduction of a service user fee, effective 1 July 2019.

Key Issues

Council has provided a Community Transport service, free of charge, to older people and people with disability for many years. This service complements the CHSP program (previously called the HACC program) provided through Council. There is an opportunity to re-orientate existing funding within Council's current CHSP service agreement to support the Community Transport service.

This will require the introduction of a service user fee for the component of the service that offers group based social support.

Agreement has been reached with the Commonwealth Department of Health to vary Council's current service agreement to enable this change. Consultation with current service users has shown positive support for the change and proposed fee. As with existing CHSP services, Council's Fees Policy will apply and this includes provisions to assist people who do not have the capacity to pay.

Financial Implications

The Department of Health has approved a variation of approximately $125,000 per annum from within the current service agreement to fund the social support component of the Community Transport service. With the current service costing $545,000 per annum (inclusive of Plant Hire), the grant income of $125,000 will offset the overall cost by 23%.

It is proposed that service users would be charged a fee of $1 per outing, resulting in income of $11,128 per annum.

PROPOSAL

That Council endorses the variation to the CHSP service agreement to transfer unspent funding from the Meals and Linkages program into Community Transport – Social Support Group activity, and introduce a service fee of $1 per trip, effective 1 July 2019.

Purpose

1. To advise Council of the outcome of consultations regarding the incorporation of a component of the Community Transport service within the Commonwealth Home Support Program (CHSP) and recommend implementation of this change, including introduction of a service user fee.

Background

2. Under Council's agreement with the Commonwealth Government to deliver CHSP services, there is an opportunity to re-orientate existing unspent CHSP funding and apply it to the Community Transport service – which to date has been fully funded by Council.

3. Council has provided a Community Transport service, free of charge, to older people and people with disability for many years. This service complements the CHSP program (previously called the HACC program) provided through Council.

4. Typical services include:

   (a) Service user transport to the Willowview Centre (specific program for older people); and

   (b) Transport to enable older people to shop; attend Seniors Centres; Leisure Centres and Social Support Groups.

5. There are around 215 regular users of the service, undertaking around 460 trips per week. Council currently spends around $545,000 on this service, inclusive of approximately $150,000 on Plant Hire. Council offers a high level community transport service and it is valued by the user group.

6. A key objective of the service is to enable residents to remain active and independent in the community and participate in a range of social activities to support community connections, health and well-being.

7. Consistent with the former HACC program, the CHSP Client Contribution Framework states that service users who can afford to contribute towards the cost of their services do so, while still recognising the need to protect those most vulnerable. The Framework does not mandate fee levels at this point and so Council is able to set fees at the local level.

8. There is no 'one size fits all' approach to client contribution arrangements across the CHSP and providers can flexibly implement the Framework to best meet their service users and their organisational needs.

External Consultation

Request for Variation

9. Discussions have been held with the Commonwealth, and agreement has been reached to enable a transfer of unspent Linkages and Meals service funding to the Community Transport service on the proviso that it relates to activities that support assisted group based shopping (referred to as a Social Support Group activity within the context of the CHSP).

10. This external funding for the Community Transport service has the potential to free up some of Council's budget that could then be invested across other important community services.

Consultation with Service Users

11. Consultation has occurred with current service users. In December 2018 letters explaining this funding opportunity and the proposed changes were provided to all people currently accessing any community transport services that could be considered as a social support group activity. This letter was also translated into four major community languages: Chinese; Vietnamese; Italian and Greek.

12. Over December 2018 and January 2019, Community Transport staff engaged people using these services in conversations about the changes and overall the feedback from people was very positive. No feedback expressing concerns was received during this period.

13. In March 2019, a second letter and feedback form was sent to all people using this service seeking their feedback on the introduction of a low level service fee. This information was again translated into the four major community languages.

14. A total of 66 active service users were surveyed, (53 English; 4 Greek; 7 Italian and 2 Mandarin.) 44 responses were received (31 English; 4 Greek; 4 Italian and 1 Mandarin) resulting in a 66% response rate. The result from the consultation are tabulated below:-

Questions	Response rate	Comments / Summary
"What do you think of the proposed $1 fee?"	98% of responses were supportive of the proposal	"No problem; "happy to pay" "very fair" "very reasonable"
	2% of responses was against the proposal	"the proposal isn't fair, elderly ratepayers shouldn't have to pay the $1.00 fee"
"What do you think about the proposed payment options?"	41% didn't state a preference	
	9% requested paying cash on the day	
	25% preferred a quarterly invoice	
	23% preferred a monthly invoice	
	2% disagreed with any payment	
"Are there any additional comments you would like to make?"	21 additional comments received	Comments included: "thanks for the service"; "very grateful for the service"; "vital service" and one person stated that "Pensioners shouldn't have to pay"

Table 1

Internal Consultation (One Yarra)

15. In February 2019 Council's Active Ageing Advisory Group (AAAG) and Disability Advisory Committee (DAC) were consulted regarding the proposed fee, implementation schedule and support of people who have limited capacity to pay. Both the AAAG and DAC committees were supportive of the proposal.

Financial Implications

Variation to Council's current CHSP Agreement

16. The Department of Health has approved a variation of approximately $125,000 from within the current Agreement to fund the social support component of the Community Transport service. This will mean that unspent funding (due to overall reduced demand) from across several other CHSP services is transferred to Social Support Group.

17. With the current service costing $545,000 per annum (inclusive of Plant Hire), the grant income of $125,000 will offset the overall cost by 23%. The introduction of a service fee will assist in further reducing the cost, however this is not a key driver for proposing this change.

18. Should Council determine not to progress this proposal and furthermore not adopt a fee for this service, the unspent grant funds would be required to be repaid to the Commonwealth.

Proposed Fee

19. It is proposed that service users would be charged a fee of $1 per outing ($1 would be charged for one way or return trips). Setting a low fee will assist in gaining acceptance in moving from a 'no fee' service to a fee for service approach.

20. All users of this service will be charged the same rate on the basis of consistency and fairness. The fee may be waived for any person experiencing financial difficulty to support them to continue using the service.

21. Payment options will be via a monthly or quarterly account (no cash collection on the buses will be available). It is estimated that this would amount to a total income of $11,128 per annum.

Economic Implications

22. There are no significant economic implications with this proposal.

Sustainability Implications

23. Accessing CHSP funding will improve the sustainability of the Community Transport service. Residents value this service and the recent Living Well in Yarra consultation noted strong support for community transport.

Social Implications

24. Introduction of a fee will be a change for service users who have used this service and has the potential to cause concern and financial difficulty for some. Consultation with current service users has however indicated a high level of acceptance and support for the change. It will be important to continue to explain the benefits of the service; the low cost of the service and Council's continuing commitment to this important social support and community connecting service. The extended consultation and lead up to the implementation on 1 July 2019 should assist in achieving this.

Hardship Considerations and Risks

25. While the HACC (and now the CHSP) program has operated on the basis of requiring service users to pay a fee for service, a principle has been that individuals will not be denied service if they do not have the capacity to pay. This is discussed and agreed with the resident at the initial service induction stage or at a later date should an individual's financial situation change. This proposal does not intend to change such an arrangement, with fee waivers available for those in need.

Human Rights Implications

26. Human rights are being considered through discussion and implementation of the support of vulnerable people and in particular any financial implications.

Communications with CALD Communities Implications

27. Consultation with the CALD community has occurred as part of the process and the response was consistent with other feedback received.

Council Plan, Strategy and Policy Implications

28. Continuation of the Community Transport service is consistent with Council's commitment to providing needed services. The approach to determining an appropriate fee schedule to reflect the service user group and each individual's capacity to pay is also consistent with Council's support of vulnerable people.

29. The Commonwealth were not supportive of enabling Council to include Community Transport (as a general CHSP service) within its current agreement, albeit that Community Transport is part of the national CHSP. At this stage the agreement is limited to those components that provide assistance during a social support group activity. Officers will continue to pursue this matter with the Commonwealth.

Legal Implications

30. There are no legal implications attached to this proposal.

Other Issues

31. There will be some people who are not eligible for the CHSP program or who do not wish to undertake a My Aged Care assessment. This service has operated on the basis of a broad

eligibility criteria (generally open to all older people) and it will be important to ensure these residents are not excluded. It is however proposed that the fee would apply to these residents also. The fee will apply to those parts of the Community Transport where assistance is provided during group activity (typically social support group shopping).

32. It should be noted that post 2020, it may be necessary to consider competitive neutrality requirements. This would be an issue irrespective of whether Council is operating under the CHSP or not.

Linkages Case Management Service

33. A separate issue, however still related to the national aged care reforms and the CHSP program, is the uncertainty regarding the Linkages service. This service which supports fifteen residents with high needs is due to cease on the 30 June 2019.

34. All existing service users are to transition to the national Home Care Program (HCP). Council's Case Manager has supported these clients in readiness for the transition however to date they have not been offered a HCP package and it is highly unlikely this will occur by 30 June 2019.

35. Officers have sought clarification from the Department of Health and while no formal advice has been received, it is likely that the Linkages program will be extended until early 2020. This situation is creating uncertainty for clients and making it difficult for them to plan, adjust to the change and make choices around a new provider. This uncertainty is also impacting on the conduct of the program at an organisational level.

36. There is a need for on-going advocacy at the Commonwealth level to ensure the needs and concerns of clients are at the forefront in decision-making and that adequate time and resources are available to assist clients during this period. Advocacy on this matter is consistent with Council's strategic advocacy directions.

Options

37. There are two options available:-

    (a) Option 1 - Maintain the current arrangement and forego approximately $125,000 of CHSP funding per year, and maintain the current service fee at nil dollars; or

    (b) Option 2 – Implement the approved transfer of CHSP funding in conjunction with introducing a low level service fee.

Conclusion

38. Following completion of the consultation process and consideration of the feedback, it is proposed to proceed with Option 2 on the basis that it will:-

    (a) maximise funding under the CHSP from the Commonwealth and offset the expenditure Council makes in Community Transport;

    (b) enable Council to continue to provide the service at a high level; and

    (c) continue to support service users through the introduction of a low fee, with appropriate hardship / capacity to pay provisions in place.

RECOMMENDATION

1. That Council:

    (a) endorse the variation to the CHSP service agreement to transfer unspent funding from the Meals and Linkages program into Social Support Group (Community Transport) activity;

    (b) introduce a service fee of $1 per trip for Social Support Group (Community Transport) activity, to be implemented along with current hardship and capacity to pay provisions that apply presently across Council's CHSP services, and that this fee is included in the

2019 - 2020 Budget; and

(c) endorse advocacy at the Commonwealth Government level and with the Department of Health to:

(i) seek inclusion of Community Transport generally as a funded activity in future service agreements; and

(ii) highlight concerns about the uncertainty being faced by residents in receipt of the Linkages Case Management program, including access to Home Care Packages, the lack of communication on transition dates and the need to ensure adequate time and resources are made available to assist residents through this change.

CONTACT OFFICER **Adrian Murphy**
TITLE: **Manager Aged and Disability Services**
TEL: **9205 5450**

Attachments
There are no attachments for this report.

11.3 Route 96 Accessible Tram Stop Proposals (Stops 16-22)

Executive Summary

Purpose

For Councillors to consider the latest detailed design drawings and other material regarding the installation of accessible tram stops on route 96 along Nicholson Street, between Kerr Street and Holden Street (stops 16 – 22).

Key Matters for Consideration

- Accessible public transport services;
- Tram priority, reliability and speed;
- Previous Council resolutions relating to the Route 96 project;
- Planning Scheme Amendment GC68;
- Speed limit of Nicholson Street;
- Car parking impacts;
- Impacts to street trees;
- Impacts to awnings and street furniture;
- Urban design improvements;
- Local access arrangements;
- East-west pedestrian and cyclist movements; and
- Construction Impacts

Project Proposal and Background

The Route 96 project proposes to create Melbourne's first fully accessible tram route, running only low-floor trams and upgrading all stops to meet Disability Discrimination Act 1992 (DDA) and Disability Standards for Accessible Public Transport 2002 (DSAPT) compliance. To complete the project PTV proposes to replace seven existing tram stops on Nicholson Street, between Rose Street and Holden Street; with six DSAPT compliant, central island platform stops (**Attachment 1**). The designs of the proposed stops is similar to those constructed further south along Nicholson Street as part of the recent upgrade to stops 11 to 15.

Re-allocation of road-space and associated works within the footpath are required to comply with adopted tram stop design standards and meet DSAPT compliance requirements. These works provide opportunities for the road-design to better reflect local and State transport and place making policies by:

- Increasing the accessibility, priority, speed and reliability of public transport services;
- Improving pedestrian environments and safety in and around tram stops;
- Getting better place-making, street beautification and tree planting outcomes; and

- Improving facilities for pedestrians and cyclists making east-west movements across Nicholson Street, including along the Capital City Trail.

The core project objectives of the project according to the sponsor (PTV) are listed below in priority order.

- DDA compliance
- Safety
- Tram reliability and speed
- Other benefits such as placemaking and urban design outcomes where these can be achieved without compromising other core high priority objectives and at reasonable cost (relative to the net cost of the project as a whole).

PTV has undertaken consultation and design work for the upgrades to Stops 11-22 over a number of years at the 'concept design' stage. As part of the concept design process Council comprehensively considered multiple alternate stop design options identified by:

- PTV
- Council officers; and
- Community members.

Council approved the concept designs for the stops being considered today in 2013 and 2014. Since the relevant Council resolutions were issued, further work related to the project has been undertaken, specifically:

- In 2017 State Government gazetted Planning Resolution CG68. This exempts the tram stop upgrade projects from normal planning processes;
- PTV and Yarra Trams have constructed stops 11-15. The detailed designs were approved by Council in 2018; and
- In 2018 PTV undertook additional consultation and detailed design work for stops 16 – 22. This resulted in relatively minor modifications to stop design and changes to the surrounding roadway. New matters not considered during the concept design stage were also identified. Specifically:
    - Stop 21 has been shifted slightly so it is directly adjacent to Scotchmer Street (in response to the Council resolution);
    - It has become apparent that a number of trees need to be removed or extensively pruned and a small number of building awnings and other assets within the footpath will need to be modified or moved to comply with road clearance requirements; and
    - The total number of car parking bays that need to be removed has been reduced significantly (from 90 to 45).

Whilst supporting the concept designs for the relevant stops, Council's previous relevant resolutions advocated for a number of changes to the roadway and stop designs at the detailed design stage. These included:

- Reducing the speed limit from 60kph to 40kph along the full length of Nicholson Street;
- Retaining off-peak parking in and around tram stops wherever possible (by removing a traffic lane during peak periods);

VicRoads are the road asset owner and have considered these requests however they have not agreed to implement them, as they consider they would result in unacceptable traffic impacts. **Attachment 4** outlines VicRoads' position on these matters.

It should be noted that with the introduction of Planning Amendment CG68 PTV will be able to refer any Council decision to VCAT if Council only grants approval subject to conditions which are dependent on the actions of a third party as this would be deemed 'unreasonable' by PTV. For

example a condition specifying a speed limit reduction is unreasonable as PTV are not responsible for speed limits and have no control over them. Further details of the amendment and what this means for Council as a planning authority is provided in the main report.

Council has requested planting of more trees/replacing with three trees for each one removed and this has been formally agreed with PTV.

Financial Implications

The project would have minimal impact on Council revenue as there is no paid parking bays being affected. There may be a marginal loss of revenue associated with parking infringements due to the removal of some parking.

PTV has agreed to grant Council $400,000 for capital works along the length of Nicholson Street for improvements to the streetscape/pedestrian environment.

Options

Council has two options with regards to the detailed designs:

Option A: Council, as the designated Responsible Planning Authority, approves the detailed designs provided by PTV for tram stops 16 to 22 along Route 96, subject to conditions recommended by the officer.

PTV is then expected to construct the stops in January 2020.

Option B: Council, as the designated Responsible Planning Authority, does not approve the detailed designs provided by PTV for tram stops 16 through 22 along Route 96.

If Option B is pursued PTV will either:

- Abandon the project and work towards delivering accessible stops in other municipalities; or
- Seek project approval via ministerial intervention or at VCAT – this would also delay construction of the stops.

The officer recommendation is for Councillors to pursue option A.

PROPOSAL

That Council, as the Responsible Planning Authority, approve, subject to conditions, the detailed design work undertaken by PTV for accessible tram stops to be constructed on Nicholson Street between Kerr Street and Holden Street, so PTV may proceed with constructing the proposed tram stops in January 2020.

11.3 Route 96 Accessible Tram Stop Proposals (Stops 16-22)

Trim Record Number: D19/20522
Responsible Officer: Director Planning and Place Making

Purpose

1. For Councillors to consider the latest detailed design drawings and other material regarding the installation of accessible tram stops on route 96 along Nicholson Street, between Kerr Street and Holden Street (stops 16 – 22).

Background

2. Victoria has a legal obligation under the relevant Disability Discrimination Act 1992 (DDA) and Disability Standards for Accessible Public Transport 2002 (DSAPT) legislation to significantly increase the number DSAPT compliant accessible tram stops over time, and make all tram stops accessible by 2032.
3. The Route 96 project proposes to create Melbourne's first fully accessible tram route, running only low-floor trams and upgrading all stops to meet DSAPT compliance. To complete the project PTV proposes to replace seven existing tram stops on Nicholson Street, between Rose Street and Holden Street; with six DSAPT compliant, central island platform stops (**Attachment 1**).
4. Route 96 is Melbourne's busiest tram route. It is 14 km in length and operates from Blyth Street, Moreland to Acland St, Port Phillip via the CBD. E-Class trams, operate along the route and have a low floor DSAPT compliant design. Pending the upgrades of stops 23 through 26 (scheduled to be constructed in May), all stops along the route will be fully DSAPT compliant except stops 16 through 22, which are the subject of this report.
5. When paired with the E-Class trams, the proposed accessible platform stops would complete accessibility upgrades of Route 96. This would greatly enhance the service for people with disabilities, the elderly, and people travelling with young children or luggage. The new platforms would also allow faster boarding and alighting by all passengers, which with some stop consolidation would speed-up trams and improve service reliability.
6. The core project objectives of the project according to the sponsor (PTV) are listed below in priority order.
   (a) DSAPT (and DDA) compliance;
   (b) Safety;
   (c) Tram reliability and speed; and
   (d) Other benefits such as placemaking and urban design outcomes where these can be achieved without compromising other core high priority objectives and at reasonable cost (relative to the net cost of the project as a whole).
7. The following matters are detailed in this report:
   (a) Existing conditions on Nicholson Street;
   (b) Proposed tram stop upgrades;
   (c) Previous Council Resolutions regarding these stops;
   (d) Planning Scheme Amendment GC68 concerning the approval process for tram stops;
   (e) Matters raised in previous Council resolutions, including:
      (i) the speed limit of Nicholson Street;
      (ii) retaining off-peak parking where possible (and other parking changes);

(iii) implementing urban design improvements;

(iv) shifting Stop 21 closer to Scotchmer Street;

(v) widening the Capital City Trail crossing (and other east-west pedestrian and cyclist crossings); and

(vi) ensuring the access requirements of business owners are considered;

(f) External Consultation and Community Engagement, including matters raised by the community; and

(g) Consideration of alternate tram-stop designs.

(h) New matters not previously considered at the concept design stage; these include:

(i) Impacts to existing street trees; and

(ii) Impacts to building awnings and other assets within the footpath;

Existing Conditions

8. Nicholson Street is a key north-south transport corridor between the City of Moreland via the CBD to Acland St, St Kilda. Within Yarra, Nicholson Street carries:

(a) Over 12,000 tram passengers each weekday; and

(b) Approximately 21,000 cars on an average day (in its busiest sections).

9. Nicholson Street is not a major cycling route and is unlikely to become one due to better alternate routes located nearby such as Canning Street which are far quieter and have better facilities.

Route 96

10. South of Holden Street, trams on Nicholson Street operate in a limited right-of-way (i.e. they have dedicated lanes, but interact with vehicles at intersections). The tram stops in question currently require passengers to wait in the centre of the road, at road level with a fence separating waiting passengers from passing vehicles.

11. Issues identified with the existing stops are as follows:

(a) They require people to step up or down to board or alight trams which:

(i) Limits accessibility of these stops for people with limited mobility, or prams, luggage, etc.; and

(ii) Increases the time it takes to board or alight trams, slowing tram services down.

(b) Some stops are very narrow with passengers squeezed between trams and passing traffic on a road with a 60kph speed limit;

(c) All stops lack weather protection within the roadway and generally have poor levels of amenity:

(d) In some locations shelters are provided on the footpath, however, these are infrequently used as they are not convenient. They also obstruct the footpath.

(e) Stop spacing is inconsistent:

(i) Stops which are too close slow down tram services whilst providing only a limited accessibility benefit; and

(ii) Stops which are spaced too far apart require people to walk excessive distances to access tram services.

Roadway and parking

12. The section of Nicholson Street being considered currently operates as a four lane road with a 60km/h speed limit and a parking lane either side of the road.

13. Nicholson Street is a key radial arterial road and VicRoads is the Road Authority. The Road Authority has the final decision on speed limit and road design, including provision of parking bays.

14. In locations where VicRoads allows full time parking bays, Council determines parking restrictions. There is no paid parking in the section of Nicholson Street being considered. Parking restrictions are generally in the form of time restricted bays or permit bays.

Nicholson Street as a place

15. Nicholson Village is located between Holden Street and Pigdon Street. This comprises a commercial strip approximately 650m long which serves as a neighbourhood activity centre.

16. The Inner Circle Railway Linear Park and Capital City Trail shared path is located towards the north of Nicholson Village. This operates as a major east-west pedestrian and cyclist thoroughfare and area of open space.

17. A Transdev bus depot is located on the east side of the Nicholson Village, between Richardson Street and Liverpool Street. The bus depot has a large but un-activated frontage. This bus depot is of regional significance to the operation of Melbourne's bus network.

18. Residential properties predominately flank Nicholson Street between Pigdon Street and Johnston Street. The majority of sites are developed with townhouses and attached cottages with some high density residential developments also present.

Proposed tram stop improvements

19. The proposal is the replacement of seven existing tram stops with six new, central island platform stops. The designs of the proposed stops is similar to those constructed further south along Nicholson Street as part of the recent upgrade to stops 11 to 15. Stop designs and locations are summarised in the table below :

Stop No.	Location	Configuration	Relevant Councils
Stop 16	Between Rose Street and Leicester Street	A double-sided central island platform (33m).	City of Melbourne & City of Yarra
Stop 17	Between Alexandra Parade and Lee Street/York Street	A double-sided central island platform (33m).	City of Yarra
Stop 18 & 19	Between Freeman Street and Church Street	Consolidating stops 18 and 19. A double-sided central island platform (33m).	City of Yarra
Stop 20	Just south of Richardson Street / Reid Street.	A double-sided central island platform (33m).	City of Yarra
Stop 21	Just south of Pigdon Street / Scotchmer Street.	A double-sided central island platform (33m).	City of Yarra
Stop 22	Between the Capital City Trail and Holden Street	A narrower double-length central island platform (66m) with north-bound trams stopping at its northern end, and south bound trams stopping at its southern end.	City of Yarra & City of Moreland

Policy alignment opportunities

20. Re-allocation of road-space and associated works within the footpath are required to comply with adopted tram stop design standards and meet DSAPT compliance requirements.

21. These works provide opportunities for the road-design to better reflect local and State transport and place making policies by:

    (a) Increasing the accessibility, priority, speed and reliability of public transport services;

    (b) Improving pedestrian environments and safety in and around tram stops;

(c) Getting better place-making, some street beautification and tree planting outcomes; and

(d) Improving facilities for pedestrians and cyclists making east-west movements across Nicholson Street, including along the Capital City Trail.

Other associated works

22. The associated works required to complete the project, include:

(a) Removal of some on-street car parking spaces (previously agreed at concept design stage);

(b) Removal and pruning of some large street trees to provide safe clearance from traffic on the roadway. Note this project, through replanting by PTV to Council standards, would increase the net number of trees along the corridor;

(c) Relatively minor alterations to some existing building awnings - to provide a safe clearance from the roadway;

(d) Removal of some bluestone within the roadbed and repaving with asphalt in some areas. Note this was previously agreed at the concept design stage; and

(e) Relocation of a small amount of street furniture and fixtures near the kerb including electrical poles to provide a safe road clearance.

23. Council officers have worked very closely with PTV and VicRoads over a significant period of time to minimise impacts wherever this is practical.

Previous Council Resolutions

24. PTV has carried out consultation and design work for the upgrades to Stops 11-22 over a number of years at the 'concept design' stage. As part of the concept design process Council (in 2013 and 2014) comprehensively considered multiple alternate stop design options identified by:

(a) PTV;

(b) Council officers; and

(c) Community members.

25. A full list Officer Recommendations and Council Resolutions related to Route 96 decisions is provided at **Attachment 2**. The table below summarises Council approvals for the concept designs for stops being considered as part of this report.

Meeting Date	Tram Stops / Road Section	Expected parking change in Yarra
12 November 2013	Between Victoria Parade and Brookes Crescent: Stops 11 & 12 (consolidated) Stops 13 & 14 (consolidated) Stop 15 Stop 16 Stop 17 and Stops 18 & 19 (consolidated)	Net removal of 51 spaces associated with stops 16, 17 and 18 & 19.
2 September 2014	Near Scotchmer/Pigdon Street and Brunswick Road/Holden Street. Stops 21 & 22	Net removal of 20 unmetered spaces.
16 September 2014	Immediately south of Reid/Richardson Streets. Stop 20	Net removal of 19 unmetered spaces.

26. Whilst supporting the concept designs for the relevant stops, the Council resolutions advocated for a number of changes to the roadway and stop designs at the detailed design stage. These were:

    (a) Reducing the speed limit from 60kph to 40kph along the full length of Nicholson Street;

    (b) Retaining off-peak parking in and around tram stops wherever possible;

    (c) Implementing urban design improvements to Nicholson Street as part of the project;

    (d) Shifting Stop 21 slightly closer to the Scotchmer Street intersection;

    (e) Widening the capital city trail pedestrian / cyclist crossing, and

    (f) Ensuring PTV have directly contacted affected business owners to ensure specific access requirements are considered.

27. Since the 16 September 2014 Council resolution further tram related work has been undertaken which should be noted as part of this project:

    (a) In 2017 State Government gazetted Planning Resolution CG68. This exempts the tram stop upgrade projects from normal planning processes;

    (b) PTV and Yarra Trams have constructed stops 11-15. The detailed designs were approved by Council in 2018; and

    (c) In 2018 PTV undertook additional consultation and detailed design work for stops 16 – 22. This resulted in relatively minor modifications to stop design and changes to the surrounding roadway. New matters not considered during the concept design stage were also identified. Specifically:

        (i) Stop 21 has been shifted slightly so it is directly adjacent to Scotchmer Street in response to the Council resolution;

        (ii) It has become apparent that a number of trees need to be removed or extensively pruned to comply with road clearance requirements;

        (iii) The total number of car parking bays that need to be removed has been reduced significantly; and

        (iv) It has become apparent that a small number of building awnings and other assets within the footpath would need to be modified or moved to comply with road clearance requirements.

28. Further details on these aspects are provided later in this report.

Planning scheme amendment

29. Planning Scheme Amendment CG68 was gazetted into the Yarra Planning Scheme on 3 September 2017 by the State Government. The purpose of the amendment was to streamline delivery of accessible tram stops along Route 96 and at other locations within metropolitan Melbourne.

30. The amendment introduced a new *Incorporated Document* into the Yarra Planning Scheme (**Attachment 3**). This exempts '*the use and development of the land for a Tramway'* from normal planning requirements along the length of Route 96 provided certain conditions are met. The '*use and development of the land for a Tramway'* includes (but is not limited to):

    (a) New level access stops, including tram platforms and associated facilities, tram track and tram overhead infrastructure;

    (b) Segregation treatments to better separate trams from general traffic;

    (c) Roadway alterations including bluestone kerbing, building awnings and associated traffic and street furniture;

    (d) Vegetation pruning and removal;

    (e) Infrastructure to support improved priority for trams at traffic signals;

    (f) Pedestrian operated signals and real-time passenger information; and

    (g) Ancillary infrastructure including sub-stations and driver facilities.

31. The conditions which must be met for works associated with the development of a tramway to not require a planning permit are summarised as follows:

    (a) Scale Plans must be prepared for approval by the Responsible (Planning) Authority;

    (b) In areas prone to flooding (as identified by relevant planning overlays), consent from the relevant floodplain authority must be provided; and

    (c) In heritage areas (as identified by the Heritage Overlay in the planning scheme) a statement of heritage impacts must be provided.

32. Given the above, the proposed works are only planning permit exempt, provided the Responsible Authority consents to the works. The implication of this change is that whilst the Responsible Authority must still consent to the works, the application is now exempt from the regular planning process, including third party objections and appeal rights.

33. If Council does not consent to the works, or if Council imposes Conditions as part of its approval which PTV do not find acceptable or deliverable for any reason, then PTV can either:

    (a) Seek Ministerial intervention and request the Minister for Planning assume the role of the Responsible Authority; or

    (b) Request the matter be heard at VCAT.

34. If the matter is taken to VCAT for a decision, advocacy costs would be incurred.

Matters raised in previous resolutions

Implementing a 40km/h speed limit to Nicholson Street

35. Council officers and PTV have advocated strongly for the speed limit to be reduced in line with the Council resolution. VicRoads have not agreed to implement a 40km/h speed limit. A letter from VicRoads explaining this position is found at **Attachment 4**.

36. Notwithstanding this, the tram stop designs do not prevent the speed limit being reduced in the future and Council officers will continue to advocate for this change.

Retaining off-peak parking in and around tram stops wherever possible;

37. Further refinement via the detailed design process has enabled the amount of parking removals required to deliver the project to be significantly reduced. Originally 90 bays were

approved for removal, however, Council officers have worked with PTV to keep parking removals down to an absolute minimum and have reduced this number to 45 bays. In some locations there has been a slight increase in the number of bays that need to be removed to deliver the project. Changes to parking bay removals since concept design are outlined in detail in the table below:

Stop Number	Concept Design Stage	Detailed Design
Stop 16	-21	-14
Stop 17	-18	+12
Stop 18-19	-12	-3
Stop 20	-19	-14
Stop 21	-16	-22
Stop 22	-4	-4
Total	-90	-45

38. Many of the parking bays in the vicinity of Stop 16, 17 and 18-19 would be retained by implementing a single north-bound traffic lane past the tram stops. Where existing tram stops are to be relocated, PTV and Council officers have identified opportunities for new parking bays to be installed to offset loses elsewhere.

39. In the vicinity of Stop 21 (located within Nicholson Village), the number of spaces requiring removal has been increased from 16 to 22. Officers are satisfied that it is essential for 22 spaces to be removed to deliver the project.

40. Community sensitivities and perceptions around the removal of car parking are well understood by Council officers and the PTV project team. Opportunities for reducing the number of traffic lanes on Nicolson Street to retain parking have been explored where this would not result in a network bottleneck that generates long traffic queues and unacceptable delay.

41. Traffic modelling undertaken by PTV and VicRoads has indicated that single north-bound traffic lanes can be provided past stops 16, 17 and 18-19. These are mid-block stops away from junctions where multiple lanes are required for turning traffic. At mid-block locations traffic will be able to merge into a single lane without unacceptable impacts on safety and traffic congestion. VicRoads maintain that mid-block single traffic lane configurations are not suitable in the south-bound direction as traffic volumes are significantly higher throughout the day.

42. Stops 20, 21 and 22 are located at junctions where multiple lanes need to be maintained for turning traffic. VicRoads state that any reduction in road capacity at these particular locations would generate significant traffic queuing. The rationale and data outlining these decisions is provided at **Attachments 4 and 5**.

43. Single lane sections at mid-block stops would get a significantly improved outcome by reducing impacts on parking and trees and on this basis they should be supported.

44. Traders have expressed concern regarding the removal of any car parking spaces within Nicholson Village to maintain existing traffic lane configuration. Council officers will continue to consider if parking removals on Nicholson Street can be offset to some degree by converting permit bays to time restricted bays on Park Street and Scotchmer Street. Further advice on this will be provided as parking surveys are currently being completed.

Implementing urban design improvements to Nicholson Street as part of the project

45. As part of the resolution for the detailed designs of stops 11 through 15, PTV has agreed to grant Council $400,000 to implement urban design upgrades along the length of Nicholson Street. This is a discretionary contribution, and the agreement was made in good faith that Council would continue to support the detailed designs for Stops 16 – 22.

46. Council officers are currently developing a list of projects in and around the Nicholson Village to improve the appearance and amenity of this activity centre. A copy of preliminary options

for urban design improvements has been provided in the Councillors Briefing Rooms for consideration.

Shifting Stop 21 slightly closer to the Scotchmer Street intersection;

47. During the detailed design process PTV has shifted Stop 21 to directly adjacent the Scotchmer Street intersection as requested by Council.

Widening the capital city trail pedestrian / cyclist crossing (and other east west crossings);

Capital City Trail crossing

48. PTV propose that the busy Capital City Trail signalised crossing is widened from 2.7m to 4.5m with separately delineated paths marked for pedestrians and cyclists.

49. A 4.5m wide crossing will not satisfactorily cater for existing demand at this intersection. Council officers have discussed this concern with PTV who have agreed that widening the crossing to 6.0m would result in an improved outcome. However they have informed Council that this exact change may not be practical due to the existence of underground services which would be prohibitively expensive to relocate. The exact location of the services is not known at this time. A condition has been added to the approval to make the crossing 6 metres in width or as close to this as possible noting the services issue.

Other east-west pedestrian and cyclist crossings

50. Each stop would include signalised pedestrian crossings facilitating access to the stop, and from one side of the street to the other.

51. Other east-west cycling corridors would be maintained by incorporating small bike friendly cut-throughs in the separators as was undertaken in at Moor Street and Bell Street as part of the improvements to stops 11 through 15. These breaks are located at:

    (a) Lee Street / York Street;

    (b) Newry Street;

    (c) Curtain Street / Freeman Street; and

    (d) Fenwick Street / Church Street.

52. Council officers have concerns with the current design proposed for east-west cyclist movements at the Lee Street / York Street corridor; specifically that the use of single-breaks in the separators and the inclusion of a ‘cyclist maze’ are not good design outcomes. This concern can be addressed via a condition of any approval.

Ensuring PTV have directly contacted affected business owners to ensure access requirements are considered;

53. Council officers have worked with PTV to ensure businesses are contacted throughout the process to ensure individual access requirements are understood. Four sites were identified as having specific access requirements:

    (a) Maria’s Pasta, 655-667 Nicholson Street;

    (b) L U Simons Builders, 818 Nicholson Street;

    (c) AMG Body Works, 820 Nicholson Street; and

    (d) Fire Wood / Timber Supply, 820 Nicholson Street.

54. PTV has liaised directly with the affected businesses to understand existing conditions, their access requirements going forward, and how access will be addressed as part of the project.

55. These sites currently utilise larger vehicles and frequently cross the tram tracks to get access to their driveways which is an illegal manoeuvre and results in safety issues. Following completion of the works, crossing the tracks would no longer be possible due to the new tram stops and new bluestone splitter islands that prevent vehicles from entering the track reserve. Each site would retain an acceptable level of access for ‘left-in and left-out’

manoeuvres. The following table outlines the level of access which would be retained for the four properties:

Address	12.5m vehicle Reverse	8.8m vehicle Forward	8.8m vehicle Reverse	Kerb Works Required
Maria's Pasta (car park) 655 Nicholson Street	No	Yes	Yes	No
Maria's Pasta (loading) 667 Nicholson Street	No	No	No	No
L U Simon Builders 818 Nicholson Street	Yes	Yes	Yes	Yes
AMG Body Works 820 Nicholson Street	Yes	No	Yes	Yes
Fire Wood / Timber Supply 820 Nicholson Street	Yes	Yes	Yes	Yes

56. PTV would carry out modifications to the existing kerbs to provide the level of access noted above for left in left out manoeuvres. Some minor works within the title boundaries of the site may be required in the case of L U Simon Builders. PTV would pay for all of these works as part of the project and would liaise directly with the businesses and building owners about these works.

Matters not considered at the concept design stage

Tree removals and planting

57. Road clearance requirements and potential tree removals were not considered at the concept design stage. The proposed works require traffic lanes to be moved towards the kerb at and near tram stops, presenting a significant increase in risk of vehicles striking trees at high speeds.

58. Council officers are aware of community sensitivities around tree removal and have worked extensively with VicRoads to understand the basis for road clearance requirements in road safety standards and assess opportunities for dispensation to reduce impacts on trees as much as possible.

59. VicRoads has recently indicated a dispensation to the existing clearance requirements is being considered in order to reduce the number of trees which must be removed, however a final decision by VicRoads on what clearance to be maintained has not been reached.

60. 16 trees currently encroach on adopted road-clearance requirements and many or all of these may need to be removed. Some of these trees are already being struck by larger vehicles as they attempt to park.

61. The following table summarises the trees which encroach on the existing clearance requirements, and indicates the maximum possible required tree removals (a map showing tree locations is at **Attachment 6**):

Stop Number	Number of trees which encroach on existing clearance requirements	Tree Types
Stop 16	1	London Plane (1)
Stop 17	5	London Plane (5)
Stop 18-19	2	London Plane (2)
Stop 20	5	London Plane (3), Spotted Gum (1), Plane (1),
Stop 21	3	London Plane (3)
Stop 22	0	
Total	16	London Plane (14), Spotted Gum (1), Plane (1).

62. PTV has agreed to pay for tree planting to off-set required tree removals. Assuming all 16 trees are required to be removed, Council's arborist has indicated that 61 replacement trees would be planted (approximately 4 new trees to every tree removed). The proposed replacement species is a *Box Elder Maple Sensation*. Council's arborist advises that:

    (a) Box Elder Maple Sensation is a better tree for this street as it is easier to maintain and does less damage to buildings and footpaths. All newly planted trees will be the Box Elder Maple Sensation species.

63. Some members of the community have suggested some tree removals could be avoided at locations with single north-bound traffic lanes by shifting the road, track and platform slightly westward. This option is not feasible as significant relocation of underground services would be required which is very expensive.

Building awning alterations and other impacts to footpath assets (including Heritage Considerations)

64. Four building awnings, some poles and other assets on the footpath and adjacent the proposed tram stops encroach on road clearance requirements so need to be altered or relocated for the implementation of the project. Some of these assets and awnings are already being struck by larger vehicles as they attempt to park. The following table identifies the four awnings and their heritage significance:

Address	Heritage Significance
700 Nicholson Street	Not-Contributory Building
702-704 Nicholson Street	Contributory Building – The awning is Not-Contributory fabric
705 Nicholson Street	Contributory Building – The awning is Not-Contributory fabric.
709 Nicholson Street	Contributory building - the awning is Contributory fabric.

65. The recent VicRoads dispensation to the existing clearance requirements is being determined. This will determine which awnings and assets would need to be altered or relocated. PTV would pay for the works to be carried out and is in direct discussions with the affected building owners regarding the works.

66. The works are covered by the Incorporated Document which exempts the project from requiring planning approval, hence no planning permit is required. Building Permits and other consents may still be required and Council officers will work with PTV to process all relevant permits and consents.

Heritage considerations

67. Only one encroaching awning comprises Contributory heritage fabric. PTV has provided a Heritage Impact Assessment (HIA) which provides conditions which must be met to ensure the awning alterations would not be detrimental to the heritage streetscape. A copy of the HIA is included as **Attachment 7**.

68. The HIA has not raised any concerns with regards to relocation of other assets such as poles within the footpath.

External Consultation & Community Engagement

69. The Council's Disability Advisory Committee support the upgrade to the tram stops.

70. Extensive community consultation was undertaken in 2014 by PTV during the concept design stage.

71. More recently, PTV has undertaken:

    (a) Community engagement on 2nd March 2019 at the Auditorium (75 Reid Street) and 6th March at St Brigid's Hall; and

    (b) Trader engagement on 26th February 2019 at the Empress Hotel and on 18th March 2019 at The Little Bookroom.

72. Broadly speaking the community acknowledge that tram stop upgrades are required, although there were concerns regarding impacts. A summary of these is as follows:

    (a) Some on-street car parking would be removed;

    (b) Some street-trees would be removed;

    (c) The 60km/h speed limit is too high;

    (d) Access to sites adjacent to tram stops would be reduced;

    (e) Pedestrian amenity and safety would be affected;

    (f) Traffic lanes would be too narrow;

    (g) The stops would be a barrier to crossing the street;

    (h) The construction period would be disruptive and affect businesses to an unacceptable degree;

    (i) Some of the community "missed out" on earlier concept design related consultation; and

    (j) Alternate stop designs have not been appropriately considered.

73. Matters relating to Concerns (a), (b), (c), (d) have been considered earlier within this report. Responses to these concerns are summarised as follows:

    (a) The number of car parking spaces proposed to be removed has been kept to a minimum and has significantly reduced since the concept design stage;

    (b) Tree removal has been kept to a minimum and multiple replacement tree planting is proposed;

    (c) VicRoads as the road authority and has not agreed, despite repeated requests from the Yarra CEO and PTV, to reduce the speed limit from 60km/h to 40km/h. There is nothing more Council can do regarding this matter at this time; and

    (d) PTV have engaged directly affected businesses regarding their individual access requirements and have considered their needs in the tram stop design and associated works. Access impacts have been kept to a minimum.

74. The remaining concerns are considered below:

    <u>(e) Pedestrian amenity and safety would be affected</u>

75. Moving the traffic lane to the kerb edge would impact pedestrian amenity to some degree. This was understood and accepted at the concept design stage. The impact may be

mitigated to some degree by urban design improvements that Council officers are currently exploring.

(f) Traffic lanes would be too narrow

76. The traffic lane widths comply with road standards and have been approved by VicRoads as the Road Authority for Nicholson Street. Narrower traffic lanes would encourage people to reduce driving speed.

(g) The stops would be a barrier to cross the street

77. The proposed stop designs, lengths and locations were considered and approved at the concept design stage. The majority of the proposed stops include a 33m long platform with only stop 22 requiring a 66m long platform due to road geometry. Each stop includes provision of a signalised pedestrian crossing. The stops do create a barrier to informal road crossings, however, given traffic volumes on Nicholson Street and associated safety risks pedestrians should be encouraged to use the signalised intersections as much as possible.

(h) The construction period would be disruptive and affect businesses to an unacceptable degree

78. To help mitigate some of the concerns raised by traders regarding the disruption this may cause their businesses, PTV have moved construction of the stops from late September and early October 2019 to January 2020 (with exact dates to be confirmed). Collectively the traders as a group have indicated that this period is the least disruptive to their businesses.

79. The main occupation is expected to be two-weeks, with some preliminary works required beforehand. The main occupation would require full road closures, whilst the preliminary works would require closing some sections of footpaths and may require closure of some traffic lanes.

80. Since the tram stop upgrades of stops 11-15, lessons have been learnt by all relevant parties regarding managing the occupation and all parties are looking to mitigate some of the concerns that were raised in response to those works.

(i) Some of the community “missed out” on consultation

81. Some community members have expressed concern that they missed the widespread consultation undertaken in 2013 and 2014 as they moved into the vicinity of the tram stops (as either traders or residents) after that time. On this basis they believe that they have not had an opportunity to be suitably engaged in the consultation process at the outset. Complaints of this nature are a regular occurrence during larger infrastructure projects, which are progressed over many years with businesses and residents continually moving in and out over this time.

82. Residents of the high-density residential development at the south-east corner of Reid Street and Nicholson Street (*construction completed in 2018*) have indicated their views have not been considered. These concerns should be considered in the following context:

    (a) When buying property due diligence is required by purchasers with regards to proposed developments and works. Given the tram stops are not DDA compliant they were always going to need to be upgraded in the near future;

    (b) The residential development in question was approved by Council on 2 December 2012 pursuant to planning permit PLN11/0586 – prior to Council approving the concept designs for the relevant tram stop;

        (i) This planning application was referred to PTV for consideration and PTV was aware of the proposed development.

    (c) The concerns expressed by residents of the development are very similar to other general concerns already expressed by other residents and traders in relation to the other tram locations: i.e.;

        (i) Loss of on-street car-parking spaces adjacent their development; and

(ii) Safety and amenity concerns relating to the traffic lane shifting towards the kerb; and

(d) Other than this development there has been relatively little other change along the stretch of Nicholson Street being considered.

83. For the reasons above, additional consultation in response to these general comments is not warranted and the tram stop designs should not be changed further in response to these comments.

Alternate stop designs have not been appropriately considered

84. PTV and Council have expended a significant amount of officer and Council time on the route 96 project and the topic of tram stop design options in particular during the concept design stage in 2014. The alternate designs considered included:

(a) a range of other stop locations and design options developed by PTV,

(b) a number of design options and locations proposed by Council officers; and

(c) a number of alternate stop designs developed by Mr Jeff Walker a community member who has represented some of the traders along Nicholson Street on this project.

85. Any proposed accessible tram stop design must be designed to deliver multiple outcomes for the project. These include:

(a) compliance with relevant DDA requirements;

(b) compliance with relevant road rules and adopted road and rail design standards;

(c) improving tram priority, speed, reliability and accessibility;

(d) not excessively or unnecessarily impacting vehicle traffic, particularly at intersections and on arterial roads;

(e) improving safety or at least maintaining existing conditions for all road users including pedestrians;

(f) minimising on-street car parking losses;

(g) reducing existing conflicts wherever possible, and not introducing new conflicts;

(h) improving passenger amenity;

(i) improving pedestrian amenity in and around the tram stops;

(j) supporting activity centres and placemaking; and

(k) considering the often divergent views as expressed in community and stakeholder consultation.

86. Two new alternate concept designs for stop 22 have been provided to Council by Mr Walker (**Attachment 8**) following further consultation on the proposed detailed designs. These options are:

(a) an ‘easy-access-stop’; and

(b) a ‘shorter wider central island platform stop’.

87. Council officers have considered Mr Walker’s current proposals in detail and found a number issues (see below).

Easy-Access-Stop Design

88. An Easy-Access-Stop design requires passengers to wait for trams on the footpath, with the road adjacent to the stop raised to the footpath level to provide DDA compliant level access. This type of design requires vehicles to stop and not pass trams when they are at stops. Examples of easy access stops can be found on Bridge Road and Victoria Street.

89. Nicholson Street contains four traffic lanes; hence passengers would have to cross two lanes of traffic to access trams. This arrangement does not comply with Victorian road rules and

there would be significant safety risks for passengers. In response to this, Mr Walker's design proposes a kerb build out thereby reducing the number of lanes to one in each direction.

Officer Comments on alternate proposal by Mr Walker

90. This would create a bottleneck at an intersection resulting in long traffic queues which is not an outcome acceptable to VicRoads. Long traffic queues generated as a direct result of the design of the tram stop would not encourage people to visit Nicholson Street village.

91. The proposal introduces a right-turning lane over the tram tracks. This would delay trams significantly and introduce a new safety issue between vehicles and trams. Council is currently working with Yarra Trams and PTV to reduce safety issues caused by cars driving in the tram lane. The design of the right turn car lane as drawn would result in a very small number of right-turning vehicles blocking both north-bound and left-turning vehicles maximising the potential for long traffic queues.

92. Parking/loading bays are shown on the easy-access-stop platforms – this would obstruct access to tram doors and increase loading/unloading times.

93. Easy-access-stops require vehicles to give way to tram passengers which reduces passenger safety compared to the signalised crossing facility proposed. It would also reduce traffic flow as traffic cannot move whilst passengers are boarding or alighting. Tram journey times would be increased as boarding and alighting time would increase at this stop. That is passengers would need to ensure all vehicles have stopped appropriately and then must walk further from the footpath to the tram doors which takes more time.

94. NB. At some locations easy access stops are the most appropriate solution (due to the road configuration), it is however a significantly inferior outcome at stop 22 when compared to a central island platform.

95. The other issues with this alternate design suggestion are as follows:

    (a) Parking bays are shown in locations which minimise vehicle turning lane lengths at the junction approach. Providing parking at these locations would cause disproportionate increases in traffic congestion;

    (b) Landscaping and car parking is shown in locations which would obstruct sightlines for vehicles; and

    (c) Vehicle access openings are shown in locations which are likely to cause safety issues and further delay trams and traffic.

33m long Central Island Platform design

96. Stop 22 is currently proposed as a 66m by 3.1m central island platform. A 33m by 3.5m wide central island platform option has now been suggested by Mr Walker. A variation on this theme was explored by PTV in 2014. Given the roadway width of Nicholson Street north of Holden Street a lateral tram track shift (significant bend in the track) would be required to accommodate a shorter wider tram platform. These changes to the tram track would not be compliant with the relevant VicRoads / Austroads standards so this design was not progressed further by PTV.

97. In short, Mr Walker's short platform design does not resolve the lateral tram track issue identified previously and introduces a number of new design issues at the stop including:

    (a) The introduction of a right-turn traffic lane over the tram tracks;

    (b) The installation of parking too close to the Brunswick Road intersection. This would result in one parked car and a small number of left-turning vehicles blocking large numbers of northbound vehicles;

    (c) Landscaping which potentially blocks sightlines; and

    (d) Vehicle access openings (shown in locations) which would delay trams and traffic; and be dangerous to pedestrians accessing the tram stop.

Additional considerations

98. Councillor Fristacky has previously raised a number of questions and concerns regarding the proposed stop designs and requested that alternative design options are explored. These questions and concerns were put to PTV in January 2019 for consideration. A response was received on 21 February 2019 which is provided at **Attachment 9**. In summary, the PTV response stated that the suggested alternate design approaches are not workable and the reasons for this were set out in detail.

99. Given the extensive investigation that has been undertaken previously into alternate designs by PTV, Council officers and Mr Walker, and the issues identified relating to the current proposals by Mr Walker and Councillor Fristacky, officers believe that alternate designs have been appropriately considered.

Internal Consultation (One Yarra)

100. Comprehensive internal consultation was undertaken internally as part of the concept design phases in 2014. At this more detailed stage further consultation has been undertaken with the following Yarra Council officer teams:

    (a) Traffic Engineering;

    (b) City Works and Assets;

    (c) Parking and compliance;

    (d) Economic development;

    (e) Recreation and Open Space;

    (f) Urban Design;

    (g) Heritage (Governance Support); and

    (h) Statutory Planning.

101. An internal working group of strategic transport, urban designers, civil engineers and economic development have been engaged in this matter under the sponsorship of the Director, Planning and Place Making.

Financial Implications

102. The project would have minimal impact on Council revenue as there is no paid parking bays being affected. There may be a marginal loss of revenue associated with parking infringements due to the removal of some parking.

Capital works

103. PTV has agreed to grant Council $400,000 for capital works along the length of Nicholson Street for improvements to the pedestrian environment. This would enable some positive urban design outcomes, but not extensive changes.

Waste Management

104. PTV have recently provided diagrams showing the proposed tram stops should not affect waste vehicle movements, and therefore the proposal should not increase costs associated with waste services.

105. The Council's Strategic Transport Statement calls for the advocacy for improved public transport. Decreasing travel time and increasing the reliability of Route 96 would deliver on Council's advocacy efforts.

Social Implications

106. The Yarra Access and Inclusion Plan 2018 – 2024 states that Yarra should *'Advocate to create an accessible, well networked public transport system in the City of Yarra'*. Specifically related to Route 96 the project also states Yarra should: *'Continue to facilitate partnership with PTV towards construction of Easy Access Tram Stops on Route 96'*.

107. Faster and more reliable public transport travel services along Nicholson Street would provide a benefit to Yarra residents along this route.

Human Rights Implications

108. Construction of the platform stops would increase the accessibility of the Route 96 tram service to people with disabilities, the elderly, and people travelling with young children. This is consistent with Council Strategies.

Disability Advisory Committee views

109. Council officers have liaised with the Yarra *Disability Advisory Committee* (DAC) about the proposed tram stops who noted the following:

    (a) The tram stop designs are consistent with the designs considered and supported by the DAC during the concept design stage negotiations. The DAC continues to support these designs over less suitable designs such as 'Easy-Access-Stops' or narrower platforms;

    (b) There has already been a significant and lengthy delay since the concept designs were approved, any further delay to delivery of the proposed tram stops would continue to disadvantage people who rely on accessible tram stops, and the wider community;

    (c) Any proposals to change the road environment should only be considered if the changes do not delay delivery of the tram stops, or should be postponed until after the completion of the works;

    (d) The completion of the Route 96 project has wider implications for accessibility to the public transport network, than the six stops being considered today. PTV has indicated it wants this route to "set the standard" for a premiere accessible tram route within Melbourne. This will help PTV convince other Council's and the wider Victorian community of the benefits of constructing accessible public transport stops.

Council Plan, Strategy and Policy Implications

110. The upgrade of the tram stops on Route 96 is consistent with Council's policies on supporting sustainable transport and accessible public transport.

111. Approaches to off-setting tree removal with new planting is consistent with the Council's urban forest strategy.

Legal Implications

112. There are no known legal implications for Council, other than if Council does not consent to the detailed designs of these accessible stops, a VCAT appeal could result.

Other Issues

113. There are no other known issues for Council.

Options

114. There are broadly two options for Council, being: 'Consent subject to appropriate conditions' or 'not providing consent'. See outlines of Options A and B below:

115. <u>Option A</u>: Council, as the Responsible Authority, consents to the detailed designs provided by PTV for tram stops 16 to 22 along Route 96, subject to the following Conditions:

Amended Plans

1 Before the tram stop civil works commence, amended plans to the satisfaction of the Responsible Authority must be submitted to Council to endorse as the approved plans pursuant to clause 4.2.1 of the *Tramway Infrastructure Upgrades Incorporated Document, May 2017* of the Yarra Planning Scheme. The plans must be drawn to scale with dimensions, and three copies must be provided. The plans must be generally in accordance with the most recent plans received by Council on 29 May 2018 and 04 June 2018 but modified to show:

a. Deletion of the 'cyclist maze' (to provide a wider clear opening) at the Lee Street/York Street and Nicholson Street intersection, and additional cut-throughs in the lane-separators (between tram tracks and traffic lanes) located to facilitate simultaneous two-way, east-west cyclist movements through the intersection;

b. The 'Capital City Trail' pedestrian and cyclist crossing must be widened to 6.0m (or as near to 6.0m wide as reasonably practicable). The crossing must be delineated to show a 3m wide cyclist path on the south, and a 3.0m pedestrian path on the north (or as near to 3.0m as reasonably practicable). The cyclist path must include green surface treatment.

c. Any works which are to be undertaken to existing building awnings, or other assets within the footpath.

d. Any areas where bluestone is being removed from the roadway, kerb or channel.

e. Any works to kerbs or footpaths, including cross sections showing kerb profiles and proposed levels of the road kerb and footpath.

f. Any additional works which are required to provide adequate access for the following businesses:

i. Maria's Pasta, 655-667 Nicholson Street,

ii. L U Simon Builders, 818 Nicholson Street,

iii. AMG Body Works, 820 Nicholson Street, and

iv. Fitzroy Fuel Supply, 820 Nicholson Street.

2 The civil works as shown on the plans approved by the Responsible Authority must not be altered (unless the Yarra Planning Scheme specifies that a planning permit is not required) without the prior written consent of the Responsible Authority.

Street Trees

3 All tree removals and footpath reinstatements are to be at the expense of Public Transport Victoria. Without the prior written consent of Council, no more than sixteen (16) street trees may be removed and only trees identified previously may be removed. Trees which have been identified for potential removal are identified as: 28, 37, 38, 39, 40, 41, 42, 43, 47, 50, 51, 52, 54, 77, 78 and 79; within the Arborists Report produced by Ryder, titled 'Construction Impact Assessment' dated 15 March 2017.

4 Before the removal of any tree approved at Condition 4, a qualified zoologist must inspect the trees to determine if there are any fauna present, and if so, a Wildlife Management Report must be submitted to and approved by the Responsible Authority, detailing the type of fauna found and measures to be taken to manage these. This report must also outline any particular specifications on how and when the trees should be removed to best protect any wildlife present in the trees to be removed and the tree removal will then occur in accordance with the recommendations of the zoologist.

5 Where any heavy machinery is operating within the area of a tree canopy, a spotter must be utilised to ensure machinery is being operated in a manner where no damage will occur to existing street trees.

6 Replacement tree planting (species to Council satisfaction) of 61 trees between Kerr Street and Holden Street, and ongoing maintenance of these trees for a period of 2 years is to be at the expense of Public Transport Victoria.

Other Council Assets

7 Any connections made to Council's drainage infrastructure must be approved by the Responsible Authority and undertaken to Council Standards.

8 If any property drains within the footpath are affected as part of any footpath works, the drains must be replaced to Council standards.

9 Where existing bluestone is being removed from within Council's municipal boundaries, it must be stored and transported with as much care as is reasonably practical, in order for bluestone to be returned to Council.

10 Prior to the completion of the civil works, subject to the relevant authority's consent, the relocation of any Council or privately owned assets within the road carriageway or footpath necessary to facilitate the civil works must be undertaken:

a. in accordance with any requirements or conditions imposed by the relevant authority;

b. at Public Transport Victoria's cost; and

c. to the satisfaction of the Responsible Authority.

11 Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any new pram crossing(s) must be constructed:

a. in accordance with any requirements or conditions imposed by Council;

b. at the Public Transport Victoria's cost; and

c. to the satisfaction of the Responsible Authority.

12 Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the works must be reinstated:

a. at Public Transport Victoria's cost; and

b. to the satisfaction of the Responsible Authority.

13 Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any redundant pram crossing must be demolished and re-instated as standard footpath and kerb and channel:

a. at the Public Transport Victoria's cost; and

b. to the satisfaction of the Responsible Authority.

Communications

14 At least three months prior to commencement of main occupation, a communications plan must be submitted to Council for consideration and approval. The plan must include:

a. Outlines of what information will be provided to residents and traders;

b. Details about when information will be provided to residents and traders;

c. Details about how information will be disseminated and the extent of dissemination.

Construction and Amenity

15 Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:

a. Monday-Friday (excluding public holidays) before 7 am or after 6 pm;

b. Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or

c. Sundays, ANZAC Day, Christmas Day and Good Friday at any time.

16 Before the civil works commence, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be form part of Council's approval. The plan must provide for:

a. a pre-conditions survey (dilapidation report) of the works areas and all adjacent Council roads frontages and nearby road infrastructure;

b. works necessary to protect road and other infrastructure, including trees to be retained;

c. remediation of any damage to road and other infrastructure;

d. containment of dust, dirt and mud within the works areas and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the works areas,

e. facilities for vehicle washing as appropriate, to the satisfaction of the responsible authority;

f. the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;

g. site security;

h. management of any environmental hazards including, but not limited to,:

   i. contaminated soil;

   ii. materials and waste;

   iii. dust;

   iv. stormwater contamination from run-off and wash-waters;

   v. sediment from excavations within the road reserve;

   vi. washing of concrete trucks and other vehicles and machinery as appropriate; and

   vii. spillage from refuelling cranes and other vehicles and machinery;

i. the construction program;

j. preferred arrangements for trucks delivering to the works areas, including delivery and unloading points and expected duration and frequency;

k. parking facilities for construction workers;

l. measures to ensure that all work at the sites will be carried out in accordance with the Construction Management Plan;

m. an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

n. an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced; and

o. the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads.

116. Other matters for consideration in Option A include:

(a) Council provides approval for PTV to proceed with carrying out works associated with stops 11 through 15, along the route between Kerr Street and Holden Street;

(b) Council expects these works to be carried out over a two week window in January 2019 (with some preliminary works beforehand);

(c) Prior to commencement of construction a Traffic Management Plan needs to be submitted to Council for approval by PTV;

(d) Council note the removal of 15 existing street trees, and pruning of additional street trees;

(e) Council note the costs of supplying and planting some 61 replacement trees and maintenance of these trees for a two year period would be covered by PTV;

(f) Following the completion of the works, Council's arborist would commence replacement tree planting in spring of 2019;

(g) Council notes that tram stops 18 and 19 would be consolidated resulting in the net removal of one stop (*as noted at the Council meeting 12 November 2013*);

(h) Council note a net removal of 45 car parking spaces on Nicholson Street, within Yarra boundaries; and

(i) Council accepts a grant of $400,000 from PTV for some streetscape and pedestrian improvement works along the length of Nicholson Street.

117. *Option B: Council does not provide consent for the detailed designs provided by PTV for tram stops 15 to 22 along Route 96.*

118. Matters for consideration by Council in Option B need to include the following:

(a) Council accepts that PTV may seek to have the project approved via ministerial intervention, or determined at VCAT;

(b) Council accepts that PTV may abandon the project for the foreseeable future and look to deliver tram stop upgrades in other Council areas;

(c) Council understands that this decision is contrary to Council's earlier resolutions supporting the project at the concept design stage, and contrary to a number of endorsed Council policies including the Yarra Access and Inclusion Plan 2018 – 2024 which specifically indicates support for this project;

(d) Council understands that not supporting accessible tram stops is likely to result in negative media coverage of Council (as was the case for City of Moreland following their decision to not approve accessible tram stops in September 2018); and

(e) Council understands that PTV may withdraw the offer of the $400,000 grant for some streetscape and pedestrian improvement works along the length of Nicholson Street.

Conclusion

119. Victoria has a legal obligation under the relevant DDA and Disability Standards for Accessible Public Transport 2002 (DSAPT) legislation to significantly increase the number DDA compliant tram stops over time, and make all tram stops DSAPT compliant by 2032. Route 96 is Melbourne's busiest tram route and the stops being considered are the last to be made DSAPT compliant.

120. "In principle" approval for DSAPT compliant tram stops designs was given by Council in 2014 and Council noted that PTV would seek planning permission to carry out the works. Planning Scheme Amendment CG68 has since been gazetted (3 September 2017) into the Yarra Planning Scheme by the state government to streamline the delivery of accessible tram stops along Route 96 and at other locations within the planning process.

121. PTV have worked collaboratively with officers on the detailed designs and have modified the designs where possible to minimise impacts to trees and car parking removals. PTV have also agreed to pay a $400k grant for some complementary urban design works.

122. It is recommended that Council consents to the latest design drawings subject to the conditions outlined under the 'Option A' section in this report.

RECOMMENDATION

1. That: *Council, as the Responsible Authority, consents to the detailed designs provided by PTV for tram stops 16 to 22 along Route 96, subject to the following Conditions:*

Amended Plans

1 Before the tram stop civil works commence, amended plans to the satisfaction of the Responsible Authority must be submitted to Council to endorse as the approved plans pursuant to clause 4.2.1 of the *Tramway Infrastructure Upgrades Incorporated Document, May 2017* of the Yarra Planning Scheme. The plans must be drawn to scale with dimensions, and three copies must be provided. The plans must be generally in accordance with the most recent plans received by Council on 29 May 2018 and 04 June 2018 but modified to show:

a. Deletion of the 'cyclist maze' (to provide a wider clear opening) at the Lee Street/York Street and Nicholson Street intersection, and additional cut-throughs in the lane-separators (between tram tracks and traffic lanes) located to facilitate simultaneous two-way, east-west cyclist movements through the intersection;

b. The 'Capital City Trail' pedestrian and cyclist crossing must be widened to 6.0m (or as near to 6.0m wide as reasonably practicable). The crossing must be delineated to show a 3m wide cyclist path on the south, and a 3.0m pedestrian path on the north (or as near to 3.0m as reasonably practicable). The cyclist path must include green surface treatment.

c. Any works which are to be undertaken to existing building awnings, or other assets within the footpath.

d. Any areas where bluestone is being removed from the roadway, kerb or channel.

e. Any works to kerbs or footpaths, including cross sections showing kerb profiles and proposed levels of the road kerb and footpath.

f. Any additional works which are required to provide adequate access for the following businesses:

i. Maria's Pasta, 655-667 Nicholson Street,

ii. L U Simon Builders, 818 Nicholson Street,

iii. AMG Body Works, 820 Nicholson Street, and

iv. Fitzroy Fuel Supply, 820 Nicholson Street.

2 The civil works as shown on the plans approved by the Responsible Authority must not be altered (unless the Yarra Planning Scheme specifies that a planning permit is not required) without the prior written consent of the Responsible Authority.

Street Trees

3 All tree removals and footpath reinstatements are to be at the expense of Public Transport Victoria. Without the prior written consent of Council, no more than sixteen (16) street trees may be removed and only trees identified previously may be removed. Trees which have been identified for potential removal are identified as: 28, 37, 38, 39, 40, 41, 42, 43, 47, 50, 51, 52, 54, 77, 78 and 79; within the Arborists Report produced by Ryder, titled 'Construction Impact Assessment' dated 15 March 2017.

4 Before the removal of any tree approved at Condition 4, a qualified zoologist must inspect the trees to determine if there are any fauna present, and if so, a Wildlife Management Report must be submitted to and approved by the Responsible Authority, detailing the type of fauna found and measures to be taken to manage these. This report must also outline any particular specifications on how and when the trees should be removed to best protect any wildlife present in the trees to be removed and the tree

removal will then occur in accordance with the recommendations of the zoologist.

5 Where any heavy machinery is operating within the area of a tree canopy, a spotter must be utilised to ensure machinery is being operated in a manner where no damage will occur to existing street trees.

6 Replacement tree planting (species to Council satisfaction) of 61 trees between Kerr Street and Holden Street, and ongoing maintenance of these trees for a period of 2 years is to be at the expense of Public Transport Victoria.

Other Council Assets

7 Any connections made to Council's drainage infrastructure must be approved by the Responsible Authority and undertaken to Council Standards.

8 If any property drains within the footpath are affected as part of any footpath works, the drains must be replaced to Council standards.

9 Where existing bluestone is being removed from within Council's municipal boundaries, it must be stored and transported with as much care as is reasonably practical, in order for bluestone to be returned to Council.

10 Prior to the completion of the civil works, subject to the relevant authority's consent, the relocation of any Council or privately owned assets within the road carriageway or footpath necessary to facilitate the civil works must be undertaken:

a. in accordance with any requirements or conditions imposed by the relevant authority;

b. at Public Transport Victoria's cost; and

c. to the satisfaction of the Responsible Authority.

11 Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any new pram crossing(s) must be constructed:

a. in accordance with any requirements or conditions imposed by Council;

b. at the Public Transport Victoria's cost; and

c. to the satisfaction of the Responsible Authority.

12 Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the works must be reinstated:

a. at Public Transport Victoria's cost; and

b. to the satisfaction of the Responsible Authority.

13 Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any redundant pram crossing must be demolished and re-instated as standard footpath and kerb and channel:

a. at the Public Transport Victoria's cost; and

b. to the satisfaction of the Responsible Authority.

Communications

14 At least three months prior to commencement of main occupation, a communications plan must be submitted to Council for consideration and approval. The plan must include:

a. Outlines of what information will be provided to residents and traders;

b. Details about when information will be provided to residents and traders;

c. Details about how information will be disseminated and the extent of dissemination.

Construction and Amenity

15 Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:

a. Monday-Friday (excluding public holidays) before 7 am or after 6 pm;

b. Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or

c. Sundays, ANZAC Day, Christmas Day and Good Friday at any time.

16 Before the civil works commence, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be form part of Council's approval. The plan must provide for:

a. a pre-conditions survey (dilapidation report) of the works areas and all adjacent Council roads frontages and nearby road infrastructure;

b. works necessary to protect road and other infrastructure including trees to be retained;

c. remediation of any damage to road and other infrastructure;

d. containment of dust, dirt and mud within the works areas and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the works areas,

e. facilities for vehicle washing as appropriate, to the satisfaction of the responsible authority;

f. the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;

g. site security;

h. management of any environmental hazards including, but not limited to,:

i. contaminated soil;

ii. materials and waste;

iii. dust;

iv. stormwater contamination from run-off and wash-waters;

v. sediment from excavations within the road reserve;

vi. washing of concrete trucks and other vehicles and machinery as appropriate; and

vii. spillage from refuelling cranes and other vehicles and machinery;

i. the construction program;

j. preferred arrangements for trucks delivering to the works areas, including delivery and unloading points and expected duration and frequency;

k. parking facilities for construction workers;

l. measures to ensure that all work at the sites will be carried out in accordance with the Construction Management Plan;

m. an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

n. an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced;

and

o. the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads.

2. Council provides consent for PTV to proceed with carrying out works associated with stops 11 through 15, along the route between Kerr Street and Holden Street as outlined in Option 1 above, with the following understanding;

   (a) Council expects these works to be carried out over a two week window in January 2019 (with some preliminary works beforehand);

   (b) Prior to commencement of construction a Traffic Management Plan would be submitted to Council for approval by PTV;

   (c) Council note the removal of 15 existing street trees, and pruning of additional street trees;

   (d) Council note the costs of supplying and planting some 61 replacement trees and maintenance of these trees for a two year period would be covered by PTV;

   (e) Following the completion of the works, Council's arborist would commence replacement tree planting in spring of 2019;

   (f) Council notes that tram stops 18 and 19 would be consolidated resulting in the net removal of one stop (*as noted at the Council meeting 12 November 2013*); and

   (g) Council note a net removal of 45 car parking spaces on Nicholson Street, within Yarra boundaries.

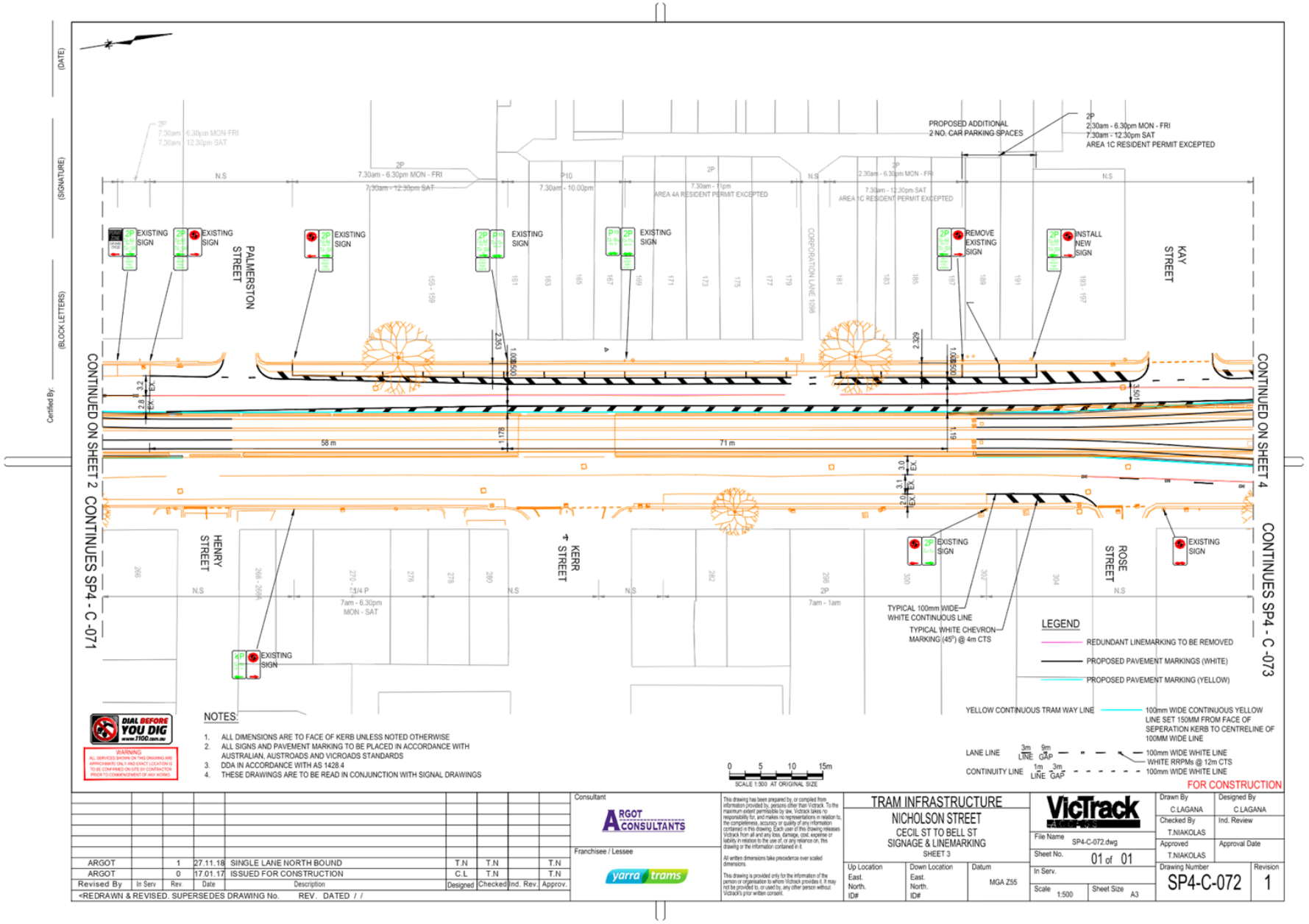
3. That Council accepts a grant of $400,000 from PTV for some streetscape and pedestrian improvement works along the length of Nicholson Street.

CONTACT OFFICER: **Simon Exon**
TITLE: **Unit Manager Strategic Transport Planning**
TEL: **9205 5781**

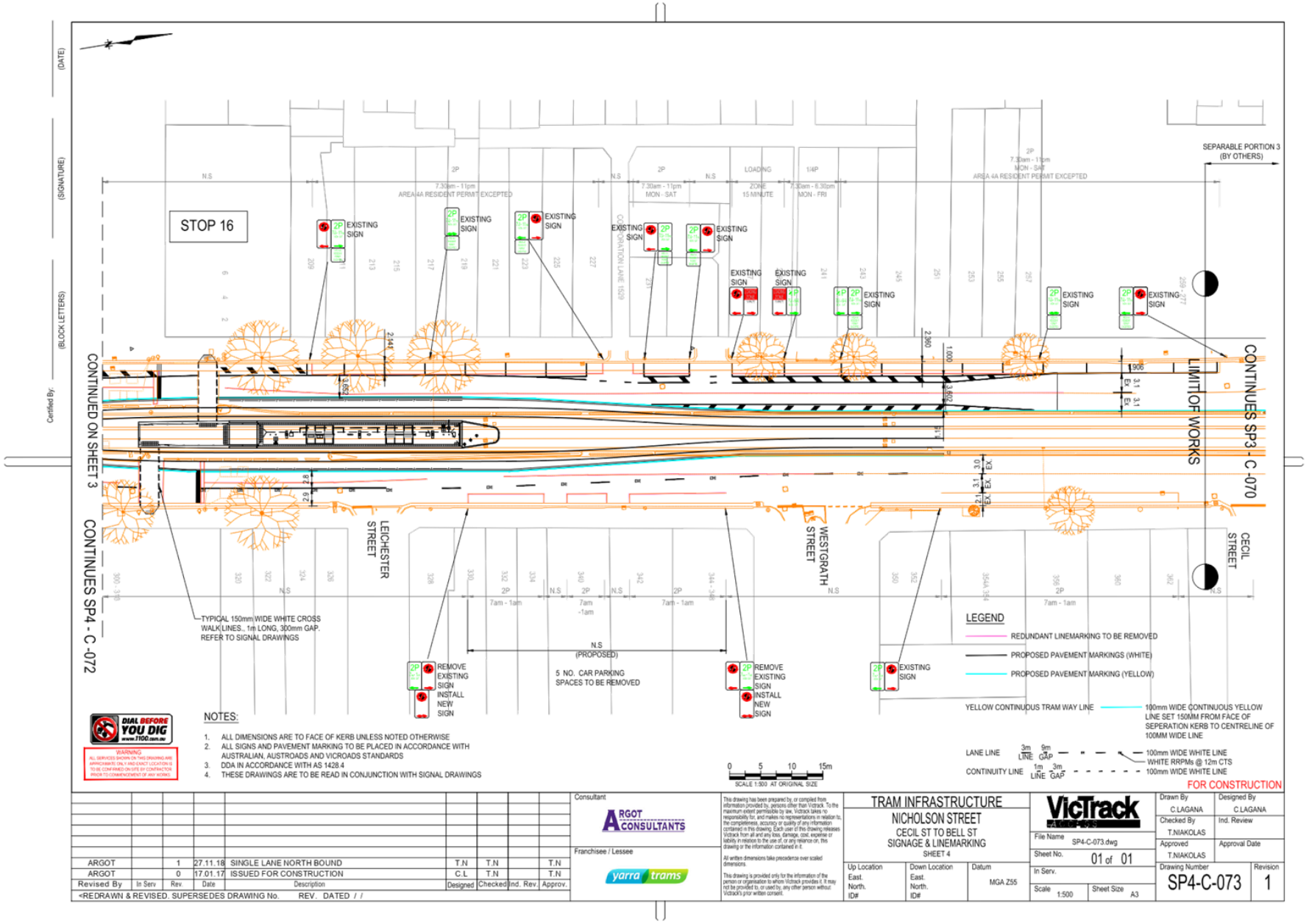
Attachments

1⇩ Plans - Stops 16-22
2⇩ All Previous Route 96 Recommendations and Resolutions
3⇩ Planning Scheme Incorporated Document
4⇩ VicRoads letter regarding single lanes and reduced speed limits
5⇩ Traffic Modelling Reporting and Data in response to resolution on 2-4-19
6⇩ Tree location map
7⇩ Heritage Assessment (Jacobs) - updated 2018
8⇩ Alternate Designs by Mr Jeff Walker (community member)
9⇩ PTV response to Councillor Fristacky dated 21 February 2019.

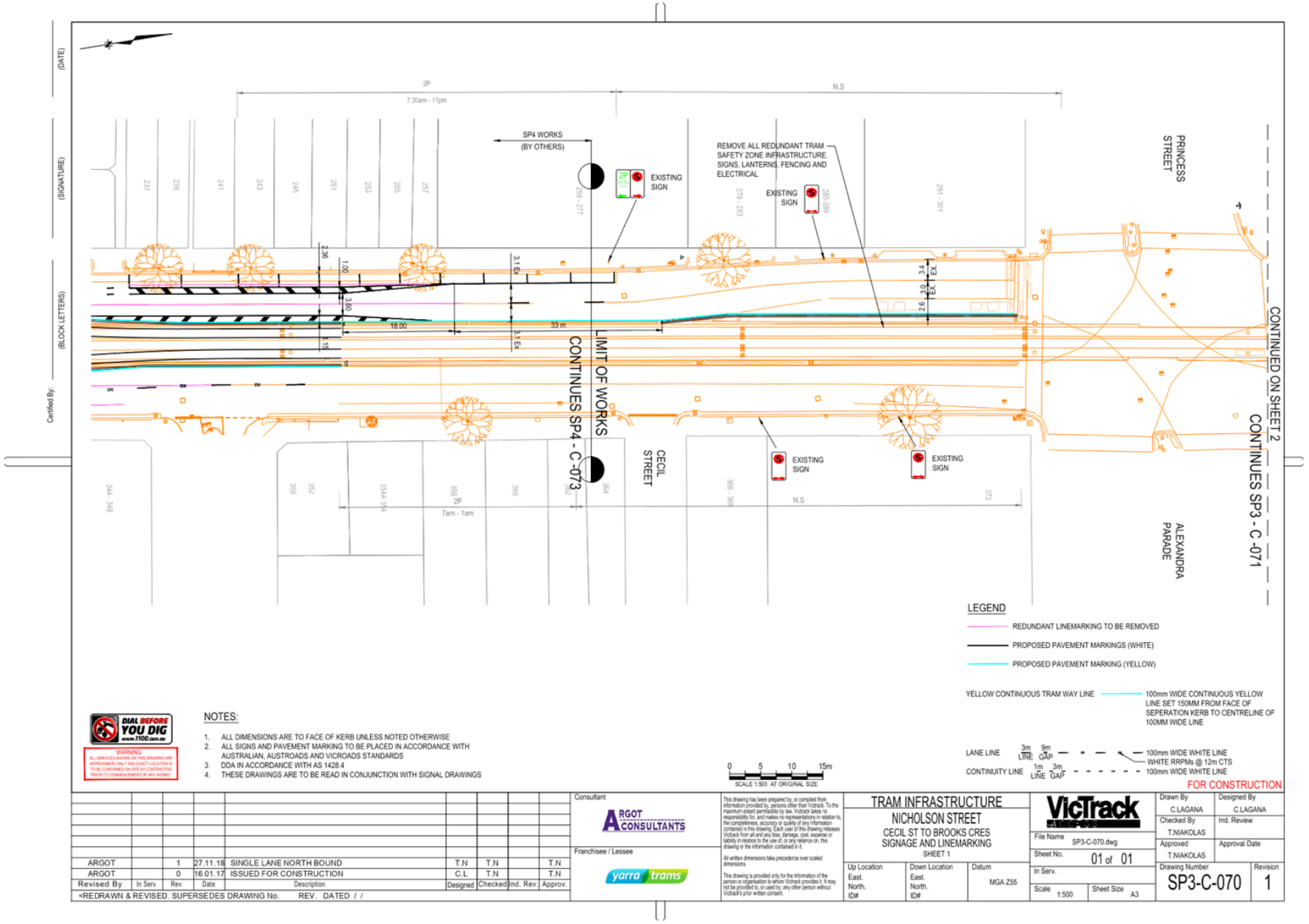
Attachment 1 - Plans - Stops 16-22



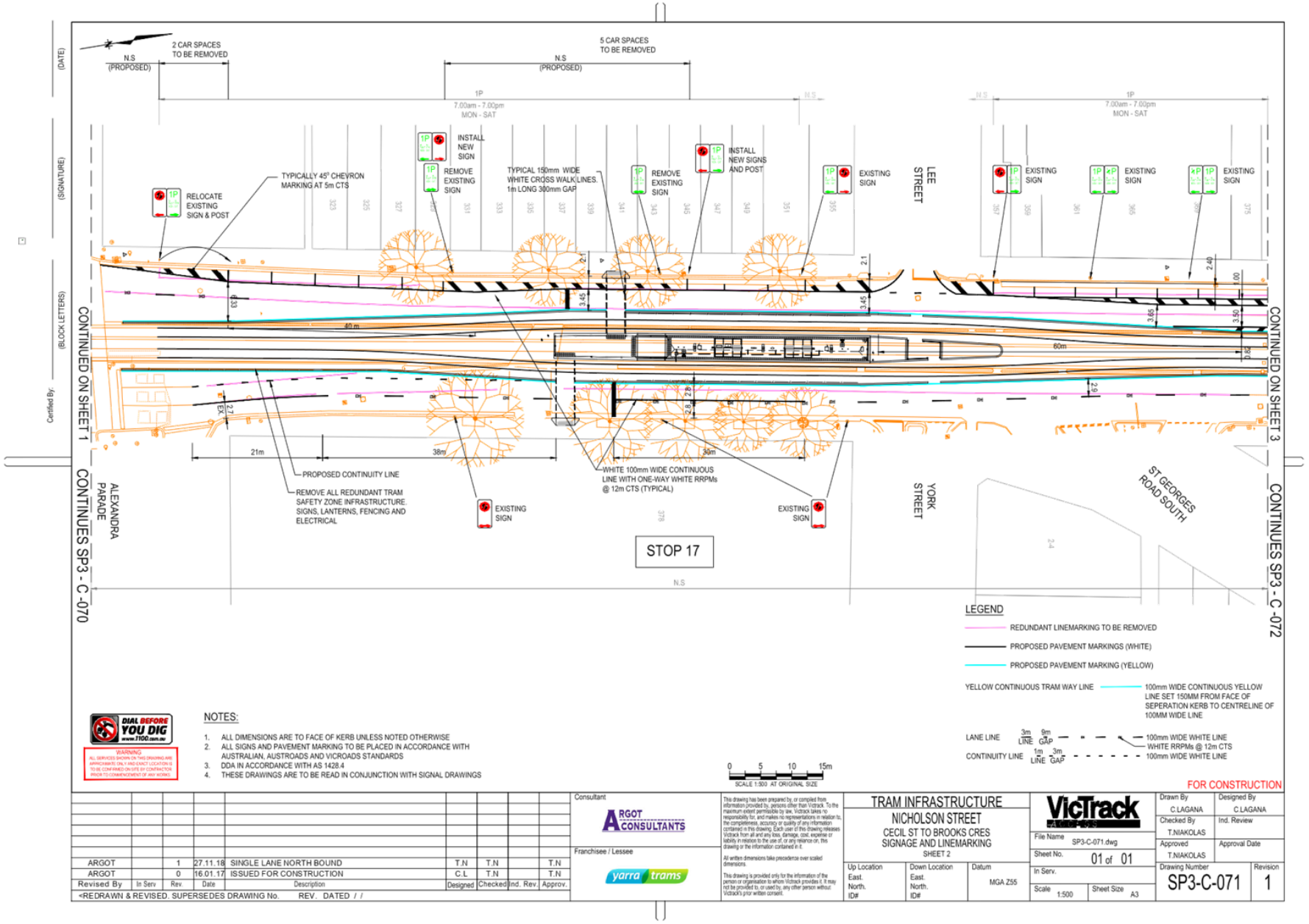
Attachment 1 - Plans - Stops 16-22



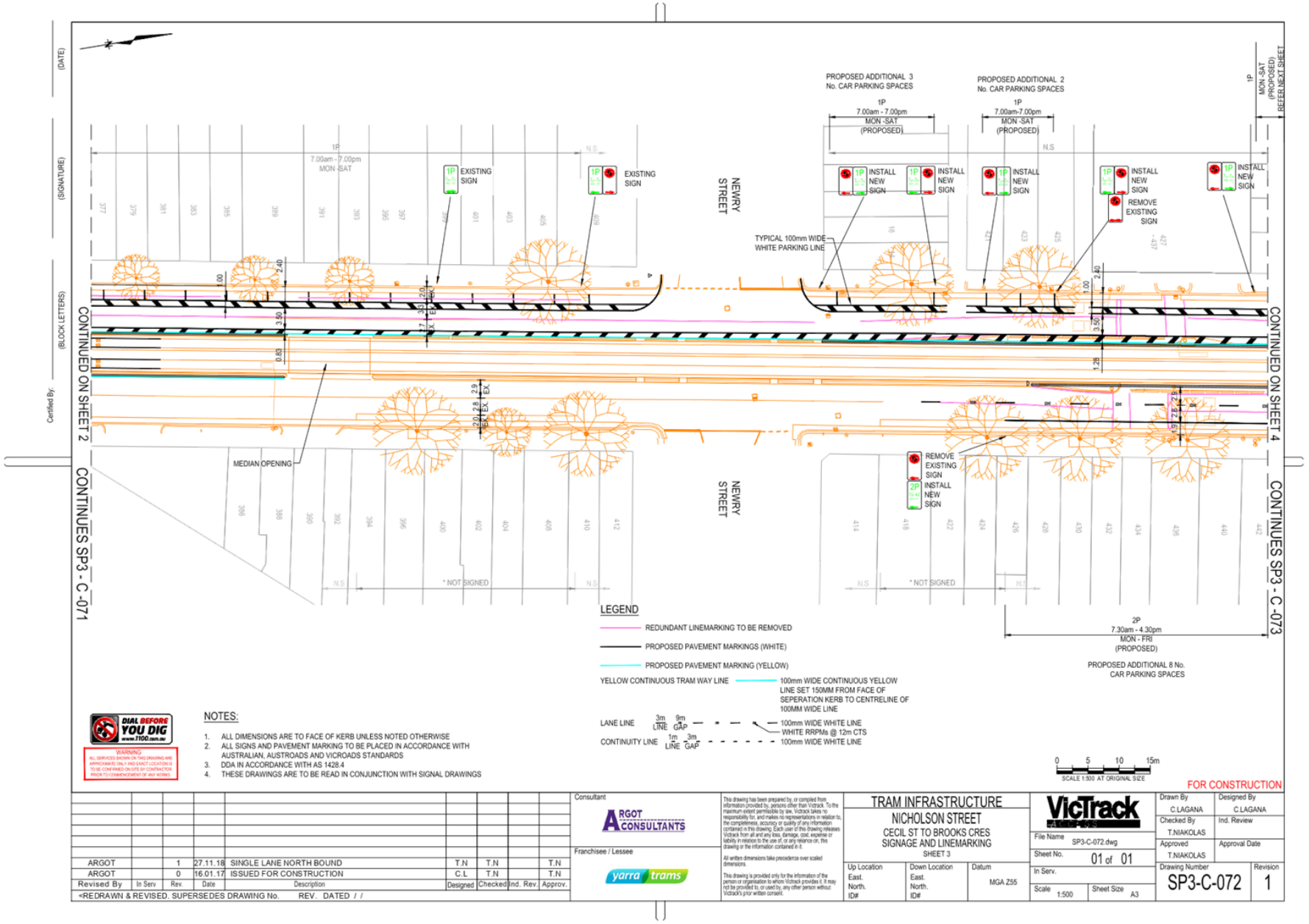
Attachment 1 - Plans - Stops 16-22



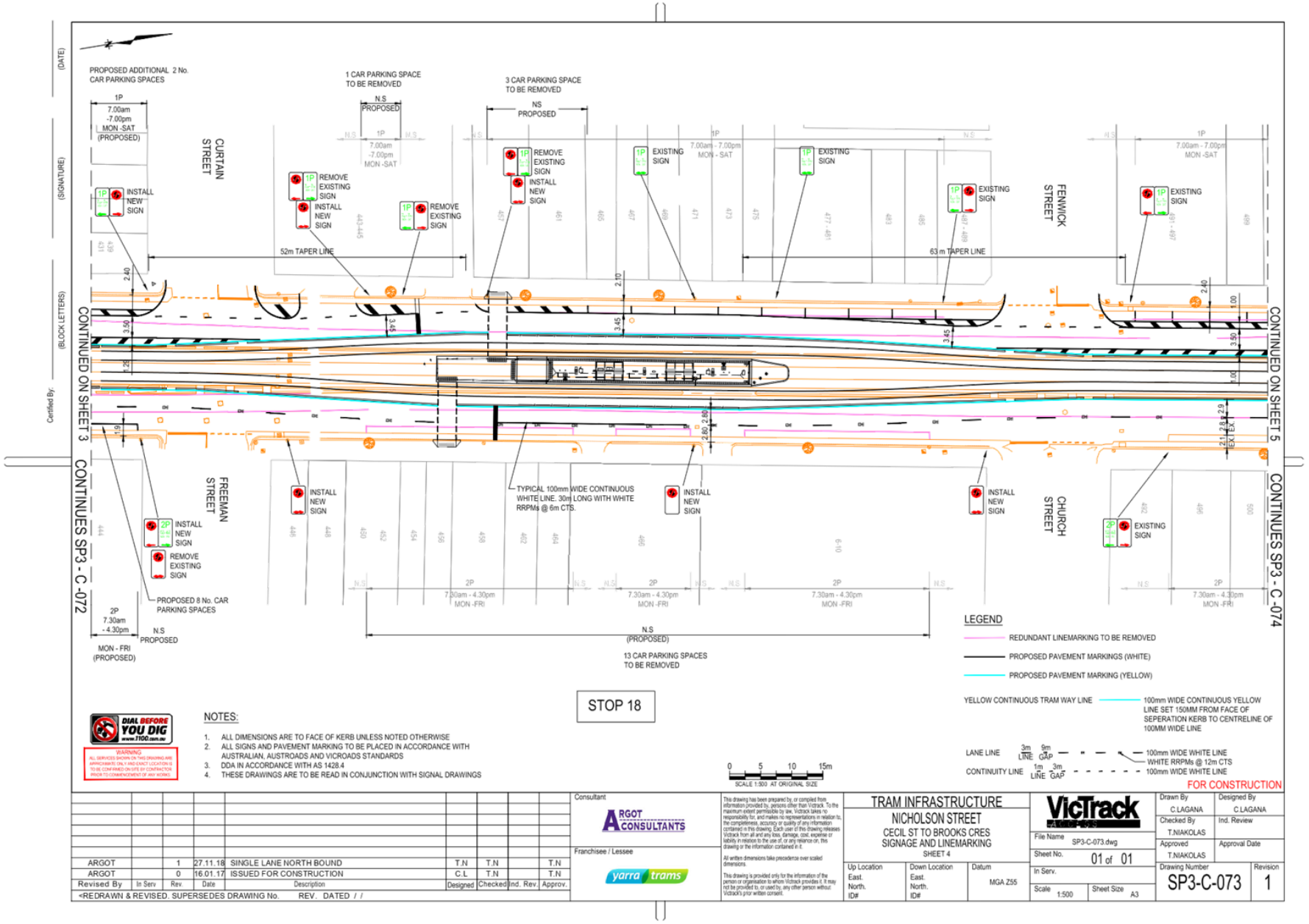
Attachment 1 - Plans - Stops 16-22



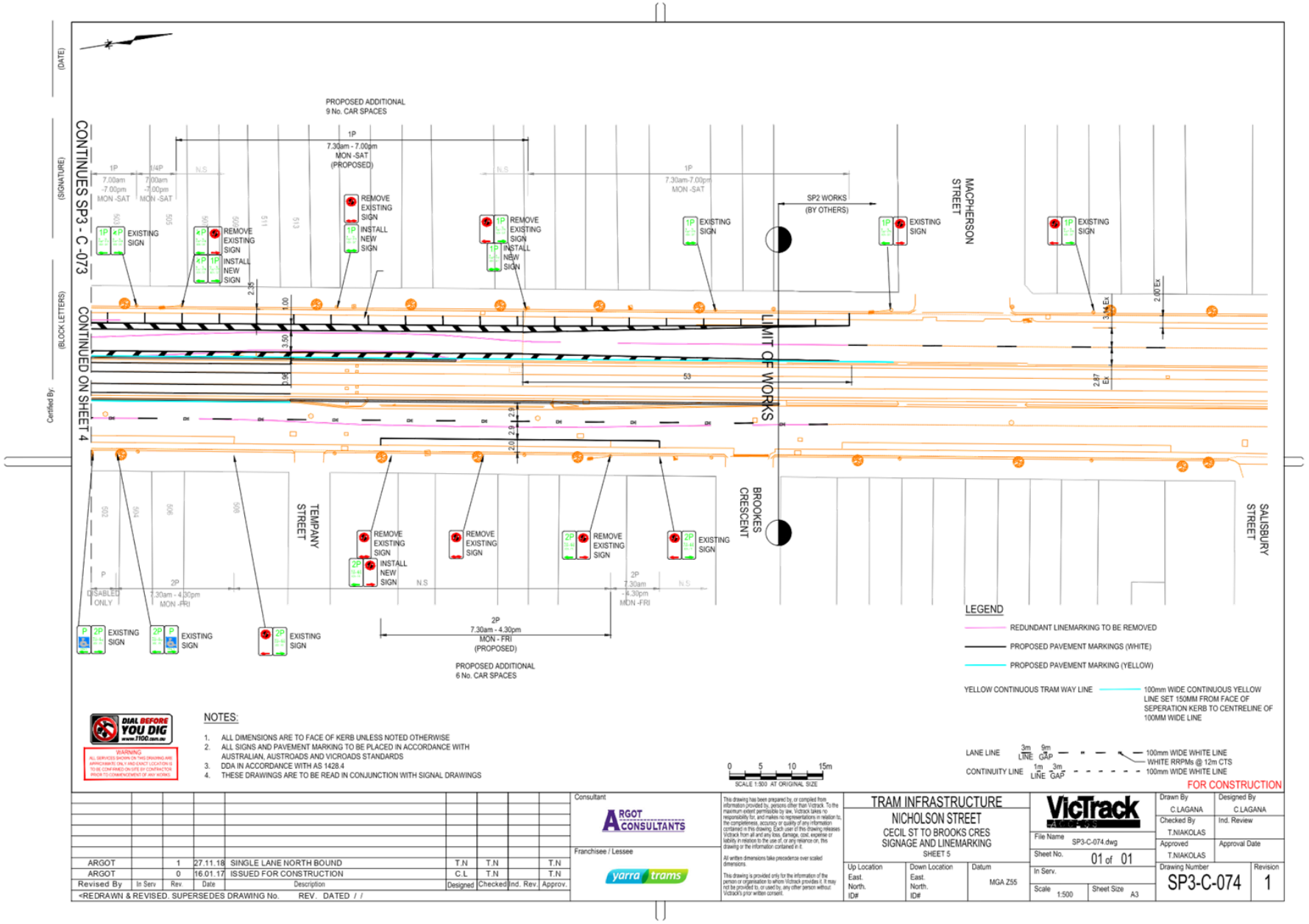
Attachment 1 - Plans - Stops 16-22



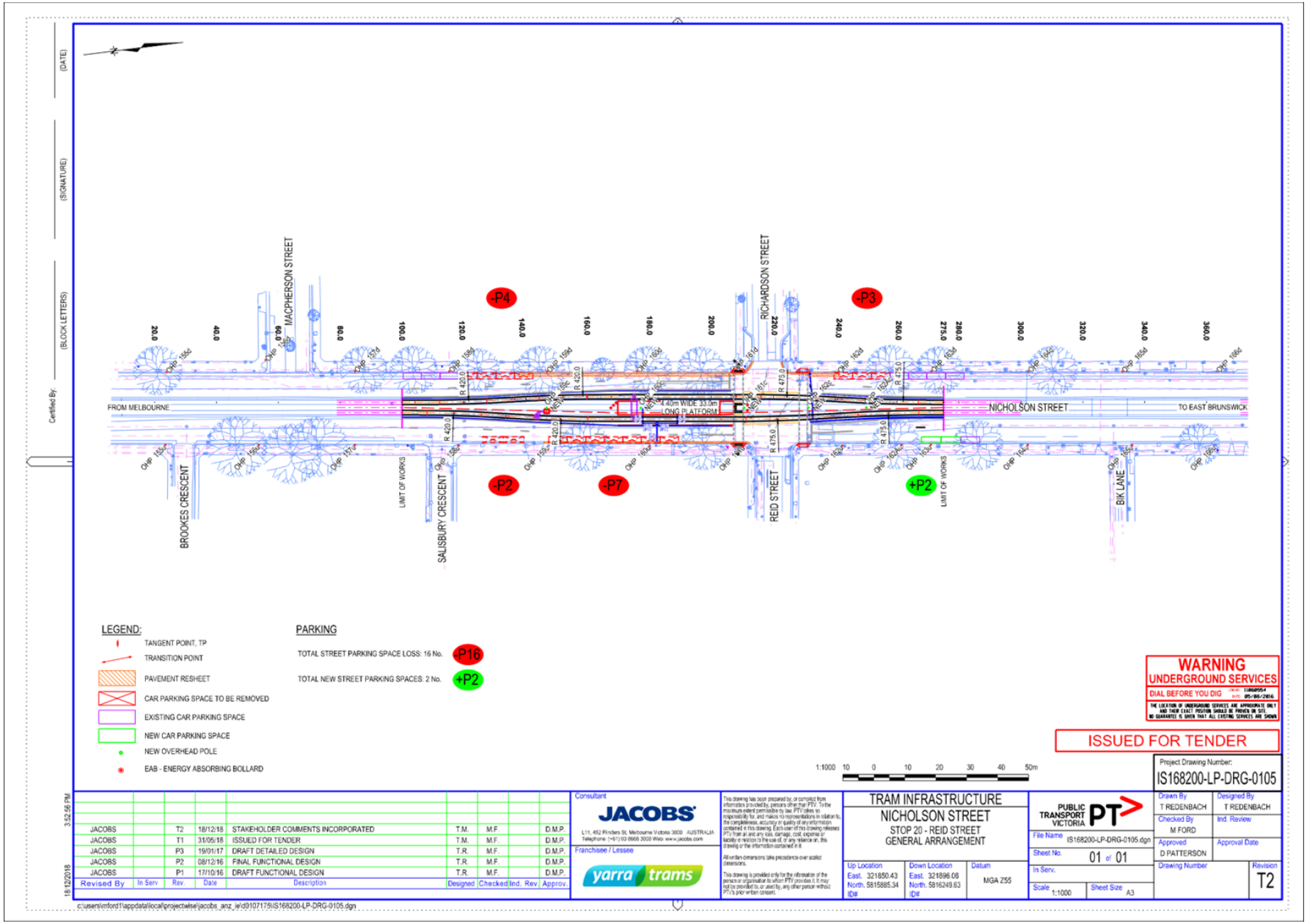
Attachment 1 - Plans - Stops 16-22



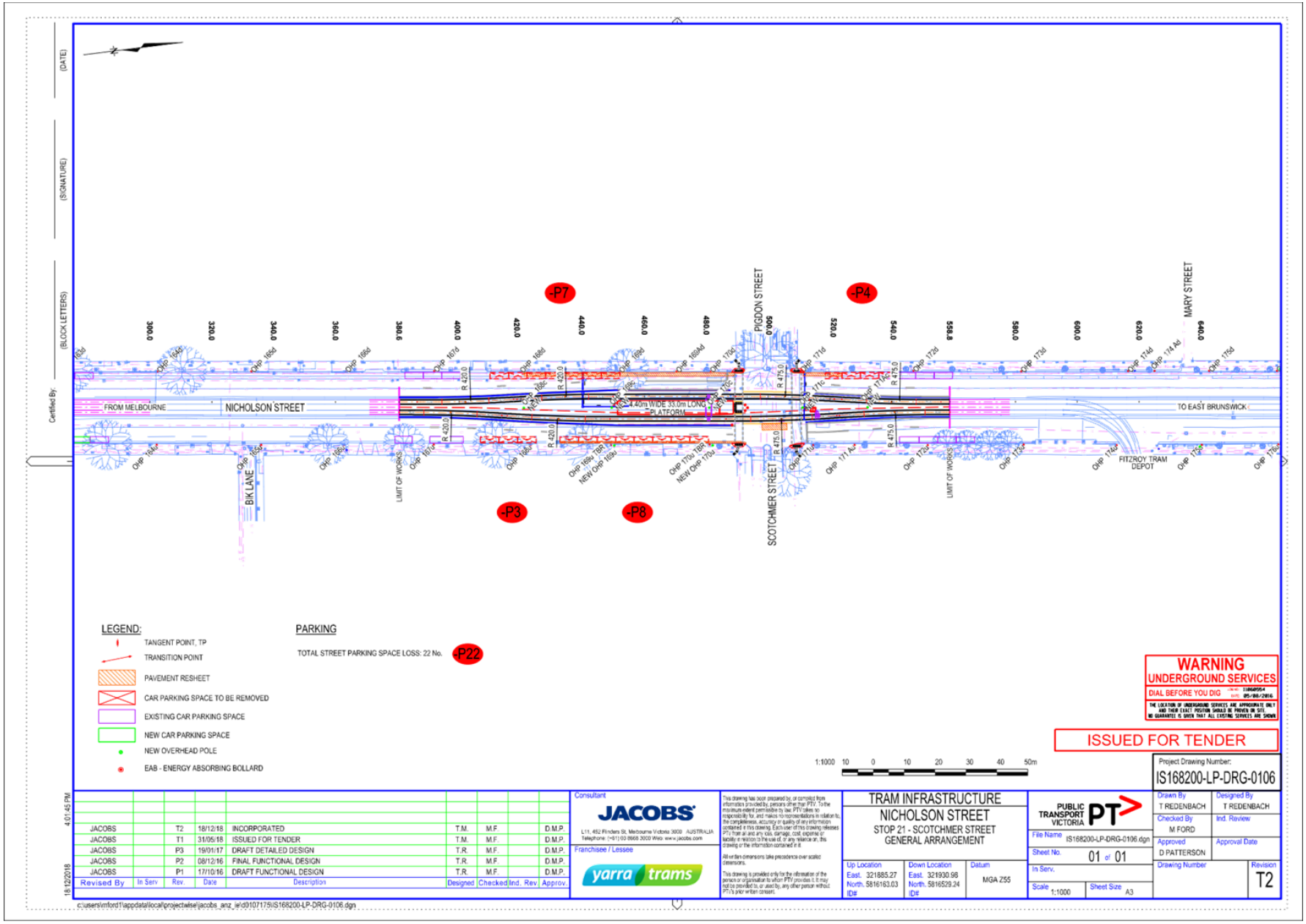
Attachment 1 - Plans - Stops 16-22



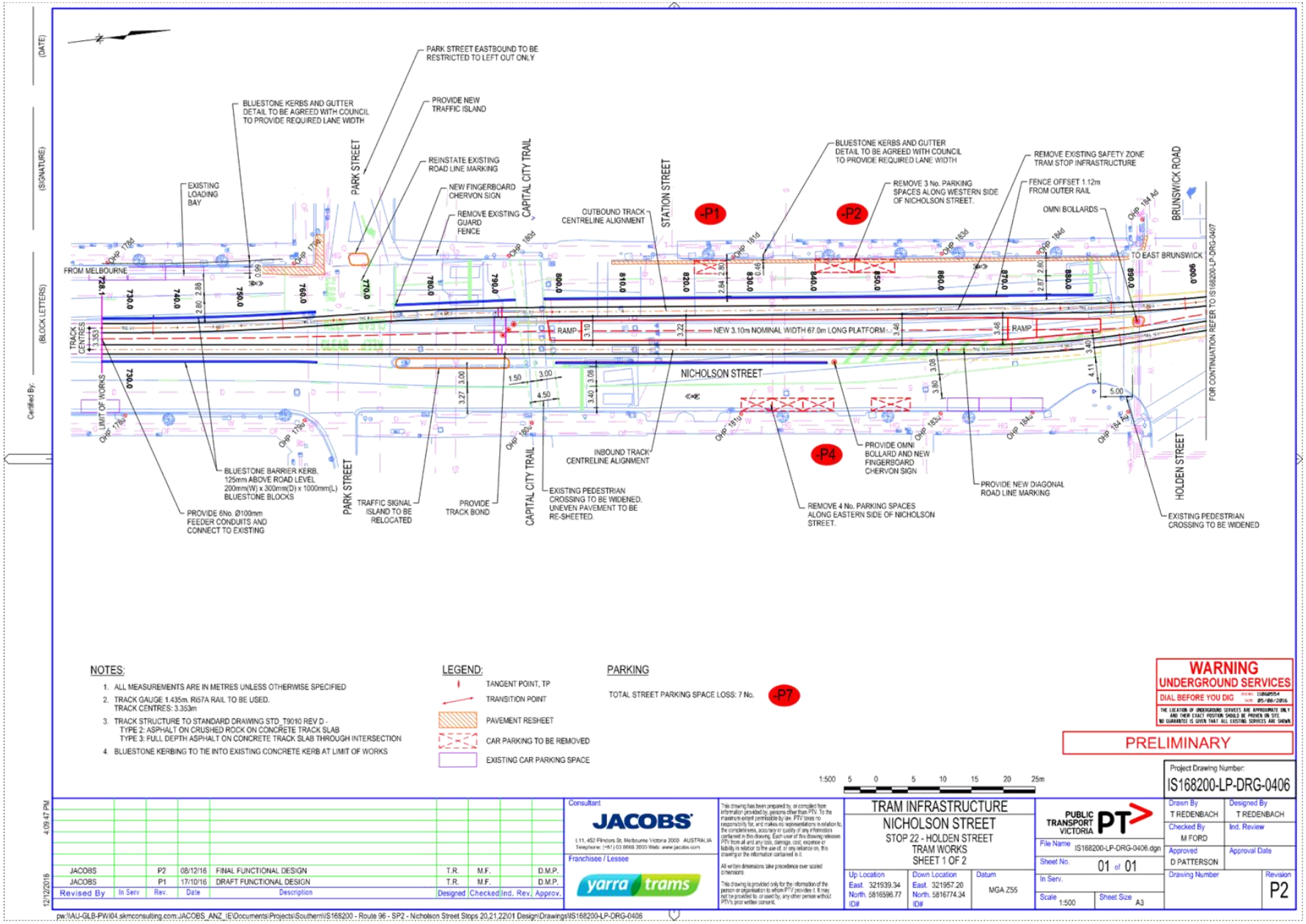
Attachment 1 - Plans - Stops 16-22



Attachment 1 - Plans - Stops 16-22



Attachment 1 - Plans - Stops 16-22



Attachment 2 - All Previous Route 96 Recommendations and Resolutions

Council meeting 12 November 2013

RECOMMENDATION

1. That Council:
   (a) support in principle the Route 96 upgrade project for the section between Tempany Street and Victoria Parade, subject to PTV contacting directly affected residents to discuss the preferred options and associated impacts.
   (b) request PTV specifically consult with the nearby community on the proposed removal of stop 19.
   (c) refer any necessary planning permits to the Councils Internal Development Approvals Committee (IDAC) for consideration.

RESOLUTION

Moved: Councillor Barbour **Seconded:** Councillor Stone

1. That Council:
   (a) support in principle the Route 96 upgrade project for the section between Tempany Street and Victoria Parade, subject to Public Transport Victoria (PTV) contacting directly affected residents to discuss the preferred options and associated impacts;
   (b) support the retention of a U-turn facility in the vicinity of between Moor and King William Streets;
   (c) request PTV specifically consult with the nearby community on the proposed removal of stop 19;
   (d) refer any necessary planning permits to the Council's Internal Development Approvals Committee (IDAC) for consideration; and
   (e) request that PTV undertake the discussion and consultation (referred to in clauses 1(a) and 1(c) respectively) in community languages as necessary to properly engage with the affected residents and nearby community.

Council Meeting – 24 June 2014

RECOMMENDATION

1. That:
   (a) Council support 'in principle' the concept designs for the consolidation of stops 20 and 21 and the upgrade of stop 22 as part of the Tram Route 96 upgrade project, noting the expected loss of a net of up to 18 unmetered parking spaces;
   (b) Council officers work with PTV Officers to investigate urban design improvements, such as soft landscaping and street furniture that can be implemented by PTV as part of the Tram Route 96 upgrade project;

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

(c) Council officers work with PTV Officers in consulting further with VicRoads about the potential for reducing the speed limit in Nicholson Village from 60km / hr. to 40km / hr.; and

(d) PTV submit any necessary planning permit applications to Council for formal consideration.

RESOLUTION

Moved: Councillor Colanzi **Seconded:** Councillor Barbour

1. That Council:

   (a) note the report;

   (b) defer the matter and seek a further meeting/consultation with Public Transport Victoria (PTV), Nicholson Village Traders and other relevant parties to discuss design and intermodal issues; and

   (c) request a further report back to Council in the August cycle.

Council Meeting – 2 September 2014

RECOMMENDATION

1. That Council:

   (a) approves in principle the Public Transport Victoria (PTV) concept design for the upgrade of stop 22;

   (b) approves in principle the PTV concept design for the consolidation of stops 20 and 21 south of Scotchmer/Pigdon Streets, on the basis that PTV investigates shifting the stop closer to the Scotchmer Street/Pigdon Streets intersection during the functional and detailed design process;

   (c) notes the expected loss of approximately 16 (non-metered) parking spaces on Nicholson Street associated with the consolidation of stops 20 and 21, and a further net loss of up to four spaces associated the upgrade of stop 22;

   (d) officers work with PTV Officers to investigate urban design improvements, such as soft landscaping and street furniture that can be implemented by PTV as part of the Tram Route 96 upgrade project;

   (e) officers work with PTV Officers in consulting further with VicRoads in relation to implementing off-peak parking bays on Nicholson Street and the reduction of the speed limit from 60km/hr. to 40km/hr. in the Nicholson Village area;

   (f) reaffirm with PTV that they will contact directly affected residents / business owners (including Maria's Pasta to and the Nicholson Gardens Owners Corporation) to discuss the proposed changes and associated impacts, and to seek views regarding issues such as access to loading bays and parking redistribution opportunities, and that where possible, Council support PTV and VicRoads; and

   (g) notes that officers will work with PTV in relation to the widening of the existing Capital City Trail signalised pedestrian/cyclist crossing point to allow for separation

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

between cyclists and pedestrians as part of the detailed design process for the upgrade of stop 22.

2. That Public Transport Victoria (PTV) is advised that it will need to submit the necessary planning permit applications to Council for formal consideration.

RESOLUTION

Moved: Councillor Gaylard **Seconded:** Councillor Stone

1. That Council:
   (a) approves in principle the Public Transport Victoria (PTV) concept design for the upgrade of stop 22;
   (b) approves in principle the PTV concept design for stop 21 south of Scotchmer/Pigdon Streets, on the basis that PTV investigates shifting the stop closer to the Scotchmer Street/Pigdon Streets intersection during the functional and detailed design process;
   (c) notes the expected loss of approximately 16 (non-metered) parking spaces on Nicholson Street associated with the consolidation of stop 21, and a further net loss of up to four spaces associated the upgrade of stop 22;
   (d) officers work with PTV Officers to investigate urban design improvements, such as soft landscaping and street furniture that can be implemented by PTV as part of the Tram Route 96 upgrade project;
   (e) officers work with PTV Officers in consulting further with VicRoads in relation to implementing off-peak parking bays on Nicholson Street and the reduction of the speed limit from 60km/hr. to 40km/hr. in the Nicholson Village area;
   (f) reaffirm with PTV that they will contact directly affected residents / business owners (including Maria's Pasta to and the Nicholson Gardens Owners Corporation) to discuss the proposed changes and associated impacts, and to seek views regarding issues such as access to loading bays and parking redistribution opportunities, and that where possible, Council support PTV and VicRoads; and
   (g) notes that officers will work with PTV in relation to the widening of the existing Capital City Trail signalised pedestrian/cyclist crossing point to allow for separation between cyclists and pedestrians as part of the detailed design process for the upgrade of stop 22.
2. That Council:
   (a) requests that detailed design for all Nicholson Street tram stops which were approved"in principle" in November 2013, include maximum provision of parking spaces during off-peak periods, and that for outbound lanes, the peak period be between 4pm and 6:30pm Monday – Friday; and that for the inbound lanes, the peak period be between 7am and 9am Monday to Friday. Any extensions to these period must be supported by evidence of traffic volumes exceeding safe carrying limits;
   (b) also requests that VicRoads reduce the speed limit to 40kph where possible along Nicholson Street, reflecting the high volumes of pedestrians and public transport users in Nicholson Street, and the closeness of the front wall of many homes to traffic lanes; and

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

(c) requires that officers advise all the required agencies of the above.

3. That officers provide to the next Council meeting an assessment of the significant issues for the installation of a Disability Discrimination Act 1992 (DDA) compliant tram stop in the vicinity of Reid Street/Richardson Street.
4. That Public Transport Victoria (PTV) is advised that it will need to submit the necessary planning permit applications to Council for formal consideration.

Council Meeting – 16 September 2014

RECOMMENDATION

1. That Council note the report providing an assessment of the issues regarding the installation of a *Disability Discrimination Act* 1992 (DDA) compliant tram stop in the vicinity of Reid Street/Richardson Street.

RESOLUTION

Moved: Councillor Gaylard **Seconded:** Councillor Colanzi

1. That Council:
   (a) approves in principle the upgrade of Stop 20 immediately south of the Reid/Richardson Streets intersection;
   (b) notes the expected loss of approximately 19 (non-metered) parking spaces on Nicholson Street;
   (c) requests that officers work with Public Transport Victoria (PTV) officers in consulting further with VicRoads to create off-peak parking bays on Nicholson Street to include maximum provision of parking spaces during off-peak periods, and that for outbound lanes, the peak period be between 4pm and 6:30pm Monday – Friday; and that for the inbound lanes, the peak period be between 7am and 9am Monday to Friday. Any extensions to these period must be supported by evidence of traffic volumes exceeding safe carrying limits;
   (d) requests that officers work with PTV officers in consulting further with VicRoads to achieve the reduction of the speed limit from 60km/hr to 40km/hr in the Nicholson Village area reflecting the high volumes of pedestrians and public transport users in Nicholson Street, and the closeness of the front wall of many homes to traffic lanes;
   (e) requests that officers work with PTV officers to investigate urban design improvements, such as soft landscaping and street furniture that can be implemented by PTV as part of the Tram Route 96 upgrade project; and
   (f) requests that PTV contact directly affected residents / business owners to discuss the proposed changes and associated impacts, and regarding issues such as access to loading bays and parking redistribution opportunities.
2. That PTV is advised that it will need to submit the necessary planning permit applications to Council for formal consideration.

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

Council Meeting – 19 June 2018 – Stop 23

RECOMMENDATION

1. That Council note the officer report relating to the proposed tram stop upgrade at Stop 23 on Route 96 at Nicholson Street.
2. That Council, as the Responsible Planning Authority, approve the detailed designs provided by PTV for tram stop 23 on Route 96, subject to the following conditions:
    1. Before the tram stop civil works commence, amended and additional plans to the satisfaction of the Responsible Authority must be submitted to for approval by the Responsible Authority. The plans must be drawn to scale with dimensions, and three copies must be provided. The plans must be generally in accordance with the most recent plans received by Council on 29 May 2018 and 04 June 2018 but modified to show:
        (a) evidence that a Heavy Rigid Vehicle (HRV) will be able to turn into and out of Miller Street and Clauscen Street from and onto Nicholson Street. This should include:
            (i) swept paths diagrams for a 12.5 metre long heavy-rigid-vehicle (HRV), including wheel tracks, for all relevant movements; and
            (ii) section diagrams showing the profile of the splitter islands between the traffic lanes and tram tracks, where these intersect the swept paths required at Condition 1. (a) i. to demonstrate the splitter islands will be semi-mountable to the affected vehicles.
    2. The civil works as shown on the plans approved by the Responsible Authority must not be altered (unless the Yarra Planning Scheme specifies that a permit is not required) without the prior written consent of the Responsible Authority.
    3. Any connections made to Council's drainage infrastructure must be approved by the Responsible Authority and undertaken to Council Standards.
    4. Where existing bluestone is being removed from within Council's municipal boundaries, bluestone must be removed, stored and transported with as much care as is reasonably practical, in order for bluestone to be returned to Council.
    5. Prior to the completion of the civil works, subject to the relevant authority's consent, the relocation of any Council or privately owned assets within the road carriageway or footpath necessary to facilitate the civil works must be undertaken:
        (a) in accordance with any requirements or conditions imposed by the relevant authority;
        (b) at Public Transport Victoria's cost; and
        (c) to the satisfaction of the Responsible Authority.
    6. Within 2 months of the completion of the tram stop, or by such later date as approved in writing by the Responsible Authority, any new pram crossing(s) must be constructed:
        (a) in accordance with any requirements or conditions imposed by Council;
        (b) at the permit holder's cost; and
        (c) to the satisfaction of the Responsible Authority.

7. Within 2 months of the completion of the tram stop, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the works must be reinstated:
   (a) at Public Transport Victoria's cost; and
   (b) to the satisfaction of the Responsible Authority.
8. Within 2 months of the completion of the tram stop, or by such later date as approved in writing by the Responsible Authority, any redundant pram crossing must be demolished and re-instated as standard footpath and kerb and channel:
   (a) at the permit holder's cost; and
   (b) to the satisfaction of the Responsible Authority.
9. Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:
   (a) Monday-Friday (excluding public holidays) before 7 am or after 6 pm;
   (b) Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or
   (c) Sundays, ANZAC Day, Christmas Day and Good Friday at any time.
10. Before the civil works commence, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be endorsed and will form part of this permit. The plan must provide for:
    (a) a pre-conditions survey (dilapidation report) of the works areas and all adjacent Council roads frontages and nearby road infrastructure;
    (b) works necessary to protect road and other infrastructure;
    (c) remediation of any damage to road and other infrastructure;
    (d) containment of dust, dirt and mud within the works areas and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the works areas;
    (e) facilities for vehicle washing, which must be located to the satisfaction of the responsible authority;
    (f) the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;
    (g) site security;
    (h) management of any environmental hazards including, but not limited to,:
        (i) contaminated soil;
        (ii) materials and waste;
        (iii) dust;
        (iv) stormwater contamination from run-off and wash-waters;
        (v) sediment from excavations within the road reserve;
        (vi) washing of concrete trucks and other vehicles and machinery; and
        (vii) spillage from refuelling cranes and other vehicles and machinery;
    (i) the construction program;

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

(j) preferred arrangements for trucks delivering to the works areas, including delivery and unloading points and expected duration and frequency;

(k) parking facilities for construction workers;

(l) measures to ensure that all work at the sites will be carried out in accordance with the Construction Management Plan;

(m) an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

(n) an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced; and

(o) the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads.

3. That Council notes the consequent removal of 11 parking spaces in the City of Yarra.
4. That Council provide a formal response to Public Transport Victoria regarding the proposed upgrade of Stop 23.

RESOLUTION

Moved: Councillor McEvoy **Seconded:** Councillor Fristacky

1. That Council note the officer report relating to the proposed tram stop upgrade at Stop 23 on Route 96 at Nicholson Street.
2. That Council, as the Responsible Planning Authority, approve the detailed designs provided by PTV for tram stop 23 on Route 96, subject to the following conditions:
    1. Before the tram stop civil works commence, amended and additional plans to the satisfaction of the Responsible Authority must be submitted to for approval by the Responsible Authority. The plans must be drawn to scale with dimensions, and three copies must be provided. The plans must be generally in accordance with the most recent plans received by Council on 29 May 2018 and 04 June 2018 but modified to show:
        (a) evidence that a Heavy Rigid Vehicle (HRV) will be able to turn into and out of Miller Street and Clauscen Street from and onto Nicholson Street. This should include:
            (i) swept paths diagrams for a 12.5 metre long heavy-rigid-vehicle (HRV), including wheel tracks, for all relevant movements; and
            (ii) section diagrams showing the profile of the splitter islands between the traffic lanes and tram tracks, where these intersect the swept paths required at Condition 1. (a) i. to demonstrate the splitter islands will be semi-mountable to the affected vehicles.
    2. The civil works as shown on the plans approved by the Responsible Authority must not be altered (unless the Yarra Planning Scheme specifies that a permit is not required) without the prior written consent of the Responsible Authority.
    3. Any connections made to Council's drainage infrastructure must be approved by the Responsible Authority and undertaken to Council Standards.

4. Where existing bluestone is being removed from within Council's municipal boundaries, bluestone must be removed, stored and transported with as much care as is reasonably practical, in order for bluestone to be returned to Council.
5. Prior to the completion of the civil works, subject to the relevant authority's consent, the relocation of any Council or privately owned assets within the road carriageway or footpath necessary to facilitate the civil works must be undertaken:
   (a) in accordance with any requirements or conditions imposed by the relevant authority;
   (b) at Public Transport Victoria's cost; and
   (c) to the satisfaction of the Responsible Authority.
6. Within 2 months of the completion of the tram stop, or by such later date as approved in writing by the Responsible Authority, any new pram crossing(s) must be constructed:
   (a) in accordance with any requirements or conditions imposed by Council;
   (b) at the permit holder's cost; and
   (c) to the satisfaction of the Responsible Authority.
7. Within 2 months of the completion of the tram stop, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the works must be reinstated:
   (a) at Public Transport Victoria's cost; and
   (b) to the satisfaction of the Responsible Authority.
8. Within 2 months of the completion of the tram stop, or by such later date as approved in writing by the Responsible Authority, any redundant pram crossing must be demolished and re-instated as standard footpath and kerb and channel:
   (a) at the permit holder's cost; and
   (b) to the satisfaction of the Responsible Authority.
9. Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:
   (a) Monday-Friday (excluding public holidays) before 7 am or after 6 pm;
   (b) Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or
   (c) Sundays, ANZAC Day, Christmas Day and Good Friday at any time.
10. Before the civil works commence, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be endorsed and will form part of this permit. The plan must provide for:
    (a) a pre-conditions survey (dilapidation report) of the works areas and all adjacent Council roads frontages and nearby road infrastructure;
    (b) works necessary to protect road and other infrastructure;
    (c) remediation of any damage to road and other infrastructure;
    (d) containment of dust, dirt and mud within the works areas and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the works areas;

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

(e) facilities for vehicle washing, which must be located to the satisfaction of the responsible authority;

(f) the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;

(g) site security;

(h) management of any environmental hazards including, but not limited to,:

(i) contaminated soil;

(ii) materials and waste;

(iii) dust;

(iv) stormwater contamination from run-off and wash-waters;

(v) sediment from excavations within the road reserve;

(vi) washing of concrete trucks and other vehicles and machinery; and

(vii) spillage from refuelling cranes and other vehicles and machinery;

(i) the construction program;

(j) preferred arrangements for trucks delivering to the works areas, including delivery and unloading points and expected duration and frequency;

(k) parking facilities for construction workers;

(l) measures to ensure that all work at the sites will be carried out in accordance with the Construction Management Plan;

(m) an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

(n) an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced; and

(o) the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads.

3. That Council notes the consequent removal of 11 parking spaces in the City of Yarra.

4. That Council provide a formal response to Public Transport Victoria regarding the proposed upgrade of Stop 23.

5. That Council request that the CEO write a joint letter with the CEO of PTV to the CEO of VicRoads advocating for a 40kp speed limit on Nicholson Street.

Council Meeting – 19 June 2018 – Stops 11-15

RECOMMENDATION

That Council note the report of officers regarding the proposed Tram Stop changes in Route 96 along Nicholson Street (Stops 11 to 15).

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

2. That Council, as the Responsible Planning Authority, approves the detailed designs provided by PTV for tram stops 11 through 15 along Route 96, subject to the following conditions:

    1. Before the tram stop civil works commence, amended and additional plans to the satisfaction of the Responsible Authority must be submitted for approval by the Responsible Authority. The plans must be drawn to scale with dimensions, and three copies must be provided. The plans must be generally in accordance with the most recent plans received by Council on 29 May 2018 and 04 June 2018 but modified to show:

        (a) 'Keep Clear' road markings on the south-bound traffic lanes on Nicholson Street at the intersection of Nicholson Street and Moor Street; to facilitate east-west bicycle movements through the intersection;

        (b) road markings between the tram tracks at the Nicholson Street and Moor Street intersection, to indicate where bicycles can safely wait during staged crossings of the intersection;

        (c) evidence that a Heavy Rigid Vehicle (HRV) will be able to turn into and out of streets that intersect with Nicholson Street between Victoria Parade and Argyle Street. This should include:

            (i) swept paths diagrams for a 12.5 metre long heavy-rigid-vehicle (HRV), including wheel tracks, for all relevant intersections; and

            (ii) section diagrams showing the profile of the splitter islands between the traffic lanes and tram tracks, where these intersect the swept paths required at Condition 1. (c) i. to demonstrate the splitter islands will be semi-mountable to the affected vehicles.

    2. The civil works as shown on the plans approved by the Responsible Authority must not be altered (unless the Yarra Planning Scheme specifies that a planning permit is not required) without the prior written consent of the Responsible Authority.

    3. Any connections made to Council's drainage infrastructure must be approved by the Responsible Authority and undertaken to Council Standards.

    4. All tree removals are to be at the expense of Public Transport Victoria. Without the prior written consent of Council, no more than eight (8) street trees may be removed and only trees identified previously may be removed. Trees which have been identified for removal are identified as: 5, 6, 9, 10, 12, 13, 14 and 15; within the Arborists Report produced by Ryder, titled 'Construction Impact Assessment' dated 15 March 2017.

    5. Before the removal of any tree approved at Condition 4, a qualified zoologist must inspect the trees to determine if there are any fauna present, and if so, a Wildlife Management Report must be submitted to and approved by the Responsible Authority, detailing the type of fauna found and measures to be taken to manage these. This report must also outline any particular specifications on how and when the trees should be removed to best protect any wildlife present in the trees to be removed and the tree removal will then occur in accordance with the recommendations of the zoologist.

    6. Replacement tree planting of 17 trees between Victoria Parade and Kerr Street, and ongoing maintenance of these trees for a period of 2 years is to be at the expense of Public Transport Victoria.

    7. Where existing bluestone is being removed from within Council's municipal boundaries, it must be stored and transported with as much care as is reasonably practical, in order for bluestone to be returned to Council.

    8. Prior to the completion of the civil works, subject to the relevant authority's consent, the relocation of any Council or privately owned assets within the road carriageway or footpath necessary to facilitate the civil works must be undertaken:

        (a) in accordance with any requirements or conditions imposed by the relevant authority;

        (b) at Public Transport Victoria's cost; and

(c) to the satisfaction of the Responsible Authority.

9. Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any new pram crossing(s) must be constructed:
   (a) in accordance with any requirements or conditions imposed by Council;
   (b) at the Public Transport Victoria's cost; and
   (c) to the satisfaction of the Responsible Authority.
10. Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the works must be reinstated:\
   (a) at Public Transport Victoria's cost; and
   (b) to the satisfaction of the Responsible Authority.
11. Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any redundant pram crossing must be demolished and re-instated as standard footpath and kerb and channel:
   (a) at the Public Transport Victoria's cost; and
   (b) to the satisfaction of the Responsible Authority.
12. Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:
   (a) Monday-Friday (excluding public holidays) before 7 am or after 6 pm;
   (b) Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or
   (c) Sundays, ANZAC Day, Christmas Day and Good Friday at any time.
13. Before the civil works commence, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be form part of Council's approval. The plan must provide for:
   (a) a pre-conditions survey (dilapidation report) of the works areas and all adjacent Council roads frontages and nearby road infrastructure;
   (b) works necessary to protect road and other infrastructure;
   (c) remediation of any damage to road and other infrastructure;
   (d) containment of dust, dirt and mud within the works areas and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the works areas,
   (e) facilities for vehicle washing, which must be located to the satisfaction of the responsible authority;
   (f) the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;
   (g) site security;
   (h) management of any environmental hazards including, but not limited to,:
      (i) contaminated soil;
      (ii) materials and waste;
      (iii) dust;
      (iv) stormwater contamination from run-off and wash-waters;
      (v) sediment from excavations within the road reserve;

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

(vi) washing of concrete trucks and other vehicles and machinery; and

(vii) spillage from refuelling cranes and other vehicles and machinery;

(i) the construction program;

(j) preferred arrangements for trucks delivering to the works areas, including delivery and unloading points and expected duration and frequency;

(k) parking facilities for construction workers;

(l) measures to ensure that all work at the sites will be carried out in accordance with the Construction Management Plan;

(m) an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

(n) an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced; and

(o) the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads.

3. That Council notes the removal of 12 parking spaces would occur as part of the works by Public Transport Victoria.

4. That Council notes that PTV has agreed to provide a $400,000 grant for streetscape and pedestrian improvement works along Nicholson Street to the Yarra City Council.

5. That Council provide its formal response to Public Transport Victoria.

RESOLUTION

Moved: Councillor Fristacky **Seconded:** Councillor McEvoy

1. That Council note the report of officers regarding the proposed Tram Stop changes in Route 96 along Nicholson Street (Stops 11 to 15).

2. That Council, as the Responsible Planning Authority, approves the detailed designs provided by PTV for tram stops 11 through 15 along Route 96, subject to the following conditions:

    1. Before the tram stop civil works commence, amended and additional plans to the satisfaction of the Responsible Authority must be submitted for approval by the Responsible Authority. The plans must be drawn to scale with dimensions, and three copies must be provided. The plans must be generally in accordance with the most recent plans received by Council on 29 May 2018 and 04 June 2018 but modified to show:

        (a) 'Keep Clear' road markings on the south-bound traffic lanes on Nicholson Street at the intersection of Nicholson Street and Moor Street; to facilitate east-west bicycle movements through the intersection;

        (b) road markings between the tram tracks at the Nicholson Street and Moor Street intersection, to indicate where bicycles can safely wait during staged crossings of the intersection;

        (c) gaps in both sides of the tram fairway at stop 13/14 to enable bikes to cross Nicholson Street in a direct line rather than contraflow to vehicles on Nicholson Street, when proceeding from Carlton Street in Carlton to Moor Street in Fitzroy;

        (d) evidence that a Heavy Rigid Vehicle (HRV) will be able to turn into and out of streets that intersect with Nicholson Street between Victoria Parade and Argyle Street. This should include:

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

(i) swept paths diagrams for a 12.5 metre long heavy-rigid-vehicle (HRV), including wheel tracks, for all relevant intersections; and

(ii) section diagrams showing the profile of the splitter islands between the traffic lanes and tram tracks, where these intersect the swept paths required at Condition 1. (c) i. to demonstrate the splitter islands will be semi-mountable to the affected vehicles.

2. The civil works as shown on the plans approved by the Responsible Authority must not be altered (unless the Yarra Planning Scheme specifies that a planning permit is not required) without the prior written consent of the Responsible Authority.

3. Any connections made to Council's drainage infrastructure must be approved by the Responsible Authority and undertaken to Council Standards.

4. All tree removals are to be at the expense of Public Transport Victoria. Without the prior written consent of Council, no more than eight (8) street trees may be removed and only trees identified previously may be removed. Trees which have been identified for removal are identified as: 5, 6, 9, 10, 12, 13, 14 and 15; within the Arborists Report produced by Ryder, titled 'Construction Impact Assessment' dated 15 March 2017.

5. Before the removal of any tree approved at Condition 4, a qualified zoologist must inspect the trees to determine if there are any fauna present, and if so, a Wildlife Management Report must be submitted to and approved by the Responsible Authority, detailing the type of fauna found and measures to be taken to manage these. This report must also outline any particular specifications on how and when the trees should be removed to best protect any wildlife present in the trees to be removed and the tree removal will then occur in accordance with the recommendations of the zoologist.

6. Replacement tree planting of 17 trees between Victoria Parade and Kerr Street, and ongoing maintenance of these trees for a period of 2 years is to be at the expense of Public Transport Victoria.

7. Where existing bluestone is being removed from within Council's municipal boundaries, it must be stored and transported with as much care as is reasonably practical, in order for bluestone to be returned to Council.

8. Prior to the completion of the civil works, subject to the relevant authority's consent, the relocation of any Council or privately owned assets within the road carriageway or footpath necessary to facilitate the civil works must be undertaken:

   (a) in accordance with any requirements or conditions imposed by the relevant authority;

   (b) at Public Transport Victoria's cost; and

   (c) to the satisfaction of the Responsible Authority.

9. Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any new pram crossing(s) must be constructed:

   (a) in accordance with any requirements or conditions imposed by Council;

   (b) at the Public Transport Victoria's cost; and

   (c) to the satisfaction of the Responsible Authority.

10. Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any damage to Council infrastructure resulting from the works must be reinstated:\

    (a) at Public Transport Victoria's cost; and

    (b) to the satisfaction of the Responsible Authority.

11. Within 2 months of the completion of the tram stops, or by such later date as approved in writing by the Responsible Authority, any redundant pram crossing must be demolished and re-instated as standard footpath and kerb and channel:

    (a) at the Public Transport Victoria's cost; and

(b) to the satisfaction of the Responsible Authority.

12. Except with the prior written consent of the Responsible Authority, demolition or construction works must not be carried out:

(a) Monday-Friday (excluding public holidays) before 7 am or after 6 pm;

(b) Saturdays and public holidays (other than ANZAC Day, Christmas Day and Good Friday) before 9 am or after 3 pm; or

(c) Sundays, ANZAC Day, Christmas Day and Good Friday at any time.

13. Before the civil works commence, a Construction Management Plan to the satisfaction of the Responsible Authority must be submitted to and approved by the Responsible Authority. When approved, the plan will be form part of Council's approval. The plan must provide for:

(a) a pre-conditions survey (dilapidation report) of the works areas and all adjacent Council roads frontages and nearby road infrastructure;

(b) works necessary to protect road and other infrastructure;

(c) remediation of any damage to road and other infrastructure;

(d) containment of dust, dirt and mud within the works areas and method and frequency of clean up procedures to prevent the accumulation of dust, dirt and mud outside the works areas,

(e) facilities for vehicle washing, which must be located to the satisfaction of the responsible authority;

(f) the location of loading zones, site sheds, materials, cranes and crane/hoisting zones, gantries and any other construction related items or equipment to be located in any street;

(g) site security;

(h) management of any environmental hazards including, but not limited to,:

(i) contaminated soil;

(ii) materials and waste;

(iii) dust;

(iv) stormwater contamination from run-off and wash-waters;

(v) sediment from excavations within the road reserve;

(vi) washing of concrete trucks and other vehicles and machinery; and

(vii) spillage from refuelling cranes and other vehicles and machinery;

(i) the construction program;

(j) preferred arrangements for trucks delivering to the works areas, including delivery and unloading points and expected duration and frequency;

(k) parking facilities for construction workers;

(l) measures to ensure that all work at the sites will be carried out in accordance with the Construction Management Plan;

(m) an outline of requests to occupy public footpaths or roads, or anticipated disruptions to local services;

(n) an emergency contact that is available for 24 hours per day for residents and the Responsible Authority in the event of relevant queries or problems experienced; and

(o) the provision of a traffic management plan to comply with provisions of AS 1742.3-2002 Manual of uniform traffic control devices - Part 3: Traffic control devices for works on roads.

Attachment 2 - All Previous Route 96 Recommendations and Resolutions

3. That Council notes the removal of 12 parking spaces would occur as part of the works by Public Transport Victoria.
4. That Council notes that PTV has agreed to provide a $400,000 grant for streetscape and pedestrian improvement works along Nicholson Street to the Yarra City Council.
5. That Council provide its formal response to Public Transport Victoria.

CARRIED UNANIMOUSLY

Attachment 3 - Planning Scheme Incorporated Document

Tramway Infrastructure Upgrades

Incorporated Document

May 2017

Incorporated document pursuant to section 6(2)(j) of the *Planning and Environment Act 1987*

Attachment 3 - Planning Scheme Incorporated Document

1.0 INTRODUCTION

This document is an incorporated document in the Melbourne, Moreland, Port Phillip and Yarra Planning Schemes (planning schemes) pursuant to section 6(2)(j) of the *Planning and Environment Act 1987*.

The land identified in Clause 3.0 of this document may be used and developed in accordance with the specific control in Clause 4.0 of this document.

The control in this document prevails over any contrary or inconsistent provision in the planning schemes.

2.0 PURPOSE

To facilitate improvements to the capacity, reliability, accessibility and safety of the Tramway network in the areas affected by this control.

To require consideration of matters relevant to the purpose of the zone, overlay or other provision that, if not for this incorporated document, would have required a planning permit for the use and/or development.

3.0 LAND

The control in this document applies to the Land defined as Project Areas in the maps in this document.

4.0 CONTROL

4.1 EXEMPTION FROM PLANNING SCHEME REQUIREMENTS

The use and development of the Land for a Tramway includes, but is not limited to, the following:

- new level access stops, including tram platforms and associated facilities, tram track and tram overhead infrastructure
- segregation treatments to better separate trams from general traffic
- roadway alterations including bluestone kerbing, building awnings and associated traffic and street furniture
- vegetation pruning and removal
- infrastructure to support improved priority for trams at traffic signals
- pedestrian operated signals and real-time passenger information
- ancillary infrastructure including sub-stations and driver facilities.

Any requirement in the planning scheme:

- which prohibits the use or development of the Land; or
- which requires the use or development of the Land to be carried out in a particular manner; or
- to obtain a permit

does not apply to:

- the use and development of the Land for a Tramway by or on behalf of a public authority, other than the subdivision or consolidation of land; or

- the display of a Promotion sign within a Tramway.

4.2 CONDITIONS

The exemption from planning scheme requirements outlined in clause 4.1 of this document is subject to the following conditions:

Submission and approval of plans

4.2.1 Prior to the commencement of any development (including the display of a Promotion sign), plans showing the location and elevations of the proposed development must be prepared for approval by the responsible authority.

4.2.2 The plans must be drawn to scale and accompanied by the following information:

a) If the land is in a Floodway Overlay, Land Subject to Inundation Overlay, Special Building Overlay or Urban Floodway Zone, the written consent of the relevant floodplain management authority. The consent may include requirements to be met.

b) If the land is in a Public Acquisition Overlay, the written consent of the acquiring authority. The consent may include requirements to be met.

c) If the land is in a Heritage Overlay, a statement describing any impacts of the development on the significance of the heritage place.

4.2.3 The development must be carried out in accordance with any requirements contained in written consent submitted under clause 4.2.2(a) and (b).

Display of a Promotion sign

4.2.4 The advertisement area of the Promotion sign must not exceed 2 square metres.

4.2.5 The Promotion sign must not be a Floodlit sign, Electronic sign or Animated sign.

4.2.6 The written consent of the public authority responsible for the Tramway must be obtained before the Promotion sign is displayed.

4.3 DECISION GUIDELINES

Before deciding whether to approve plans submitted under clause 4.2 of this document, the responsible authority must consider, as appropriate:

- The decision guidelines of the zone, overlay or other provision that, if not for this incorporated document, would have required a planning permit for the use and/or development.

4.4 EXPIRY

The control in this document expires if any of the following circumstances apply:

a) The use and development allowed by the control is not started by 1 December 2018.

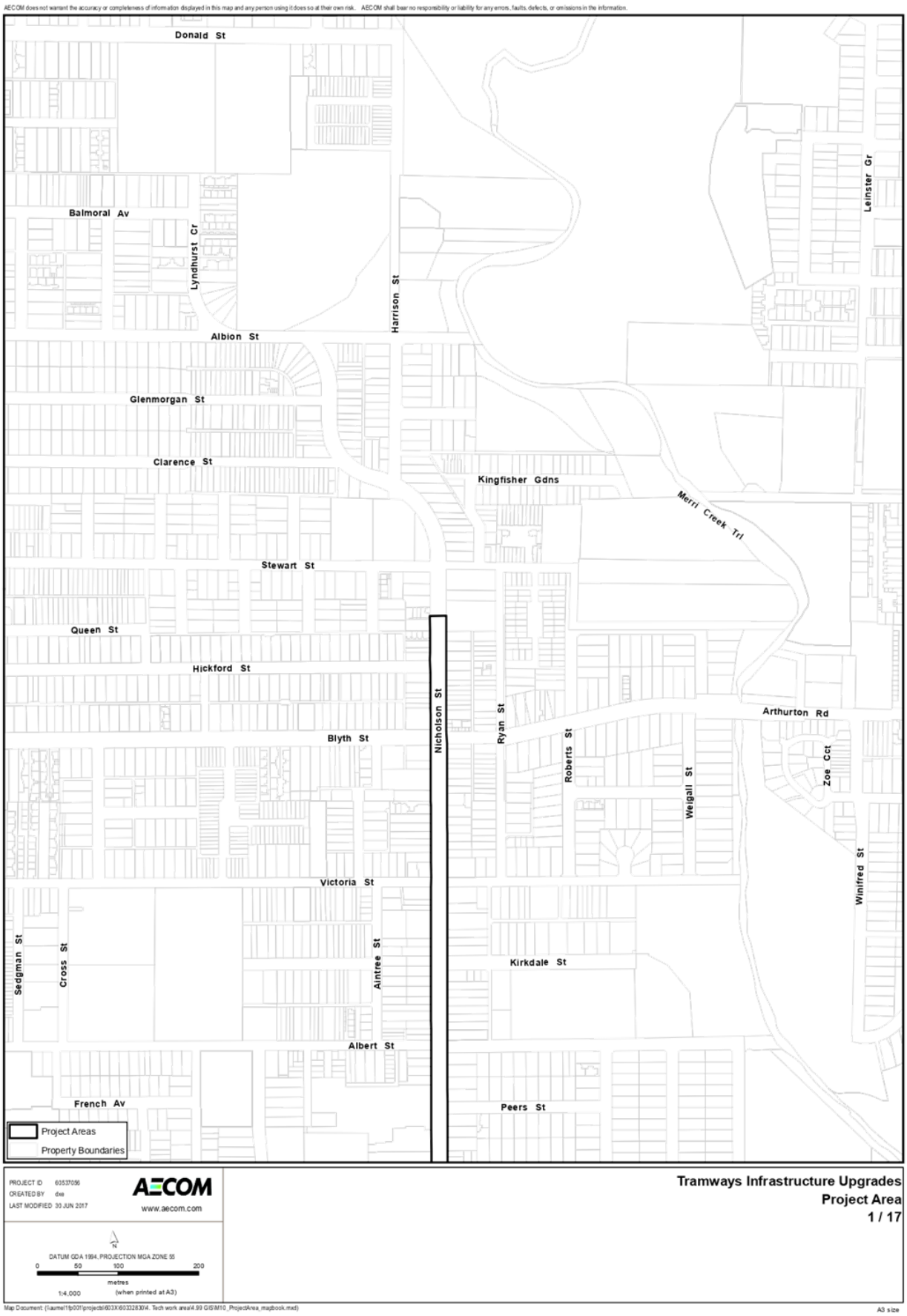
b) The development allowed by the control is not completed by 1 July 2027.

The Minister for Planning may extend these periods if a request is made in writing before the expiry date or within three months afterwards.

Attachment 3 - Planning Scheme Incorporated Document

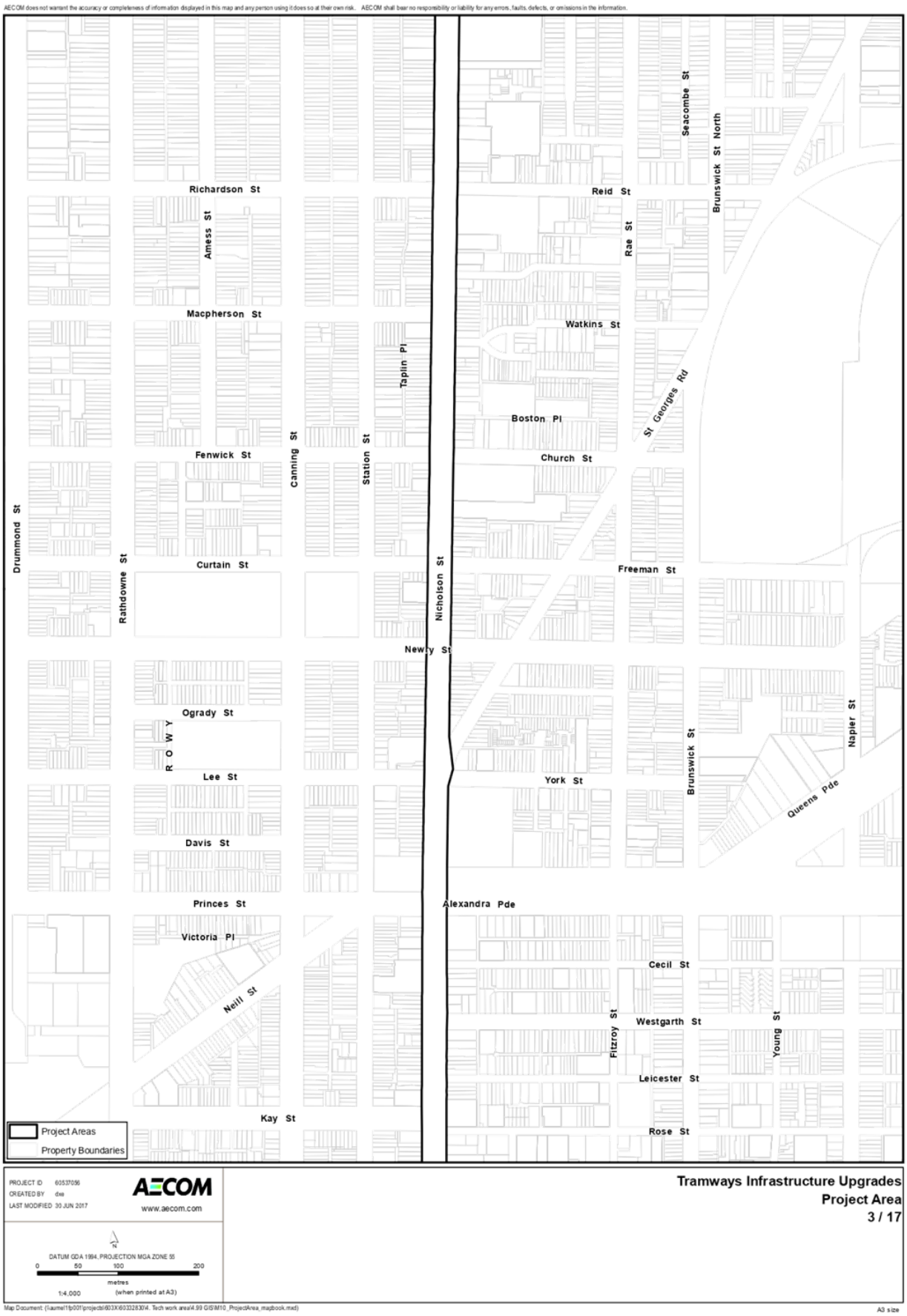
LAND AFFECTED BY THIS INCORPORATED DOCUMENT

Attachment 3 - Planning Scheme Incorporated Document

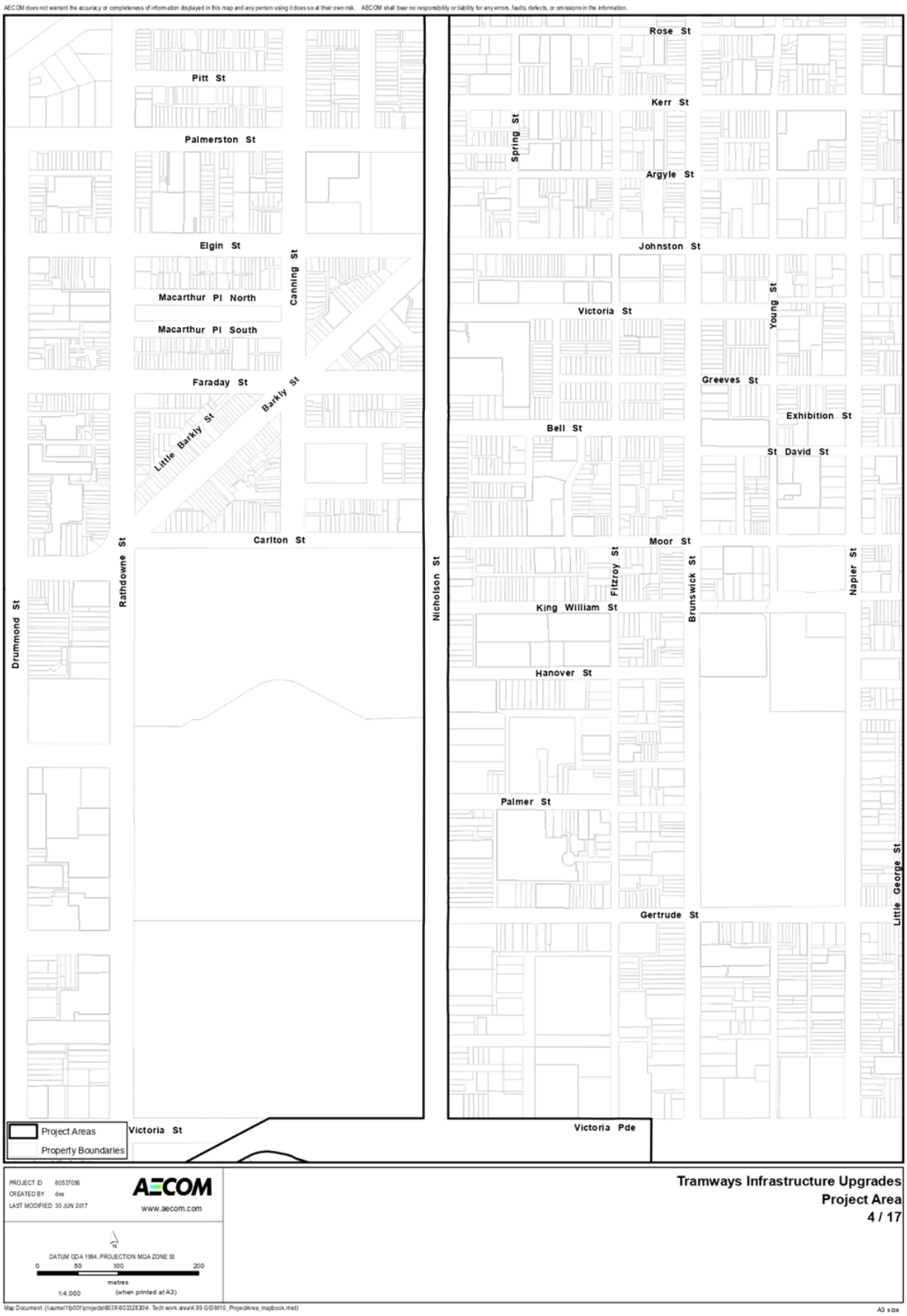


Attachment 3 - Planning Scheme Incorporated Document

Attachment 3 - Planning Scheme Incorporated Document



Attachment 3 - Planning Scheme Incorporated Document



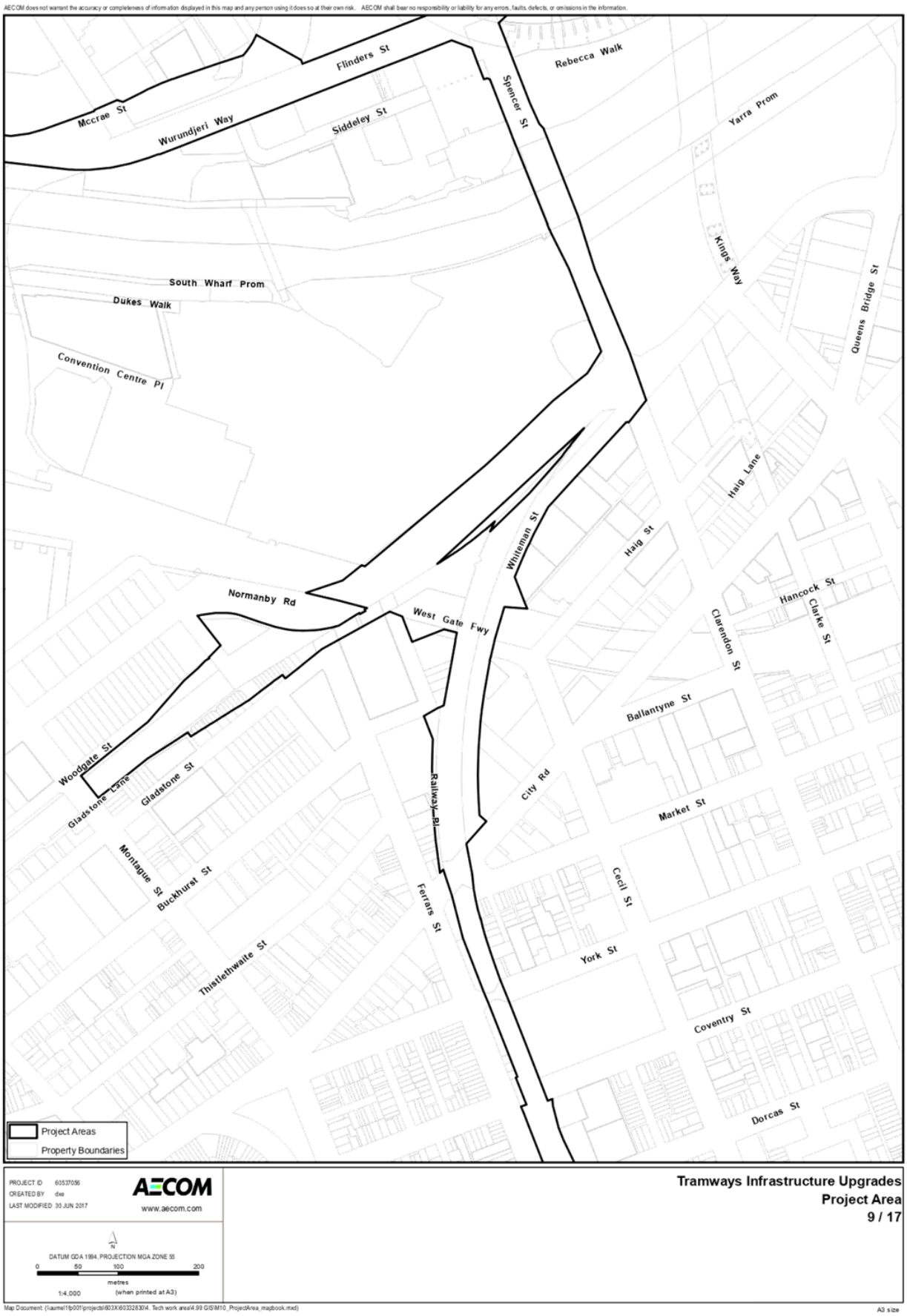
Attachment 3 - Planning Scheme Incorporated Document

Attachment 3 - Planning Scheme Incorporated Document

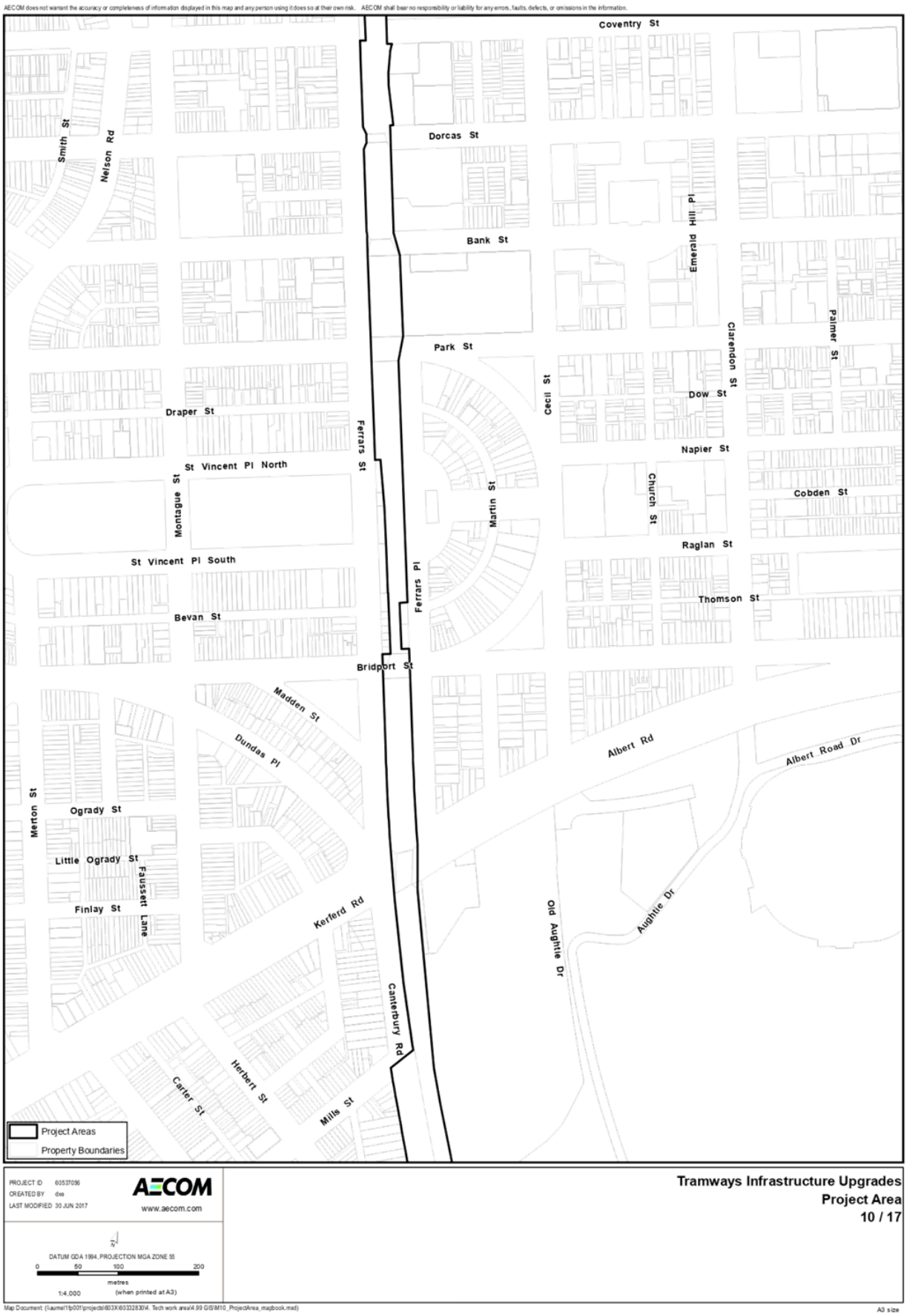
Attachment 3 - Planning Scheme Incorporated Document

Attachment 3 - Planning Scheme Incorporated Document

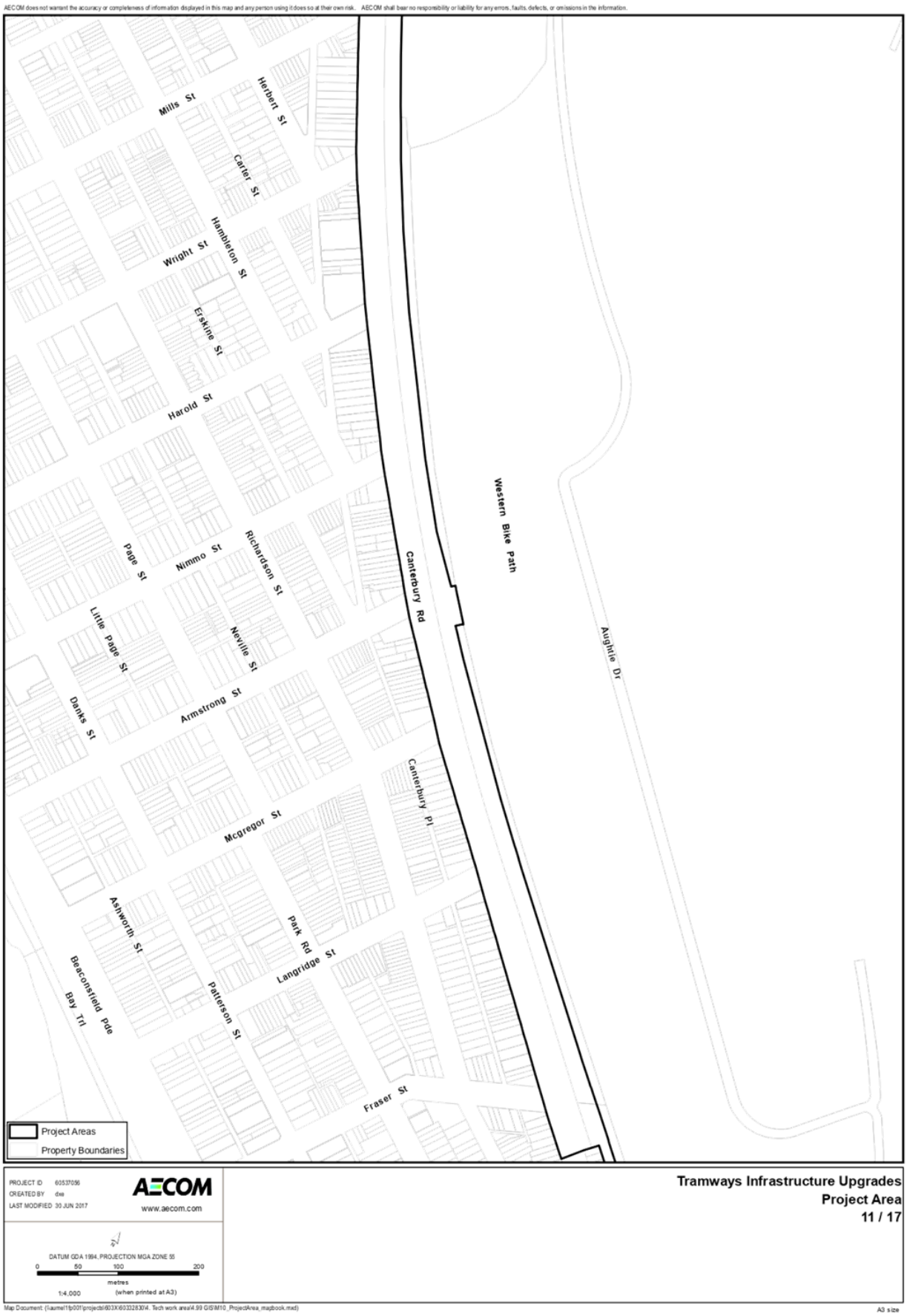
Attachment 3 - Planning Scheme Incorporated Document



Attachment 3 - Planning Scheme Incorporated Document

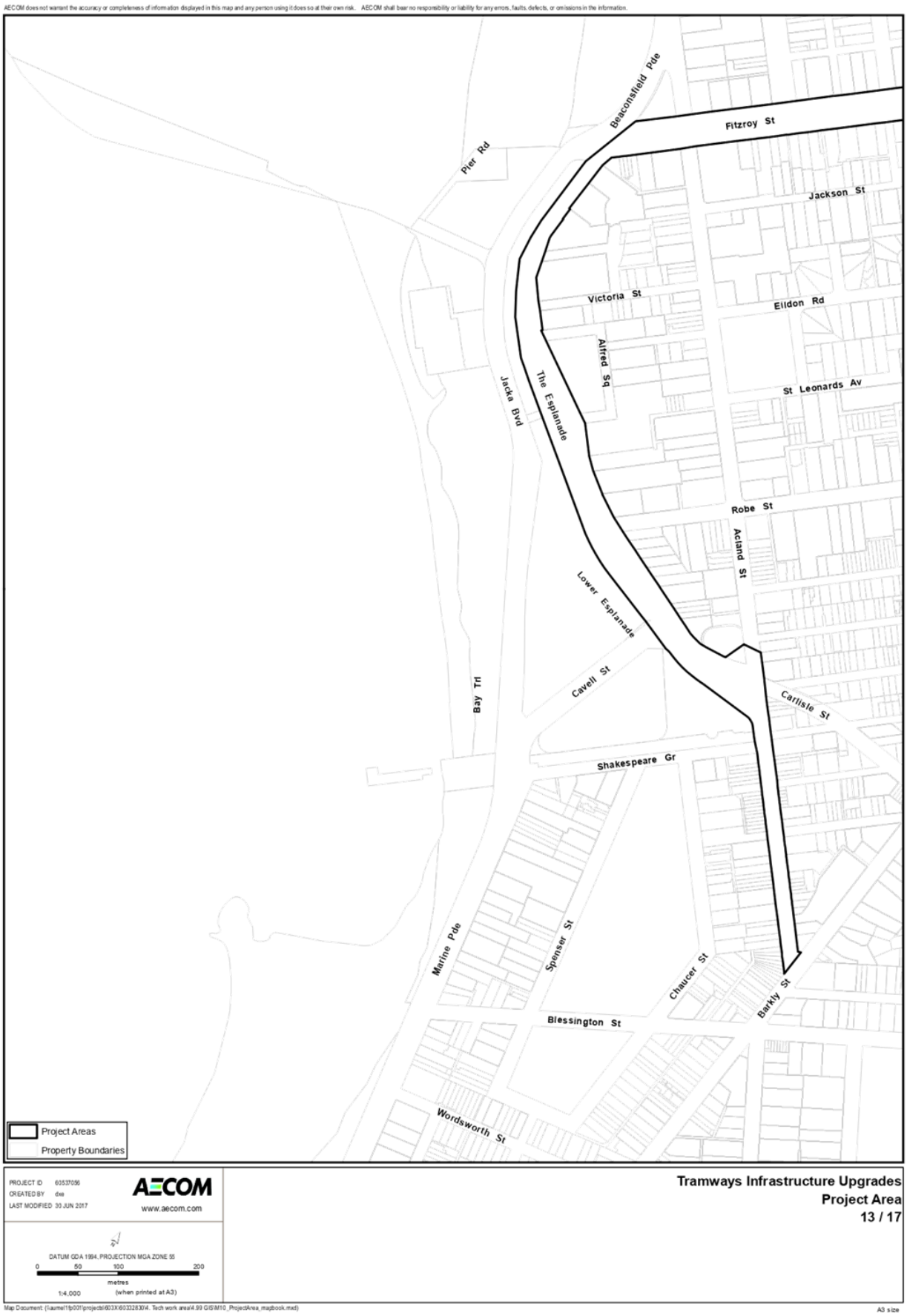


Attachment 3 - Planning Scheme Incorporated Document



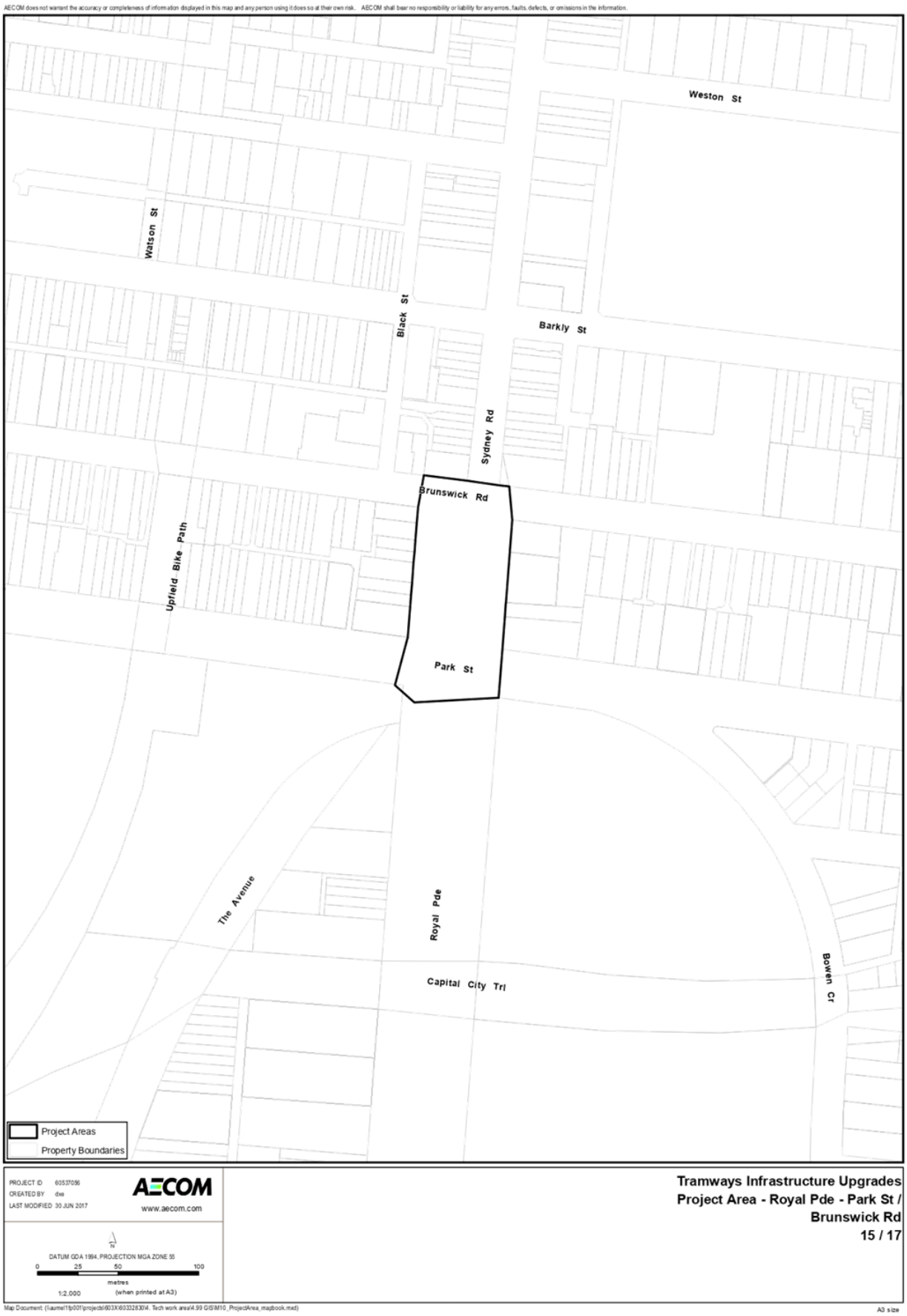
Attachment 3 - Planning Scheme Incorporated Document

Attachment 3 - Planning Scheme Incorporated Document

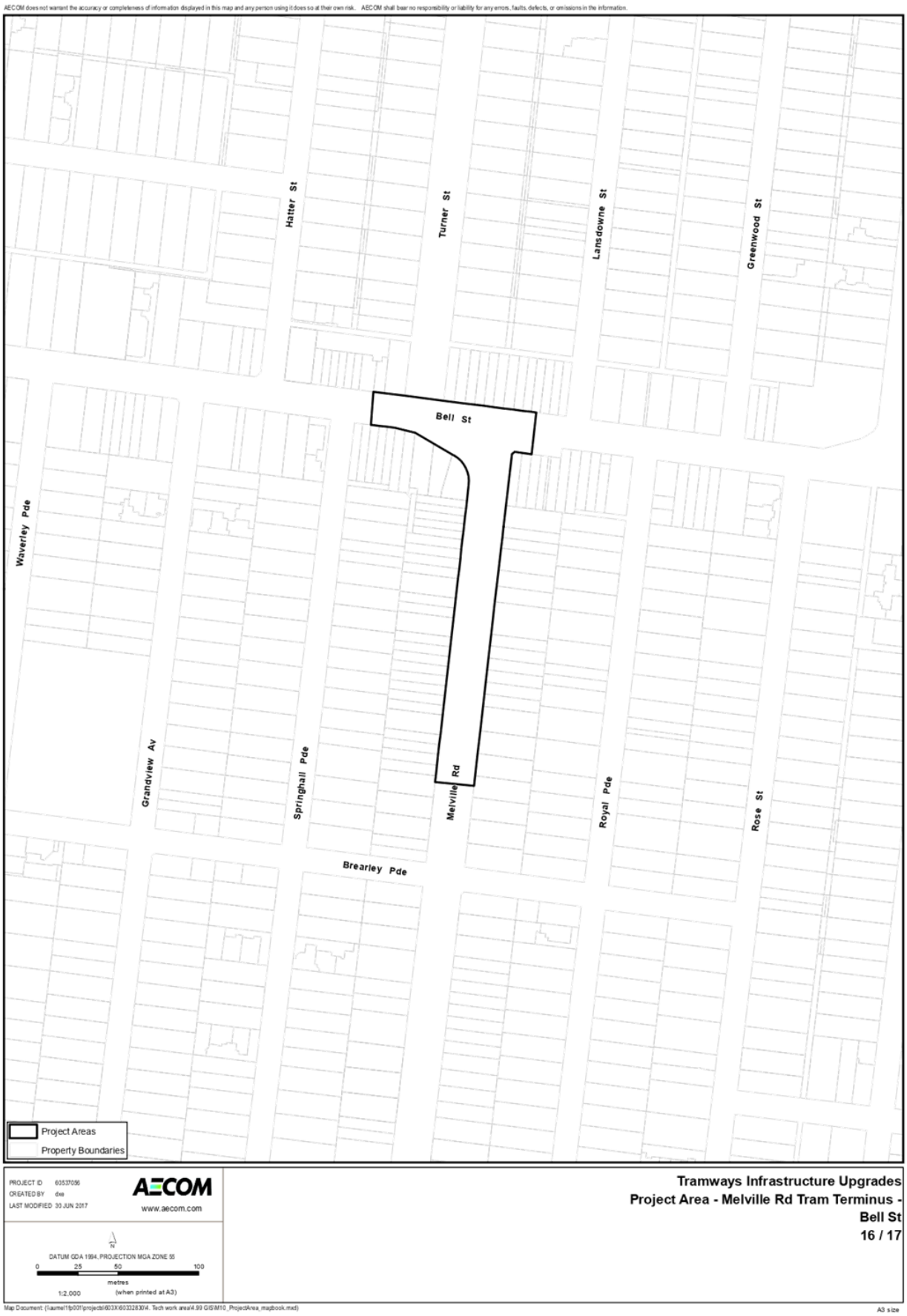


Attachment 3 - Planning Scheme Incorporated Document

Attachment 3 - Planning Scheme Incorporated Document



Attachment 3 - Planning Scheme Incorporated Document



Attachment 3 - Planning Scheme Incorporated Document

Attachment 4 - VicRoads letter regarding single lanes and reduced speed limits

vicroads

Metropolitan North West Region
12 Clarke Street
Sunshine Victoria 3020
Telephone (03) 9313 1333

Send Correspondence to:
mnw.mail@roads.vic.gov.au
or Fax (03) 9313 1175

Parcels and Drawings to:
Private Bag 4000
Sunshine Victoria 3020

vicroads.vic.gov.au

Contact: David Niemiecki
Telephone: 9313 1154
Our Ref: 15640165

Ms Melissa Alessandrini
Director – Program Delivery
Public Transport Victoria

Dear Ms Alessandrini

NICHOLSON STREET ROUTE 96 - TRAM STOP UPGRADE PROPOSALS

As our teams have discussed, following on from the traders meeting on 18 March 2019, VicRoads has reviewed the current options being considered for the Nicholson Street Route 96 tram stop upgrade. This includes a traffic lane reduction in both the northbound and southbound directions from two traffic lanes down to one (between Alexandra Parade and Brunswick St) and a speed limit reduction to 40km/h.

VicRoads has worked closely with PTV/Yarra Trams in the design process to ensure that all tram stop locations provide the best serviceability for patrons. VicRoads has no objection to the current PTV detailed designs including the trams stop upgrade locations and stop types.

Observations of the southbound traffic along Nicholson Street (Alexandra Parade to Brunswick St), revealed that the existing queue lengths could extend to approximately 370m north of Alexandra Parade and subsequent traffic queuing at other intersections, including Reid Street, with queue lengths of approximately 150m.

The VicRoads traffic modelling for a one lane option at the intersection of Nicholson Street and Reid Street revealed significant queuing in the order of 800m in both the northbound and southbound directions. This was largely due to right and left turning vehicles frequently blocking the through traffic lanes to wait for gaps between trams, oncoming vehicles and pedestrians.

Further to the above, the Movement and Place objective for this section of Nicholson Street sets a certain level of service for all modes to balance priority for all road users. The above one lane reduction all the way along Nicholson Street will likely lead to a reduction in the level of service for trams which is the highest priority mode and will result in significant queuing along Nicholson Street. To mitigate this level of services further changes would then be required like banning the right turn movements. This is not considered appropriate as the change would adversely impact local community access and shift this problem to another intersection, potentially leading to rat running through local streets to get around the turn bans.

Attachment 4 - VicRoads letter regarding single lanes and reduced speed limits

Based on the above, VicRoads reconfirms its support for a mid-block single traffic lane in the northbound direction only, retaining the number of traffic lanes at the signalised intersections. VicRoads does not support a traffic lane reduction at intersections for tram stop 20, 21 and 22. This outcome is consistent with the VicRoads approval of the southern tram stop upgrades on Nicholson Street, between Victoria Parade and Johnston Street. One of the key issues raised during Traders meeting was feedback that people feel unsafe parking in a 60km/h speed environment and exiting their vehicle. With one lane of traffic, it is considered to be simpler to park and will lead to opportunities for a buffer zone to be provided between parked vehicles and the through traffic lane.

In relation to the southbound direction, it was noted that even outside of the typical peak hours, traffic flow was much higher than in the northbound direction. Therefore, two full lanes are required in the southbound direction at all times.

In terms of the speed limit, it is important to note that speed limit changes are assessed using the Victorian Speed Zoning Guidelines. The guidelines ensure appropriate, credible and consistent speeds are applied across the state, with consideration given to factors such as the number of access points along the route, the nature of the road environment, neighbouring development, nearby intersections and the safety history of the road. The road environment should be such that motorists can comfortably travel at the desired speed limit without the need to physically put up a speed sign.

Nicholson Street is designated as an 'arterial road' and its purpose is to carry higher traffic volumes than local roads. Arterial roads in built-up areas are generally signposted at higher speed limits than local roads, in accordance with the Victorian Speed Zoning Guidelines. This encourages motorists to use these roads over alternative local roads.

Currently, tram stops 16 through to 22 have traffic lane widths which vary significantly with the narrowest lane being 2.52m. In the proposed tram stop upgrade designs, the narrowest traffic lane width will increase to minimum 2.72m. With the minimum traffic lane width along Nicholson Street increasing the road environment will further support the current speed limit of 60Km/h.

Based on the road environment post this project, VicRoads does not support a full-time 40km/h speed limit at this time. VicRoads is willing to discuss a holistic network view of the Nicholson Street corridor with Yarra City Council.

VicRoads is reviewing road clearance dispensations with an aim of retaining street trees and to minimise the relocation of shop awnings adjacent to the tram stop upgrade locations on Nicholson Street. VicRoads will continue to work with PTV with an aim to further enhance the tram stop designs and minimise impacts to street amenities.

If you have any queries regarding this matter, please feel free to contact Hazel Lirios, Team Leader – Movement and Safety Central on 9313 1169

Yours sincerely,

FATIMA MOHAMED
A/REGIONAL DIRECTOR – METRO NORTH WEST
02/04/2019

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19

Wearne, Julian

From: Troy O'Sullivan (PTV) <Troy.OSullivan@ptv.vic.gov.au>
Sent: Friday, 5 April 2019 1:33 PM
To: Wearne, Julian
Cc: Malcolm Strachan (PTV); Julian Brignell (PTV)
Subject: Route 96 - PTV response to Yarra Council motion (2 April 2019)
Attachments: CA1_TF_04426.txt; Nicholson Street Traffic Modelling Report RevC (Final).pdf; 02042019161450-0001.pdf

Hi Julian,

Further to Yarra Council 'motion' passed on 2 April for the Route 96 project, please find supporting information relating to the motion and VicRoads letter dated 1 April.

The VicRoads data provided shows that approximately 910 vehicles travel northbound along Reid Street and 940 vehicles travel southbound during peak periods of the day. From site inspections it was noted 1-2 vehicles turn right from these approaches across the tram tracks each cycle, therefore for the analysis it was assumed of these northbound and southbound vehicles approximately 50 vehicles turned right during the peak hours. The 50 vehicles assumption is a fair and balanced assessment for the modelling and could reach between 60-100 vehicles turning right during peak hours during a live one hour period.

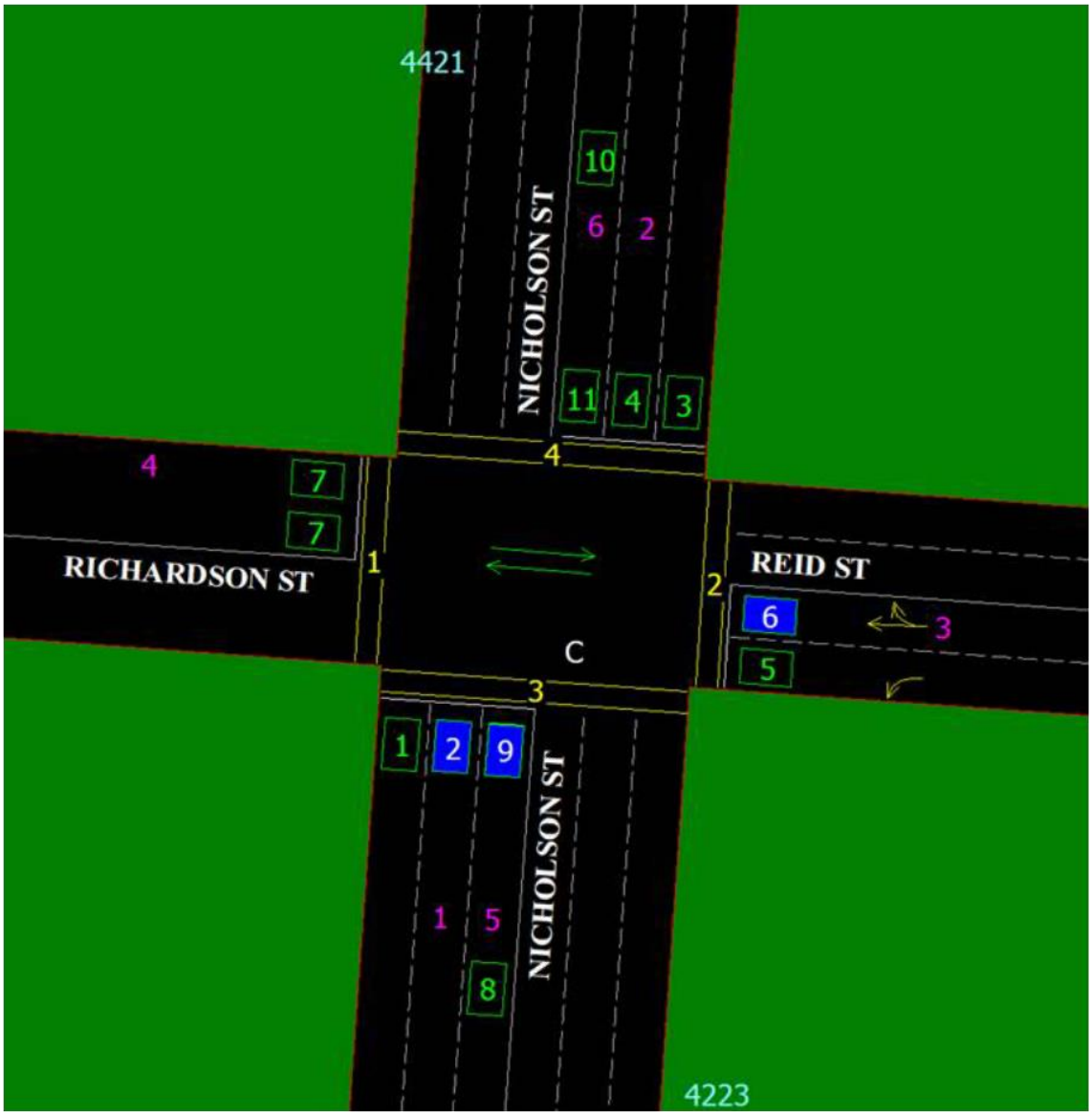
Based on the modelling undertaken, with these volumes it has shown that with only one lane north/south along the length of Nicholson Street (including at signals) queuing was a significant issue with right turning vehicles unable to successfully turn right until the end of the phase, meaning that all traffic is at a standstill each time a vehicle attempts to turn right. This is also consistent with current site observations where right turning motorists propped within the intersection and were unable to turn right until the end of the phase due to oncoming trams, motorists and pedestrians crossing in a north/south direction. Given two lanes are currently provided this was not an issue during observations as vehicles could simply use the left lane to avoid any right turning motorists, something which isn't possible having a one lane option all the way along Nicholson Street and why the resulting analysis showed high levels of queuing.

SCATS data (attached) for the site (Nicholson St/Reid St), this data was collected 19th March 2019. Below image provided to assist in locating where the detectors are in relation to northbound and southbound volumes.

Attached:

1. PTV - traffic modelling report used by VicRoads for assessment of mid-block traffic lane reduction in north bound direction past stop 16 , 17 and 18.
2. VicRoads - SCATS data and SIDRA analysis
3. VicRoads letter dated 1 April 2019

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19



Regards,

Troy O'Sullivan
Principal Project Manager - Infrastructure Projects
Network Integrity & Project Assurance

Public Transport Victoria
Level 8, 750 Collins Street
Docklands VIC 3008
Telephone +61 3 9027 4083
Mobile: 0404 490 768
Email troy.o'sullivan@ptv.vic.gov.au

For more information visit ptv.vic.gov.au
Twitter | YouTube | Live travel updates

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19

JACOBS

Route 96 Project Design

Public Transport Victoria

Nicholson Street Traffic Modelling

IS168200 | C

April 2019

Nicholson Street Traffic Modelling

JACOBS

Route 96 Project Design

Project No:	IS0168200
Document Title:	Nicholson Street Traffic Modelling
Document No.:	IS168200
Revision:	C
Date:	April 2019
Client Name:	Public Transport Victoria

Project Manager:	John Cataldo
Author:	Peter Thompson
File Name:	\\Jacobs.com\ANZ\IE\Projects\03_Southern\IS168200\21 Deliverables\Traffic Modelling Report\Nicholson Street Traffic Modelling Report RevC.docx

Jacobs Group (Australia) Pty Limited
ABN 37 001 024 095
Floor 11, 452 Flinders Street
Melbourne VIC 3000
PO Box 312, Flinders Lane
Melbourne VIC 8009 Australia
T +61 3 8668 3000
F +61 3 8668 3001
www.jacobs.com

© Copyright 2017 Jacobs Group (Australia) Pty Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party. The purpose of this report and the associated services performed by Jacobs is to inform the development of a business case, in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed by the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This assessment was subject to budget and time restrictions. This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

Document history and status

Revision	Date	Description	By	Review	Approved
A	6/10/17	Draft report	P Thompson	M De Marco	J Cataldo
B	13/11/17	Draft report – amendments as requested by PTV	P Thompson	M De Marco	J Cataldo
C	05/04/19	Final report	P Thompson	M De Marco	J Cataldo

Contents

Executive Summary ..... **iii**
1. Introduction **1**
1.1 Background 1
1.2 Purpose of this Report 2
2. Modelling Specification **3**
2.1 General Approach 3
2.2 Study Area 3
2.3 Time Periods and Forecast Years 3
2.4 Other Modelling Parameters 3
3. Data Sources **5**
3.1 SCATS Data 5
3.2 Bluetooth Travel Time Data 5
3.3 Other Data Sources 6
4. Base Year (2017) Model Development **9**
4.1 Network Coding 9
4.2 Matrix Estimation 9
4.3 Traffic Signal Operations 9
4.4 Approach to Calibration and Validation 10
4.5 Base Model Results 11
5. Options Assessment **23**
5.1 Base-Case and Project Options 23
5.2 Future Model Development 23
5.3 Network Performance Comparison 23
5.4 Nicholson Street Travel Times 24
5.5 Option 1 Average Travel Times Along Nicholson Street 34
6. Conclusions **37**

Executive Summary

Public Transport Victoria (PTV) commissioned Jacobs to investigate the traffic impacts of potential changes to Nicholson Street, as part of the Route 96 Upgrade Project.

Preliminary design work for the Project has revealed that proposed DDA-compliant tram stops at four locations along Nicholson Street (Stops 13/14, 16, 17 and 18) will be difficult to provide without reducing the number of traffic and/or parking lanes in their vicinity. As a busy primary arterial inner-city route, the traffic impacts of these changes need to be analysed and quantified so an informed decision can be made.

To properly assess the traffic impacts of any lane reductions in Nicholson Street, Jacobs were commissioned by Public Transport Victoria (PTV) to develop a microsimulation model of the section of the road from Gertrude Street to Brunswick Road using the VISSIM modelling software. Key features of the model are:

- Two time periods have been modelled, corresponding to a morning peak period (7:00-9:00am) and afternoon/evening peak period (4:00-6:00pm);
- The geometric features of the model have been coded from high-resolution aerial photographs, while key operational features such as speed limits and parking restrictions have been coded from Google StreetView;
- Other than the signalised intersections, vehicles turning to and from local side streets and parking activity have not been explicitly modelled, as the data requirements were beyond the agreed scope of the current study;
- Traffic demands have been modelled using dynamic routing and origin-destination matrices derived from SCATS detector counts at all the signal installations in the study area. These were used to develop synthesised origin-destination matrices at 15-minute intervals throughout each modelled time period, using the maximum-entropy matrix estimation method;
- All tram operations, including stops, have been included using static routing and published timetable information; and
- Traffic signal operations have been modelled using VISSIM's Vehicle Actuated Programing (VAP) facility. This has enabled the model to closely replicate observed signal phasing and timing behaviour, including pedestrian activity, as revealed by the signal operations sheets and the Intersection Diagnostic Monitor (IDM) data on a selected day.

The approach to calibrating the model centred on traffic signal operations. Once each VAP file was operating correctly in respect to the basic signal logic, successive changes were made to the *maximum extension green time* for each phase, until the modelled phase frequencies, average phase times and average cycle times were a close match to observed operations.

The model was then run, and the modelled detector counts checked against the SCATS counts. In the case of the pedestrian operated signals (POS), the volume of pedestrians (for which no actual data was available) was successively adjusted until there was a reasonable match between the observed and modelled actuations at each location. This process was repeated until the modelled results showed a close correlation to observed data. In the end, the final models replicated the observations very closely.

To validate the model, it was intended to use the Bluetooth vehicle travel time data available from VicRoads. This data was available for two sections of Nicholson Street, but analysis of the data raised concerns about its reliability. For example, one section showed an *average* travel speed of over 60 km/h, for a section that included the Nicholson Street/Alexandra Parade signals. It is possible that the data included such a small sample that by chance, only those few vehicles traversing the section (and the signals) without delay were recorded. Another possibility is that the accuracy of the vehicle detectors can pick up vehicles well before they reach the signal stop-line and incur any delay. Without some independent check on travel times along Nicholson Street, this issue remains unresolved.

The comparisons between the modelled and Bluetooth travel times generally showed a poor level of correspondence between the two. As discussed, the reliability of the Bluetooth data is questionable given its vehicle-location accuracy, and while we do not believe the poor correlation invalidates the model, we note that it remains unvalidated in respect to travel times and would be enhanced by the inclusion of reliable travel time information.

From the base models, two scenarios models were created and tested, namely:

- **Option 1 –** One model each for the morning and afternoon periods, where Nicholson Street is narrowed to one lane in each direction at new tram stops 13/14[1], 15, 17 and 18, with 2017 traffic demands; and
- **Option 2** - One model each for the morning and afternoon periods, where Nicholson Street is posted at 40kph between Carlton Street and Brunswick Road, with 2017 traffic demands.

Note that no traffic growth has been included – the assumption has been that inner-city arterials such as Nicholson Street have limited capacity for additional traffic growth.

A total of ten simulation runs were undertaken for each of these scenarios (along with the base cases or 'current condition' models), and the averaged travel times along Nicholson Street compared for the major sections between the signalised intersections. The simulation results showed that:

1) Both Option 1 and Option 2 will result in increased travel times along Nicholson Street during the morning and evening periods;
2) The impacts associated with Option 1 are concentrated at particular locations and time periods, namely:
   - On the northern approach to the Nicholson Street/Alexandra Avenue intersection, where the new tram stop reduces what is presently a continuous through lane to a short lane. This reduces stop-line capacity. The impact at this location occurs throughout the entire morning and afternoon periods;
   - At the new consolidated tram stop at Carlton Street (Stops 13/14), where the combination of a single lane, the operation of the pedestrian signals, and the increase in pedestrian demand, combine to reduce the capacity at this location. The impact at this location is significant for about an hour in the *peak direction only* in each of the morning and afternoon periods; and
   - At the new tram stop near Kay Street (Stop 16), where (similar to Carlton Street) a single lane approach to a mid-block POS creates a capacity restriction. The impact at this location occurs in the peak direction form about 4:40 pm onwards.
3) In the case of Option 2, there are consistent and even travel time increase across all time periods and all sections of Nicholson Street[2]. These travel time impacts would likely be perceived quite differently by motorists, as they arise from changes to ambient travel speeds rather than from capacity restrictions and the associated queueing and stop-start driving conditions.
4) The impacts of Option 1 could be mitigated, at least in part, through careful design of the newly created pedestrian signals. For example, increasing the time to respond to pedestrian calls, and coordination with adjacent signals, would increase traffic capacity, although this would be at the expense of pedestrian levels of service.
5) A further impact of the new tram stop just north of Alexandra Parade (Stop 17) is that uncoordinated operation of the POS leads to queuing along Nicholson Street through the intersection. This POS would need to be coordinated with the Nicholson Street/Alexandra Parade signals to avoid this condition.

[1] Stops 13 and 14 are consolidated into a single stop at Carlton Street under this scenario.
[2] With the exception of the section from Gertrude Street and Carlton Street, where the speed limit is currently set at 40 km/h.

1. Introduction

1.1 Background

Public Transport Victoria (PTV) is currently undertaking preliminary design work for the Route 96 Upgrade project. In broad terms, the project aims to create Melbourne's first fully accessible tram route, and to this end the project scope includes:

" *upgrading tram stops to level access, making them safer and accessible*

  relocating or removing some tram stops to make sure stops are spaced more evenly, improving access and tram journey times;

  measures to improve service journey time and reliability; and

  new terminus stops at Blyth Street, East Brunswick and Acland Street, St Kilda."

(Source: *www.ptv.vic.gov.au/projects/trams/route-96-upgrade*)

Jacobs have a current contract with Public Transport Victoria (PTV) for provide detailed engineering design services for the project, and in the course of this work have identified design issues associated with a number of proposed tram stops along the Nicholson Street section of the route. Specifically, there is insufficient space to provide island style, DDA-compliant stops at four locations without reducing the number of adjacent traffic and/or parking lanes. The four locations are:

- Stop Number 13/14, which combes the existing Hanover Street and Bell Street stops into a single stop near Carlton Street;
- Stop Number 16 (near Kay Street);
- Stop Number 17 (near Alexandra Parade); and
- Stop Number 18/19, which combines the existing Freeman Street and Tempany Street stops into a single stop near Fenwick Street.

A variety of design solutions are being investigated, one of which involves prioritising Nicholson Street as a public transport corridor and reducing the number of traffic lanes adjacent to each of these stops.

In addition, PTV wishes to test the implications of reducing the speed limit along Nicholson Street between Carlton Street and Brunswick Road to 40kph.

As a busy primary arterial road, the traffic implications of these changes need to be understood. To provide a sound, quantitative basis for assessing the options, Jacobs have been commissioned by PTV to develop a microsimulation model of this section of Nicholson Street using the VISSIM software platform.

1.2 Purpose of this Report

This Report has been prepared to clearly document the development of, and results obtained from, the Nicholson Street microsimulation model. It is intended to provide sufficient detail such that the PTV, VicRoads and other parties can be confident that the modelling is sufficiently robust for the purposes of the study, and to this end the Report is structured as follows:

- Chapter 2 provides an overview of the modelling approach, and sets out the general modelling specifications;
- Chapter 3 documents the traffic survey and other data used to develop and calibrate the model;
- Chapter 4 sets out the results of the model calibration and validation process;
- Chapter 5 details the alternative options for Nicholson Street, and presents statistics on their relative traffic impacts; and
- Chapter 6 concludes the report by summarising the key findings.

2. Modelling Specification

2.1 General Approach

The section of Nicholson Street under investigation is characterised by a total of 11 closely-spaced signalised intersections, linked to minimise delays to trams and provide formal crossing points for pedestrians. Considering the vehicle and tram-actuated signal logic, and the potential for interactions between intersections (such as queue blockages between adjacent signals), it was evident at the outset of the study that any realistic representation of traffic, tram, and pedestrian/cyclist operations could only be achieved using micro-simulation.

2.2 Study Area

To capture the traffic impacts of options under investigation, the micro-simulation model has been limited to the length of Nicholson Street between Gertrude Street and Brunswick area as shown in Figure 2.1.

We note that limiting the modelled area in this way does not account for any strategic reassignment of traffic as a result of the options.

2.3 Time Periods and Forecast Years

Jacobs previous experience with modelling and analysis work in inner-city locations suggests that the morning and evening peak period can be captured by modelling the following time periods:

- A two-hour morning peak period from 7:00am to 9:00am; and
- A two-hour afternoon peak period 4:00pm to 6:00pm.

Inner-city primary arterial road such as Nicholson Street have limited capacity for additional traffic growth, and for this reason we have not explicitly modelled any particular forecasts year, but have maintained current traffic demands for both the existing and project-case models.

2.4 Other Modelling Parameters

Other features of the VISSIM models are as follows:

- Traffic demands were modelled at for 15-minute intervals throughout each time period, taken from published SCATS detector counts at all available locations within the study area;
- Vehicle route selection was modelled using VISSIM's dynamic routing option and synthesised origin-destination matrices;
- All tram operations, including stops, have been included using static routing and published timetable information;
- Light vehicles and heavy vehicles have not been separately defined;
- VISSIM's Vehicle Actuated Programming (VAP) module has been used to model demand-actuated operation of all traffic signals;
- The simulation has included 15-minute warm-up and cool-down periods at the beginning and end of each time period;

- Reduced speed areas on all turns at intersections and speed humps have been coded;
- Desired vehicle speeds have been identified from posted speed limits; and
- All reported results are the average of 10 simulation runs[3] unless otherwise noted.

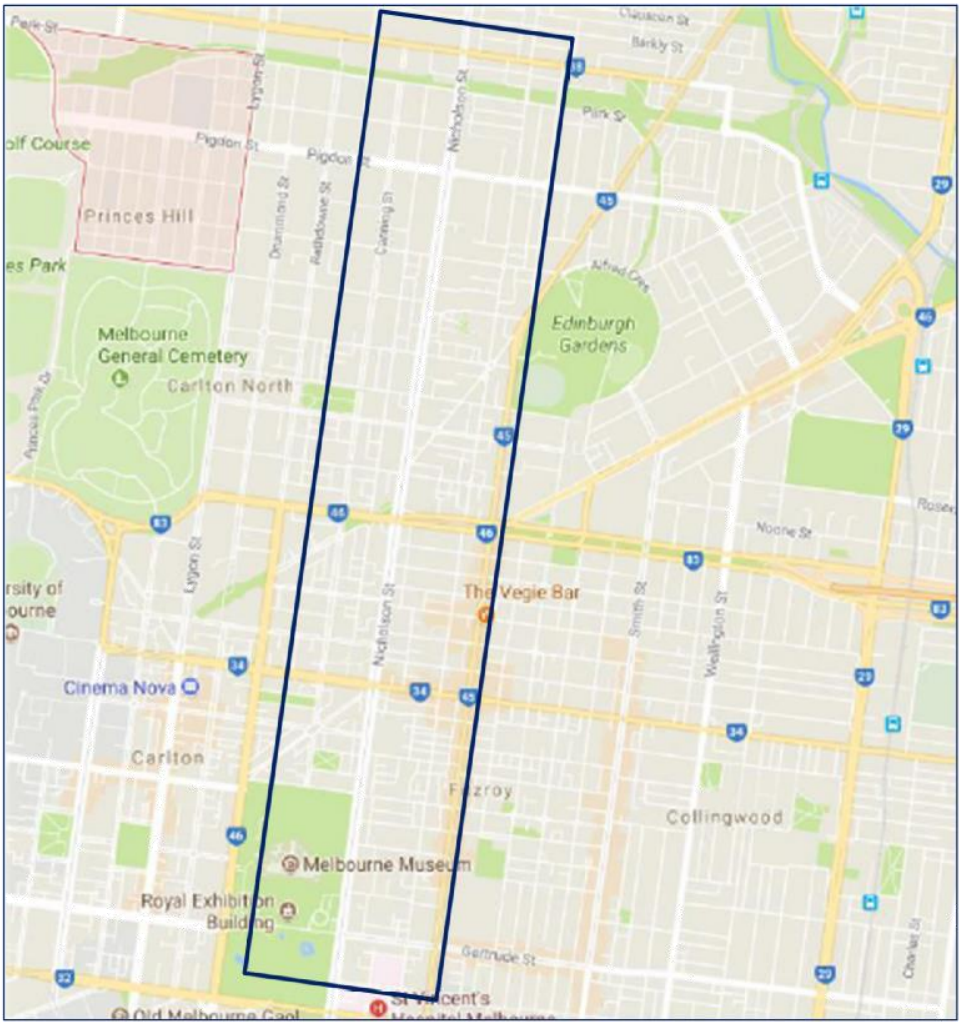


Figure 2.1 : Nicholson Street VISSIM Model Area

[3] Starting random number seed of 42, with increments of 50.

3. Data Sources

3.1 SCATS Data

3.1.1 Detector Counts

The timing and budget for the study precluded traffic and pedestrian surveys being undertaken.

Traffic demands have therefore been taken from the published SCATS detector counts at every signalised intersection within the study area, namely:

- Nicholson Street/Gertrude Street (Site 4419);
- Nicholson Street POS near Hanover Street (Site 4428);
- Nicholson Street POS near Bell Street (Site 4420);
- Nicholson Street/Elgin Street/Johnston Street (Site 3450);
- Nicholson Street POS near Kay Street (Site 4427);
- Nicholson Street/Princes Street/Alexandra Parade (Site 2100);
- Nicholson Street POS near Freeman Street (Site 4423);
- Nicholson Street/Richardson Street/Reid Street (Site 4426);
- Nicholson Street/Pigdon Street/Scotchmer Street (Site 4421);
- Nicholson Street POS near Park Street (Site 3116); and
- Nicholson Street/Brunswick Road/Holden Street (Site 3115);

The data was extracted for 15-minute intervals over the course of the modelled AM and PM periods, for Wednesday August 16th 2017. A single day was selected so there would be compatibility between the traffic demands, signal timings and the observed travel times.

3.1.2 SCATS Intersection Diagnostic Monitor (IDM) Data

The Intersection Diagnostic Monitor (IDM) data for each signalised intersection in the study area was provided by VicRoads, for the selected day and time periods, broken down into 15-minute intervals.

Further details on the IDM data is provided in Section 4.5.3.

3.1.3 Signal Operations Sheets

Signal operations sheets for each signalised intersection were used as the basis for modelling the signal logic. This is discussed in more detail in Section 4.3.

3.2 Bluetooth Travel Time Data

VicRoads now collect travel time data at numerous locations across the road network, where bluetooth detectors located in the signal controller cabinets are able to provide average travel times between collection points throughout the day.

Within the study area, data is available for two routes, namely:

- **Route 1** - Along Nicholson Street between Brunswick Road and Alexandra Parade; and
- **Route 2** - Along Nicholson Street between Elgin Street and Alexandra Parade.

The data for Wednesday August 16th, presented as travel speeds averaged over 5-minute intervals throughout the two peak periods and split by direction, are shown in Figure 3.1 to Figure 3.4.

Inspection of the bluetooth data raises some concerns about its reliability. For example, one section showed an *average* travel speed of over 60 km/h, for a section that included the Nicholson Street/Alexandra Parade signals (Figure 3.3). It is possible that the data included such a small sample that by chance, only those few vehicles traversing the section (and the signals) without delay were recorded. Another possibility is that the accuracy of the vehicle detectors can pick up vehicles well before they reach the signal stop-line and incur any delay. Given that, as we understand it, the accuracy of the vehicle location is only to 50m, both of these scenarios are quite possible. In fact, there is likely to be wide variation in the effective start and stop points between which the travel times for each vehicle are recorded, and the suitability of this data for the purposes of simulation model validation is questionable.

3.3 Other Data Sources

3.3.1 Public Transport

Tram timetables currently in effect were used to model the passage of trams through the study area, including dwell times at the designated tram stops. All routes in operation within the study area were modelled in this way[4].

There are no bus routes with stops along Nicholson Street within the study area, and any routes crossing the study area were not deemed to have sufficient impact on traffic operations along Nicholson Street to warrant inclusions in the model.

3.3.2 Speed Limits and Parking Restrictions

A desktop survey of current posted speed limits and parking restrictions along Nicholson Street was undertaken using Google StreetView. This revealed that:

- Other than a school zone where morning and afternoon time speeds limits of 40km/h are in effect, the entire modelled length of Nicholson Street is posted at 60km/h;
- Two through traffic lanes in each direction are maintained throughout the morning and evening peak periods along the entire modelled section of Nicholson Street.

[4] Corresponding to Routes 96 and 86,

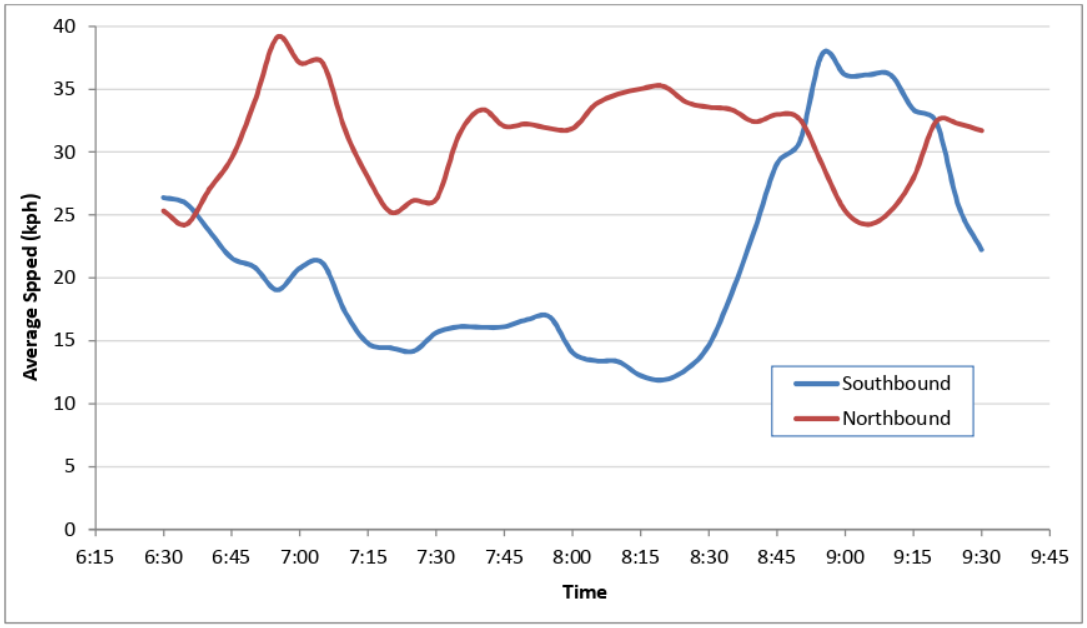


Figure 3.1 : Nicholson Street Travel Speeds, Alexandra Parade to Brunswick Road (AM Period)

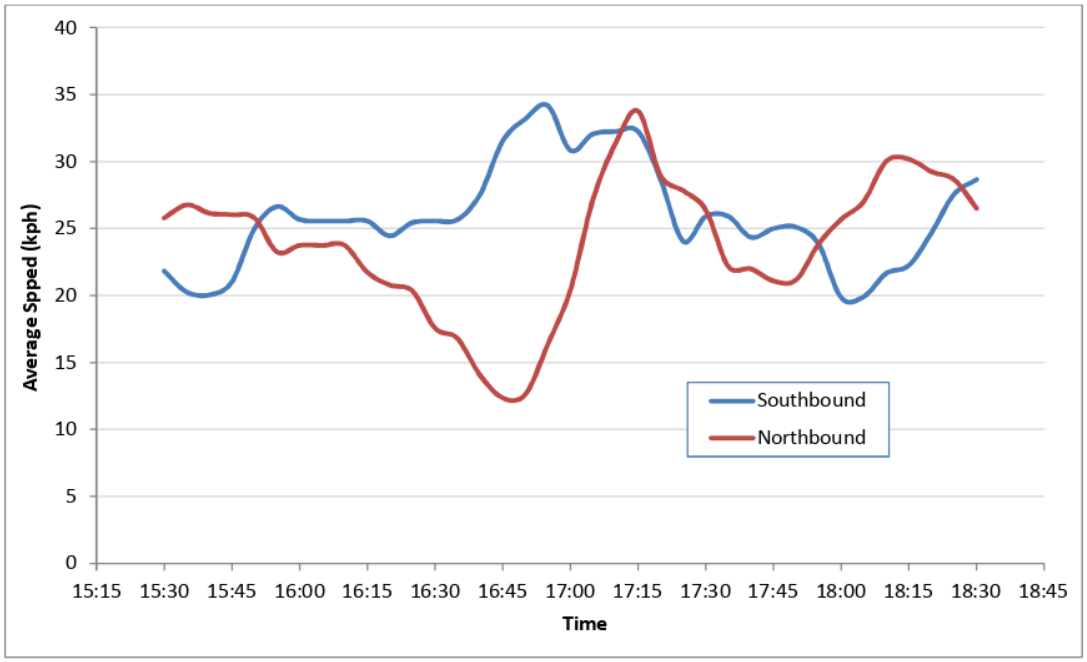


Figure 3.2 : Nicholson Street Travel Speeds, Alexandra Parade to Brunswick Road (PM Period)

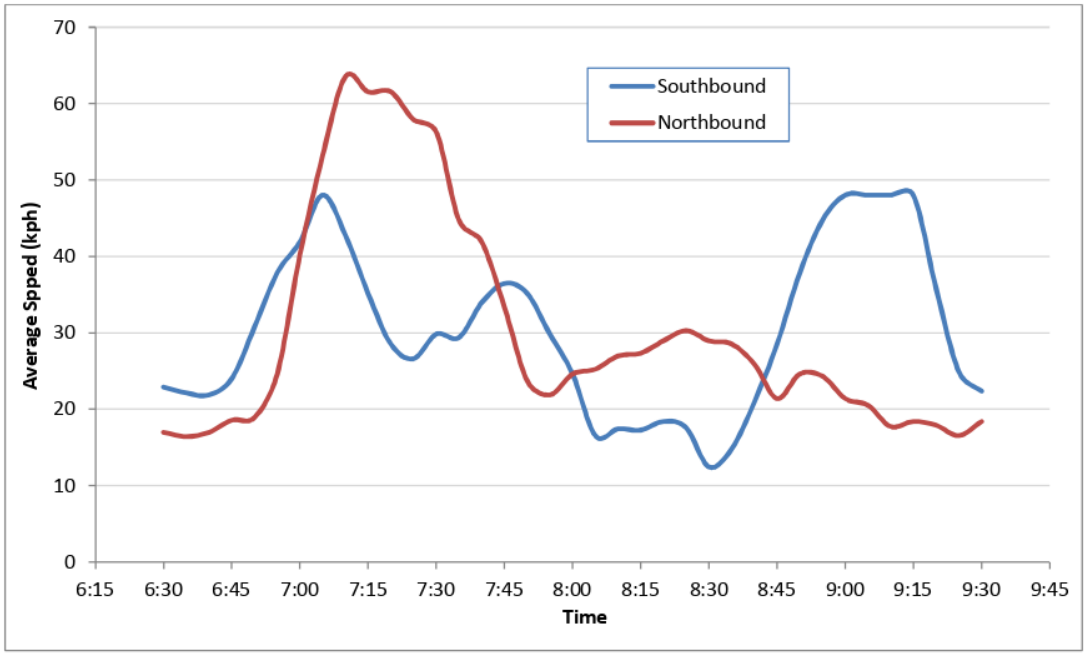


Figure 3.3 : Nicholson Street Travel Speeds, Elgin Street to Alexandra Parade (AM Period)

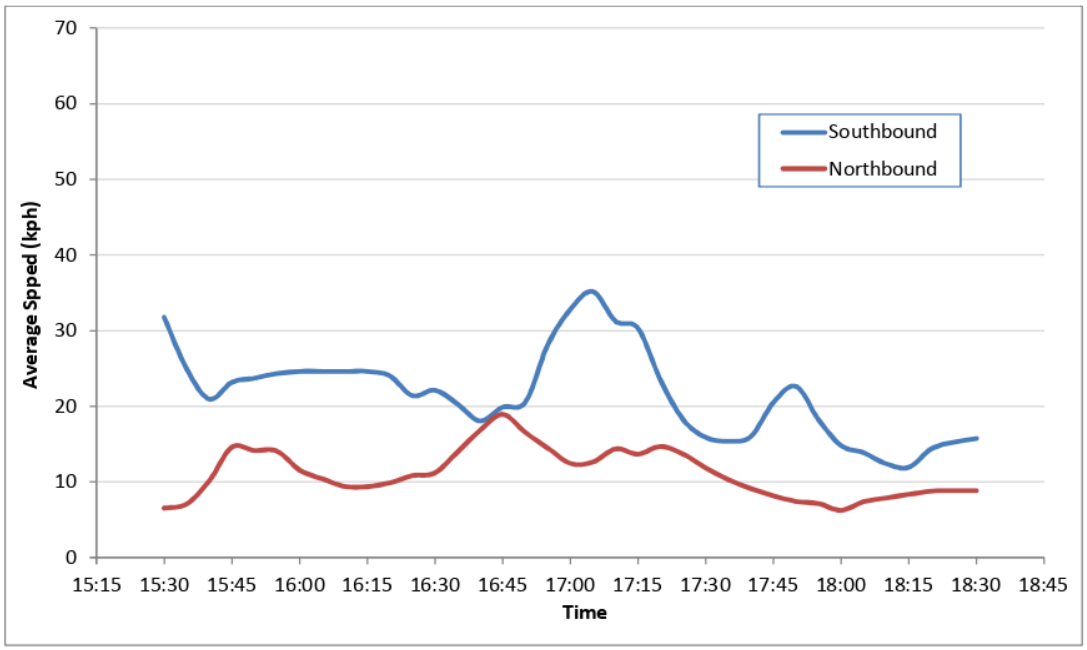


Figure 3.4 : Nicholson Street Travel Speeds, Elgin Street to Alexandra Parade (PM Period)

4. Base Year (2017) Model Development

4.1 Network Coding

The base year networks were coded from high-resolution aerial photographs covering the study area, so the network geometry has been captured to a high level of detail and accuracy.

It should be noted that only the roads at signalised intersections along Nicholson Street have been explicitly modelled. Because no data is available at the numerous priority-controlled intersections and driveways, it has not been possible (or desirable) to model all possible points of vehicle entry and exit along Nicholson Street. Instead, a simplified network has been coded where the side-streets and driveways are represented by 'dummy' links much like the centroid connectors used in strategic transport models. These links act as traffic sources and sinks, allowing for the entry and exit of vehicles not otherwise represented by the major roads, and allowing the traffic discontinuities at successive signalised intersections to be accounted for. By doing this, a demand matrix can be prepared which reproduces the observed SCATS detector counts very accurately.

Given this network representation, current traffic demands have been modelled by developing a synthesised matrix for all traffic between the model entry and exit points, for every 15 minutes over the modelled periods.

The model animations were closely observed to detect any unusual vehicle behaviour and to ensure lane choice, lane changing and observance of priorities, conflicts and '*Keep Clear*' areas was logical.

Other features of the base-year model development and simulation settings are as discussed in Chapter 2.

4.2 Matrix Estimation

As noted, the only traffic data available for the study was that available from recent SCATS detector counts at the signalised intersections and pedestrian crossings.

To convert this incomplete information into a form that could be used for the traffic simulation, a matrix estimation technique was applied to produce synthetic (as opposed to observed) origin-destination patterns for every 15-minute interval within the modelled time periods.

The specific technique employed was the *maximum-entropy* method, for which Jacobs has specially designed software. The mathematical details of this technique can be found in the literature and are not reproduced here, suffice to say that it produces the most probable trip matrix given the constraint that it must also produce the observed traffic movements. Under conditions where a network is coded to allow for unobserved traffic movements and there is a single traffic route between every OD pair, the resultant matrix will reproduce the observed movements almost exactly[5].

4.3 Traffic Signal Operations

Traffic signals in Melbourne operate under the SCATS control system, where phase sequences and green splits are dynamically adjusted according to traffic demand. Replicating this dynamic operation in a micro-simulation model can present a major challenge, especially for intersections with complex control logic.

[5] Subject to round-off error.

In these cases, VISSIM provides a mechanism for modelling dynamic operations using the VAP module. This module enables full control over all aspects of signal operations, so the particular signal logic can be implemented provided that the control logic and timing parameters are available in sufficient detail.

We note that no attempt has been made to mimic the SCATS logic in all its complexity. The objective was to review the IDM data to find the cycle times, and the frequency and duration of the various phases at each site on the selected day, then to implement the logic sufficiently to reproduce these statistics to an acceptable degree of accuracy, based on the logic documented in the signal operations sheets. For most of the signalised intersections, this is achieved when the VAP signal logic includes:

- Vehicle-actuated phases, by allowing phases to skip where no call is recorded (other than the pivot phase), and to terminate a phase when it gaps out;
- Re-allocation of unused green times to other phases within the cycle, in accordance with the SCATS settings for the site;
- Realistic values for inter-greens, minimum and maximum green times, green time extensions, early and late starts, as indicated by the IDM statistics and operations sheets;
- The logic associated with public transport priority, including remote calls from upstream detectors; and
- Pedestrian calls where these are reasonably frequent and where they have a significant influence on vehicle operations.

With these principles in mind, the operations sheets and IDM data for each signal installation was reviewed, and a corresponding VAP file developed to replicate the particular logic at each location.

4.4 Approach to Calibration and Validation

4.4.1 General Approach

The approach to calibrating the model centred on traffic signal operations. Once each VAP file was operating correctly in respect to the basic signal logic, successive changes were made to the *maximum extension green time* for each phase, until the modelled phase frequencies, average phase times and average cycle times were a close match to observed operations.

The model was then run, and the modelled detector counts checked against the SCATS counts. In the case of the pedestrian operated signals, the volume of pedestrians (for which no actual data was available) was successively adjusted until there was a reasonable match between the observed and modelled actuations at each location. This process was repeated until the modelled results showed a close correlation to observed data, as discussed in section 4.5.

4.4.2 Note on Validation

To validate the model, it was intended to use the Bluetooth vehicle travel time data available from VicRoads, as presented in section 3.2. As discussed, this data was available for two sections of Nicholson Street, but analysis of the data raised concerns about its reliability. While we have presented the results of the comparison between modelled and 'observed' travel times (see section 4.5.2), the correlation between the two is poor, and the model remains unvalidated in this respect.

4.5 Base Model Results

4.5.1 Traffic Volumes

The comparison between the observed and modelled traffic volumes is shown in Table 4.1 and Table 4.2 for the morning and evening peak periods respectively. The volumes have been analysed in terms of the turning movements at each signalised location for which a SCATS detector count was available, aggregated for the whole of the modelled period.

The results show a very good correlation between modelled and observed traffic demands. This result is not unexpected – as discussed in section 4.1 and 4.2, the coding of the network along with the matrix estimation methodology were engineered such that a very close correlation would result.

Table 4.1 : Traffic Volume Comparison, AM Period (07:00-09:00)

Location	Approach	Movements	Modelled Volume	Observed Volume	GEH	% Diff.
Gertrude St / Nicholson St	North	Left + Thru	1,131	1,132	0.0	-0.1%
Gertrude St / Nicholson St	East	Left	225	227	0.1	-0.9%
Gertrude St / Nicholson St	East	Right	262	250	0.5	4.8%
Gertrude St / Nicholson St	South	Thru	579	593	0.4	-2.4%
Gertrude St / Nicholson St	South	Right	107	107	0.0	0.0%
NR Hannover St / Nicholson St	North	Thru	1,453	1,453	0.0	0.0%
NR Hannover St / Nicholson St	South	Thru	872	928	1.3	-6.0%
NR Bell St / Nicholson St	North	Thru	1,540	1,543	0.1	-0.2%
NR Bell St / Nicholson St	South	Thru	833	845	0.3	-1.4%
Elgin St / Johnston St / Nicholson St	North	Left + Thru	1,466	1,492	0.5	-1.7%
Elgin St / Johnston St / Nicholson St	North	Right	371	385	0.5	-3.6%
Elgin St / Johnston St / Nicholson St	East	Left + Thru	1,696	1,693	0.1	0.2%
Elgin St / Johnston St / Nicholson St	East	Right	199	194	0.3	2.6%
Elgin St / Johnston St / Nicholson St	South	Left + Thru	700	701	0.0	-0.1%
Elgin St / Johnston St / Nicholson St	South	Right	81	83	0.2	-2.4%
Elgin St / Johnston St / Nicholson St	West	Left	147	147	0.0	0.0%
Elgin St / Johnston St / Nicholson St	West	Thru	742	738	0.1	0.5%
Elgin St / Johnston St / Nicholson St	West	Right	104	108	0.3	-3.7%
NR Kay / Nicholson St	North	Thru	2,032	2,046	0.2	-0.7%
NR Kay / Nicholson St	South	Thru	981	987	0.1	-0.6%
Alexandra / Princes St / Nicholson St	North	Thru	900	909	0.2	-1.0%
Alexandra / Princes St / Nicholson St	North	Right	114	125	0.7	-8.8%
Alexandra / Princes St / Nicholson St	East	Left	944	964	0.5	-2.1%
Alexandra / Princes St / Nicholson St	East	Thru	5,064	5,073	0.1	-0.2%
Alexandra / Princes St / Nicholson St	East	Right	299	295	0.2	1.4%
Alexandra / Princes St / Nicholson St	South	Left + Thru	646	660	0.4	-2.1%
Alexandra / Princes St / Nicholson St	South	Right	279	288	0.4	-3.1%
Alexandra / Princes St / Nicholson St	West	Left	599	626	0.8	-4.3%
Alexandra / Princes St / Nicholson St	West	Thru	3,620	3,604	0.2	0.4%
Alexandra / Princes St / Nicholson St	West	Right	81	80	0.1	1.3%
NR Freeman St / Nicholson St	North	Thru	1,609	1,621	0.2	-0.7%
NR Freeman St / Nicholson St	South	Thru	969	952	0.4	1.8%

Location	Approach	Movements	Modelled Volume	Observed Volume	GEH	% Diff.
Richardson St / Reid St / Nicholson St	North	Left + Thru + Right	1,747	1,780	0.6	-1.9%
Richardson St / Reid St / Nicholson St	East	Left	117	129	0.8	-9.3%
Richardson St / Reid St / Nicholson St	East	Thru + Right	349	349	0.0	0.0%
Richardson St / Reid St / Nicholson St	South	Left + Thru + Right	915	928	0.3	-1.4%
Richardson St / Reid St / Nicholson St	West	Left + Thru + Right	158	163	0.3	-3.1%
Pigdon St / Scotchmer St / Nicholson St	North	Left + Thru + Right	1,775	1,798	0.4	-1.3%
Pigdon St / Scotchmer St / Nicholson St	East	Left + Thru + Right	395	410	0.5	-3.7%
Pigdon St / Scotchmer St / Nicholson St	South	Left + Thru + Right	969	969	0.0	0.0%
Pigdon St / Scotchmer St / Nicholson St	West	Left	100	101	0.1	-1.0%
Pigdon St / Scotchmer St / Nicholson St	West	Thru + Right	264	270	0.3	-2.2%
NR Park St / Nicholson St	North	Thru	1,698	1,725	0.5	-1.6%
Brunswick Rd / Holden St / Nicholson St	North	Left + Thru + Right	1,831	1,855	0.4	-1.3%
Brunswick Rd / Holden St / Nicholson St	East	Left + Thru + Right	838	857	0.5	-2.2%
Brunswick Rd / Holden St / Nicholson St	South	Left + Thru + Right	883	885	0.0	-0.2%
Brunswick Rd / Holden St / Nicholson St	West	Left	116	115	0.1	0.9%
Brunswick Rd / Holden St / Nicholson St	West	Thru	609	611	0.1	-0.3%
Brunswick Rd / Holden St / Nicholson St	West	Right	283	287	0.2	-1.4%
Gertrude St / Nicholson St	South	Departure side	1,283	1,281	0.0	0.2%
Total Volume			**44,975**	**45,362**	**-**	**-0.9%**

Table 4.2 : Traffic Volume Comparison, PM Period (16:00-18:00)

Location	Approach	Movements	Modelled Volume	Observed Volume	GEH	% Diff.
Gertrude St / Nicholson St	North	Left + Thru	805	828	0.6	-2.8%
Gertrude St / Nicholson St	East	Left	240	241	0.0	-0.4%
Gertrude St / Nicholson St	East	Right	405	397	0.3	2.0%
Gertrude St / Nicholson St	South	Thru	1,469	1,467	0.0	0.1%
Gertrude St / Nicholson St	South	Right	217	217	0.0	0.0%
NR Hannover St / Nicholson St	North	Thru	925	949	0.6	-2.5%
NR Hannover St / Nicholson St	South	Thru	2,005	2,170	2.6	-7.6%
NR Bell St / Nicholson St	North	Thru	951	985	0.8	-3.5%
NR Bell St / Nicholson St	South	Thru	1,911	1,926	0.2	-0.8%
Elgin St / Johnston St / Nicholson St	North	Left + Thru	917	939	0.5	-2.3%
Elgin St / Johnston St / Nicholson St	North	Right	201	200	0.0	0.5%
Elgin St / Johnston St / Nicholson St	East	Left + Thru	897	900	0.1	-0.3%
Elgin St / Johnston St / Nicholson St	East	Right	188	187	0.1	0.5%
Elgin St / Johnston St / Nicholson St	South	Left + Thru	1,598	1,600	0.0	-0.1%
Elgin St / Johnston St / Nicholson St	South	Right	210	210	0.0	0.0%
Elgin St / Johnston St / Nicholson St	West	Left	376	377	0.0	-0.3%
Elgin St / Johnston St / Nicholson St	West	Thru	1,718	1,720	0.0	-0.1%
Elgin St / Johnston St / Nicholson St	West	Right	85	88	0.2	-3.4%
NR Kay / Nicholson St	North	Thru	1,299	1,338	0.8	-2.9%
NR Kay / Nicholson St	South	Thru	1,950	1,958	0.1	-0.4%
Alexandra / Princes St / Nicholson St	North	Thru	607	623	0.5	-2.6%

Location	Approach	Movements	Modelled Volume	Observed Volume	GEH	% Diff.
Alexandra / Princes St / Nicholson St	North	Right	81	83	0.2	-2.4%
Alexandra / Princes St / Nicholson St	East	Left	557	569	0.4	-2.1%
Alexandra / Princes St / Nicholson St	East	Thru	3,984	4,044	0.7	-1.5%
Alexandra / Princes St / Nicholson St	East	Right	387	393	0.2	-1.5%
Alexandra / Princes St / Nicholson St	South	Left + Thru	1,400	1,401	0.0	-0.1%
Alexandra / Princes St / Nicholson St	South	Right	475	475	0.0	0.0%
Alexandra / Princes St / Nicholson St	West	Left	1,036	1,077	0.9	-3.8%
Alexandra / Princes St / Nicholson St	West	Thru	3,823	3,813	0.1	0.3%
Alexandra / Princes St / Nicholson St	West	Right	69	67	0.2	3.0%
NR Freeman St / Nicholson St	North	Thru	1,476	1,498	0.4	-1.5%
NR Freeman St / Nicholson St	South	Thru	1,850	1,831	0.3	1.0%
Richardson St / Reid St / Nicholson St	North	Left + Thru + Right	1,427	1,463	0.7	-2.5%
Richardson St / Reid St / Nicholson St	East	Left	149	150	0.1	-0.7%
Richardson St / Reid St / Nicholson St	East	Thru + Right	297	303	0.2	-2.0%
Richardson St / Reid St / Nicholson St	South	Left + Thru + Right	1,800	1,812	0.2	-0.7%
Richardson St / Reid St / Nicholson St	West	Left + Thru + Right	366	362	0.1	1.1%
Pigdon St / Scotchmer St / Nicholson St	North	Left + Thru + Right	1,373	1,388	0.3	-1.1%
Pigdon St / Scotchmer St / Nicholson St	East	Left + Thru + Right	359	366	0.3	-1.9%
Pigdon St / Scotchmer St / Nicholson St	South	Left + Thru + Right	1,694	1,688	0.1	0.4%
Pigdon St / Scotchmer St / Nicholson St	West	Left	187	200	0.7	-6.5%
Pigdon St / Scotchmer St / Nicholson St	West	Thru + Right	374	399	0.9	-6.3%
NR Park St / Nicholson St	North	Thru	1,714	1,726	0.2	-0.7%
Brunswick Rd / Holden St / Nicholson St	North	Left + Thru + Right	1,258	1,237	0.4	1.7%
Brunswick Rd / Holden St / Nicholson St	East	Left + Thru + Right	808	840	0.8	-3.8%
Brunswick Rd / Holden St / Nicholson St	South	Left + Thru + Right	1,763	1,773	0.2	-0.6%
Brunswick Rd / Holden St / Nicholson St	West	Left	252	253	0.0	-0.4%
Brunswick Rd / Holden St / Nicholson St	West	Thru	689	689	0.0	0.0%
Brunswick Rd / Holden St / Nicholson St	West	Right	275	278	0.1	-1.1%
Gertrude St / Nicholson St	South	Departure	981	996	0.3	-1.5%
Total Volume			**49,878**	**50,494**	**-**	**-1.2%**

4.5.2 Travel Times

We have presented the travel time comparisons in the form of:

- A tabulated summary of average travel times for each modelled period, for each of the route (see Table 4.3); and
- A plot of total travel time over the identified routes, by direction, over the course of the entire modelled periods. These are shown in Figure 3.1 to Figure 3.4.

.

Table 4.3 : Travel Time Comparison

Nicholson Street Route	AM Period (7:00-9:00)		PM Period (16:00-18:00)	
	Bluetooth	Simulation	Bluetooth	Simulation
Brunswick Street to Alexandra Parade	336	181	236	186
Alexandra Parade to Brunswick Street	180	201	297	159
Alexandra Parade to Elgin Street	77	62	113	62
Elgin Street to Alexandra Parade	63	84	186	88

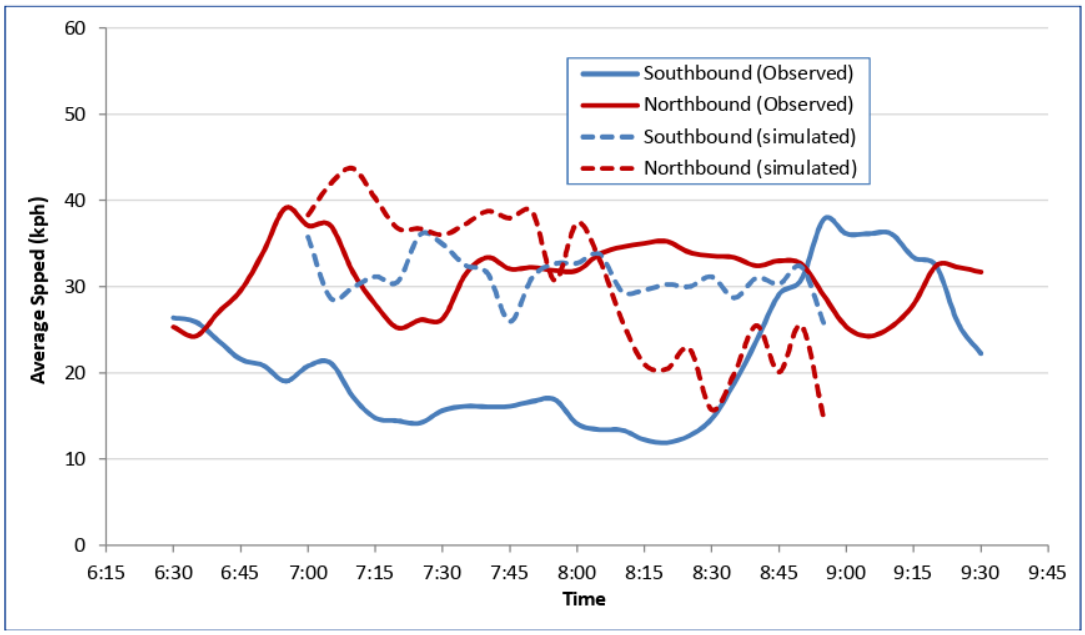


Figure 4.1 : Brunswick Street - Alexandra Parade Travel Speeds (AM Period)

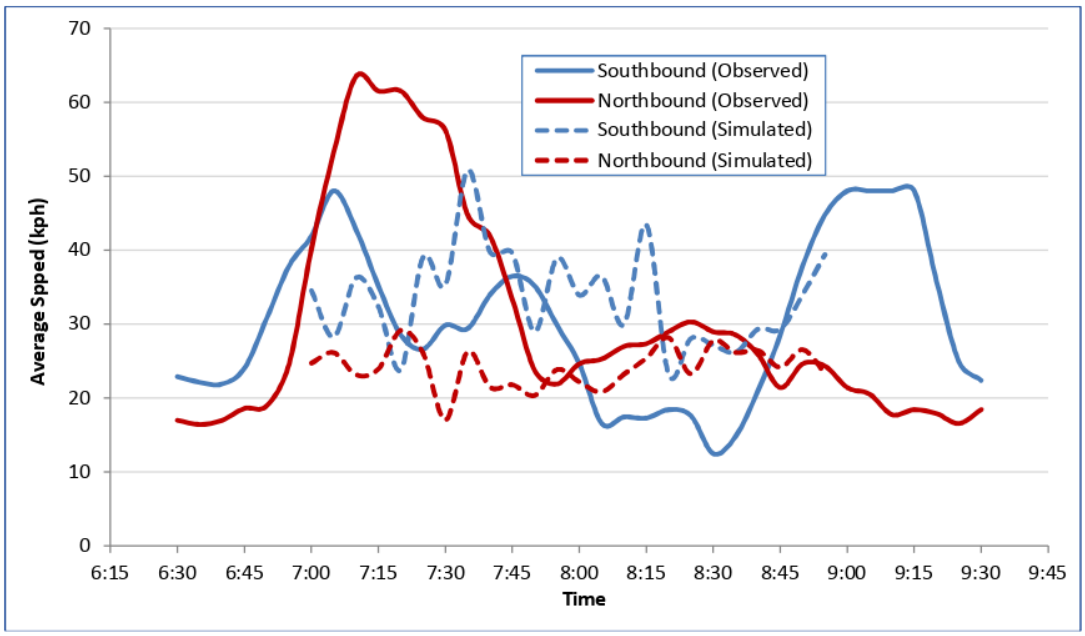


Figure 4.2 : Alexandra Parade - Elgin Street Travel Times (AM Period)

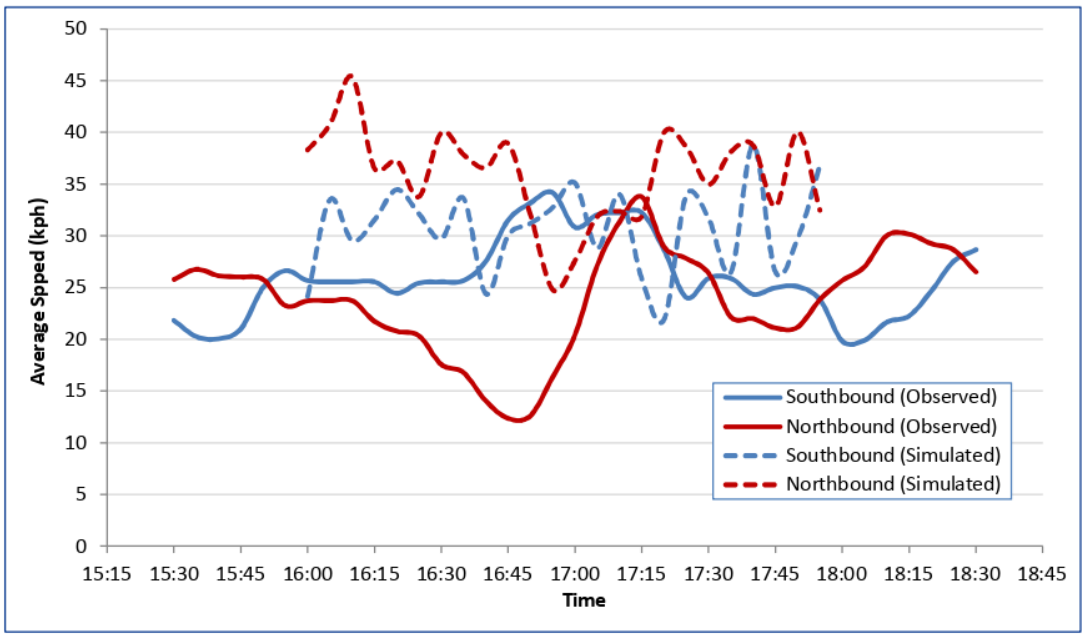


Figure 4.3 : Brunswick Street - Alexandra Parade Travel Speeds (PM Period)

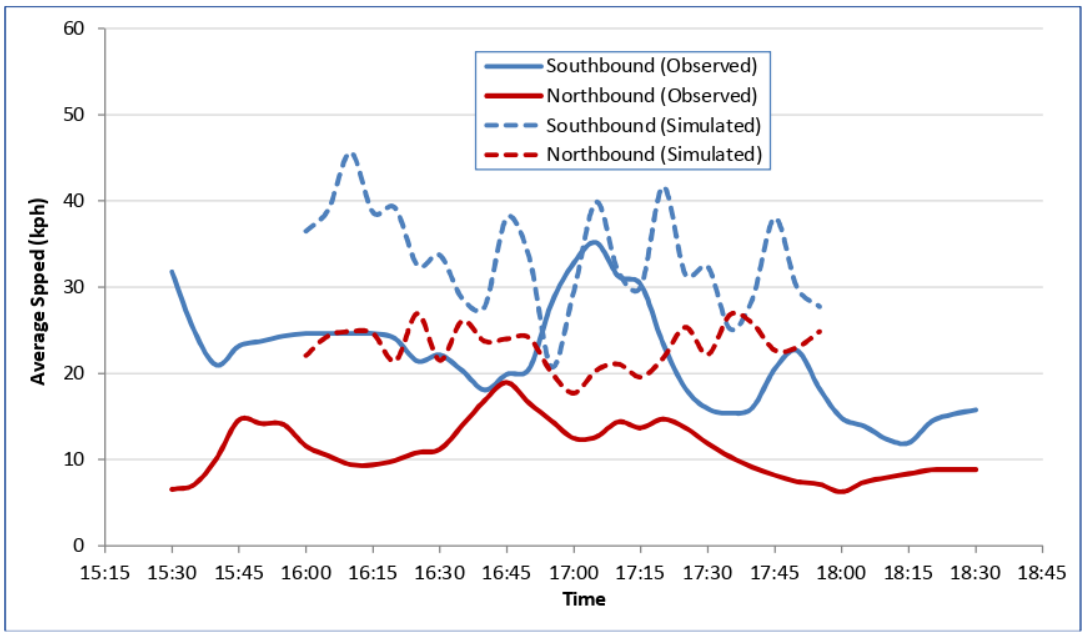


Figure 4.4 : Alexandra Parade - Elgin Street Travel Times (PM Period)

The comparisons generally show a poor level of correspondence between observed and modelled travel times. As discussed, the reliability of the Bluetooth data is questionable given its vehicle-location accuracy, and while we do not believe the poor correlation invalidates the model, we note that it remains unvalidated in respect to travel times and would be enhanced by the inclusion of reliable travel time information.

4.5.3 Traffic Signal Operations

The basic approach was to input the vehicle detectors, signal groups and phases, along with the SCATS timing parameters of minimum green, inter-green and gap-out times, and then manipulate the extension green times for each phase until the average phase times and cycle times from the IDM data were reproduced to an acceptable level of accuracy. This comparison is shown in Table 4.4 to Table 4.15 for all of the signalised intersections.

In terms of the critical statistics of average phase times and cycle times throughout the modelled periods, the Tables show that the simulation represents the observations very well.

Table 4.4 : Gertude Street Intersection - Comparison of Simulated and Observed Phase Times (7:00am-9:00am)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	95	94	1	36	65	36	35	36	46	47	3,327	3,384
B	19	16	14	14	15	14	14	14	4	3	271	224
C	60	62	6	12	23	22	15	14	12	12	879	857
D	86	93	2	13	33	33	30	29	36	38	2,556	2,700
E	2	-	12	-	13	-	13	-	0	-	25	-
F	9	-	15	-	16	-	16	-	2	-	142	-
G	0	0	0	0	0	0	0	0	0	0	0	0
										Total (s)	**7,200**	**7,164**
										Average Cycle Time (s)	**76**	**76**

Table 4.5 : Gertude Street Intersection - Comparison of Simulated and Observed Phase Times (4:00pm-6:00pm)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	88	93	1	32	51	32	32	32	39	42	2,794	2,976
B	18	25	14	14	15	14	14	14	4	5	257	350
C	78	78	14	12	23	23	17	15	19	16	1,344	1,178
D	82	93	12	13	35	35	30	28	35	37	2,497	2,645
E	2	-	13	-	13	-	13	-	0	-	26	-
F	18	-	15	-	16	-	16	-	4	-	282	-
G	0	0	0	0	0	0	0	0	0	0	0	0
										Total (s)	**7,200**	**7,149**
										Average Cycle Time (s)	**82**	**77**

Table 4.6 : Elgin Street Intersection - Comparison of Simulated and Observed Phase Times (7:00am-9:00am)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	70	72	2	27	61	52	36	37	35	37	2,543	2,641
B	10	-	9	-	16	-	11	-	1	-	107	-
C	42	48	5	12	21	19	15	12	9	8	612	598
D	70	72	3	35	56	35	34	35	33	35	2,366	2,484
E	14	16	11	11	11	11	12	11	2	2	165	176
F	62	70	4	12	45	27	22	18	19	18	1,378	1,274
G	5	-	2	-	8	-	6	-	0	-	29	-
										Total (s)	**7,200**	**7,172**
										Average Cycle Time (s)	**103**	**100**

Table 4.7 : Elgin Street Intersection - Comparison of Simulated and Observed Phase Times (4:00pm-6:00pm)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	69	66	1	26	62	42	34	37	33	34	2,363	2,434
B	9	-	9	-	15	-	10	-	1	-	93	-
C	4	27	12	12	13	15	12	12	1	4	49	315
D	71	66	2	46	62	46	46	46	46	42	3,300	3,003
E	20	15	10	11	11	11	11	11	3	2	210	165
F	67	67	3	18	37	24	17	19	15	17	1,114	1,240
G	10	-	7	-	8	-	7	-	1	-	71	-
										Total (s)	**7,200**	**7,156**
										Average Cycle Time (s)	**101**	**107**

Table 4.8 : Alexandra Parade Intersection - Comparison of Simulated and Observed Phase Times (7:00am-9:00am)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	49	49	5	68	123	68	68	68	46	46	3,343	3,307
B	19	16	11	11	11	11	11	11	3	2	209	168
C	46	49	6	11	38	21	21	16	13	11	947	799
D	46	49	14	26	52	51	35	38	23	26	1,628	1,838
E	4	5	13	13	13	13	13	13	1	1	52	65
F	45	49	3	13	45	27	23	20	14	14	1,021	981
										Total (s)	**7,200**	**7,158**
										Average Cycle Time (s)	**147**	**146**

Table 4.9 : Alexandra Parade Intersection - Comparison of Simulated and Observed Phase Times (4:00pm-6:00pm)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	49	47	7	72	106	72	72	72	49	47	3,552	3,361
B	16	18	11	11	11	11	11	11	2	3	176	189
C	43	48	1	11	35	45	24	23	14	16	1,042	1,124
D	47	47	2	23	55	33	32	32	21	21	1,490	1,502
E	3	6	6	13	13	13	9	13	0	1	26	78
F	31	47	13	12	33	33	29	19	13	13	914	900
										Total (s)	**7,200**	**7,153**
										Average Cycle Time (s)	**147**	**149**

Table 4.10 : Reid Street Intersection - Comparison of Simulated and Observed Phase Times (7:00am-9:00am)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	100	101	5	39	70	108	46	46	63	61	4,557	4,636
B	0		0		0		0		0		0	
C	104	97	5	14	31	31	25	26	37	36	2,643	2,556
D	0		0		0		0		0		0	
										Total (s)	**7,200**	**7,192**
										Average Cycle Time (s)	**72**	**71**

Table 4.11 : Reid Street Intersection - Comparison of Simulated and Observed Phase Times (4:00pm-6:00pm)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	89	88	3	41	122	122	55	55	68	68	4,912	4,836
B	0		0		0		0		0		0	
C	81	88	14	14	36	34	28	26	32	32	2,288	2,313
D	0		0		0		0		0		0	
										Total (s)	**7,200**	**7,149**
										Average Cycle Time (s)	**81**	**81**

Table 4.12 : Scotchmer Street Intersection - Comparison of Simulated and Observed Phase Times (7:00am-9:00am)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	103	94	7	46	67	95	45	48	64	63	4,606	4,535
B	0		0		0		0		0		0	
C	98	95	2	16	34	34	26	28	36	37	2,594	2,642
D	0		0		0		0		0		0	
										Total (s)	**7,200**	**7,177**
										Average Cycle Time (s)	**70**	**76**

Table 4.13 : Scotchmer Street Intersection - Comparison of Simulated and Observed Phase Times (4:00pm-6:00pm)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	83	82	8	56	108	116	59	60	69	68	4,936	4,912
B	0		0		0		0		0		0	
C	84	83	1	16	34	35	27	27	31	32	2,264	2,273
D	0		0		0		0		0		0	
										Total (s)	**7,200**	**7,184**
										Average Cycle Time (s)	**87**	**87**

Table 4.14 : Brunswick Road Intersection - Comparison of Simulated and Observed Phase Times (7:00am-9:00am)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	79	81	4	29	85	38	31	31	34	35	2,421	2,515
B	0	0	0	0	0	0	0	0	0	0	0	0
C	13	9	12	11	13	11	12	11	2	1	157	99
D	64	65	12	11	25	17	15	13	14	12	978	867
E	73	81	6	15	47	36	29	29	29	32	2,115	2,329
F	24	-	10	-	28	-	14	-	5	-	328	-
G	66	81	5	10	31	19	18	17	17	19	1,201	1,374
										Total (s)	**7,200**	**7,184**
										Average Cycle Time (s)	**91**	**89**

Table 4.15 : Brunswick Road Intersection - Comparison of Simulated and Observed Phase Times (4:00pm-6:00pm)

Phase	Frequency		Minimum (s)		Maximum (s)		Average (s)		Average (%)		Total (s)	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
A	75	74	1	39	66	39	39	39	41	40	2,916	2,886
B	0	0	0	0	0	0	0	0	0	0	0	0
C	12	9	2	11	13	11	11	11	2	2	133	99
D	57	62	12	11	25	17	15	13	12	11	880	812
E	76	75	5	17	51	36	31	30	33	31	2,355	2,254
F	39	-	4	-	23	-	11	-	6	-	428	-
G	37	75	8	10	19	15	13	15	7	16	488	1,112
										Total (s)	**7,200**	**7,162**
										Average Cycle Time (s)	**96**	**95**

Table 4.15: Signalised Intersections - Comparison of Simulated and Observed Pedestrian Actuations (7:00am-9:00am)

Phase	Number of actuations											
	Gertrude Street		Elgin Street		Alexandra Parade		Reid Street		Scotchmer Street		Brunswick Road	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
P1	59	73	62	68	30	31	22	47	99	79	44	56
P2	76	85	65	66	36	42	18	32	100	79	30	42
P3	69	79	67	65	34	37	29	31	81	66	32	35
P4	n/a	n/a	63	68	38	42	58	64	81	66	61	58
P5	n/a	n/a	n/a	n/a	17	20	n/a	n/a	n/a	n/a	n/a	n/a

Table 4.16: Signalised Intersections - Comparison of Simulated and Observed Pedestrian Actuations (4:00pm-6:00pm)

Phase	Number of actuations											
	Gertrude Street		Elgin Street		Alexandra Parade		Reid Street		Scotchmer Street		Brunswick Road	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
P1	64	57	64	53	33	25	34	38	85	79	53	42
P2	81	70	67	53	26	28	39	50	85	78	42	21
P3	73	64	68	53	38	28	34	18	65	53	31	18
P4	n/a	n/a	68	58	38	30	42	28	65	46	50	40
P5	n/a	n/a	n/a	n/a	27	28	n/a	n/a	n/a	n/a	n/a	n/a

Table 4.17: POS - Comparison of Simulated and Observed Pedestrian Actuations (7:00am-9:00am)

Phase	Number of actuations									
	Hannover Street		Bell Street		Kay Street		Freeman Street		Park Street	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
P1	54	72	22	26	33	38	11	9	72	70
P2	26	25	29	31	17	15	17	20	n/a	n/a

Table 4.18: POS - Comparison of Simulated and Observed Pedestrian Actuations (4:00pm-6:00pm)

Phase	Number of actuations									
	Hannover Street		Bell Street		Kay Street		Freeman Street		Park Street	
	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.	IDM	Sim.
P1	34	38	42	46	27	26	25	21	74	70
P2	51	50	22	25	46	41	12	12	n/a	n/a

5. Options Assessment

5.1 Base-Case and Project Options

The base-case models against which the project options are to be compared, are the 2017 calibrated model discussed in the previous chapter.

Four project-case models have been created from the calibrated base-year (2017) models, comprising:

- **Option 1 –** One model each for the AM and PM peak, where Nicholson Street is narrowed to one lane in each direction at tram stops 13/14[6], 14, 16, 17 and 18, with 2017 traffic demands;
- **Option 2** - One model each for the AM and PM peak, where Nicholson Street is posted at 40kph between Carlton Street and Brunswick Road, with 2017 traffic demands.

5.2 Future Model Development

5.2.1 Network Coding

To ensure that differences between the model results reflect the options under consideration, all network coding commenced with a copy of the base-year models, following which the proposed changes to the network were then coded in. This ensured that other than the changes directly associated with each of the options being tested, all elements of the model would be otherwise identical between all base-case and option models[7].

5.3 Network Performance Comparison

For the entire network included in the modelled area, Table 5.1 and Table 5.2 provide selected statistics which compare the performance of each option relative to current conditions.

This comparison shows that in terms of average delay, only Option 1 in the evening period shows any significant change from current conditions.

In respect to total travel time, Option 2 show the greatest increase over existing conditions. This result is expected, as the speed reduction along Nicholson Street will increase overall travel times even if delays do not change.

The network-wide statistics, while of interest, do tend to conceal any large but localised impacts of network changes, and a more detailed assessment of Nicholson Street travel times is contained in the next section.

[6] Stops 13 and 14 are consolidated into a single stop at Carlton Street under this scenario.
[7] Including signal operations, which have been left unaltered between the base-case and project options.

Table 5.1 : Average Network Statistics for AM Period (07:00-09:00)

Scenario	Average Delay (s/veh, all vehicles)	Total Travel Time (veh-hrs, all vehicles)	Total Vehicles	Latent Demand
Base Case	60	691	24,098	1
Option 1	60	729 (680*)	25,821	1
Option 2	60	746	24,095	1

* Value when normalised to base case vehicles

Table 5.2 : Average Network Statistics for PM Period (16:00-18:00)

Scenario	Average Delay (s/veh, all vehicles)	Total Travel Time (veh-hrs, all vehicles)	Total Vehicles	Latent Demand
Base Case	59	693	23,589	32
Option 1	65	732	23,660	32
Option 2	58	752	23,579	47

5.4 Nicholson Street Travel Times

As the focus of the study is on the impact of the options on traffic operations along Nicholson Street, the best single measure of impact is the before and after travel times along the sections of Nicholson Street between Gertrude Street and Brunswick Road. This comparison is presented graphically in Figure 5.1 to Figure 5.16 by direction and time period, over the course of each of the AM and PM peak periods.

We have analysed the modelled area of Nicholson Street by separately considering the major sections between signalised intersections, namely:

- Gertrude Street to Elgin Street;
- Elgin Street to Alexandra Parade;
- Alexandra Pare to Reid Street; and
- Reid Street to Brunswick Road.

5.4.1 Option 1

The travel time impacts arising from Option 1 vary considerably, depending on the time of day, and the section on Nicholson Street being considered.

During the morning period, the impacts are mostly insignificant, with two exceptions:

- Southbound traffic between Reid Street and Alexandra Parade show consistently higher travel times throughout the morning period. Closer inspection of the simulations show this is caused by the narrowing of the northern approach to the Nicholson Street/Alexandra Parade intersection, where the lane reduction adjacent to the new tram stop reduces one of the through lanes from a continuous lane to what is effectively a short lane. This reduces the capacity of this intersection approach; and
- Southbound traffic between Elgin Street and Gertrude Street also shown higher travel times from about 7:45 am onwards. This arises because of the combination of reduced traffic lanes at the new POS at Carlton Street, plus the increased pedestrian activity at this pedestrian crossing. In

modelling the new POS servicing the consolidated stops 13 and 14 at Carlton Street, we have assumed the pedestrian demand will be the sum of that currently occurring at Stop 13 (Hanover Street) and 14 (Bell Street). This reduces the green time to traffic movements at a location where there is a single through lane, substantially reducing the traffic capacity at this location compared to the base case.

For the afternoon period, there are three locations/times where Option 1 significantly increases travel times:

- Gertrude Street to Elgin Street, from about 4:45pm onwards;
- Elgin Street to Alexandra Parade through the afternoon period; and
- Reid Street to Alexandra Parade through most of the afternoon period.

In the first two cases, the situation is similar to that described for the morning period, that is, the combination of a single lane approach and a POS reduces stop-line capacity to create a mid-block bottleneck. The magnitude of the delays create at these locations is sensitive to the traffic demands, explaining why the impacts differ according to the time period and location.

In the third case noted above, again the situation is the same as for the morning peak – the conversion of a continuous through lane on the northern approach to a short lane reduces intersection capacity.

5.4.2 Option 2

Option 2 consistently shows higher travel times along all sections of Nicholson Street, during the morning and evening peak periods. This result is expected, as relative to the base case, this option involves a reduction in the posted speed limit to 40kph, with all else being equal.

We note that increased travel time does not necessarily equate to greater delay or congestion as a result of the speed reduction. In fact, the Figure 5.1 to Figure 5.16 show a very consistent increase in travel times relative to the base case across all time periods and road sections, where the line showing the Option 2 travel time closely parallels the corresponding line for the base case.

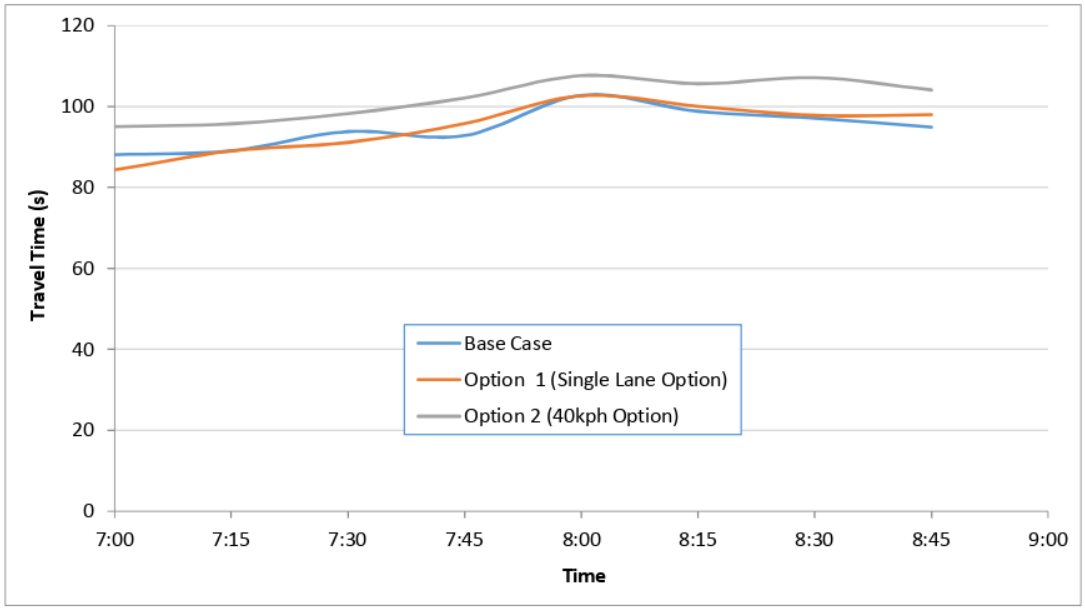


Figure 5.1 : Travel Times Gertrude Street to Elgin Street (AM Peak)

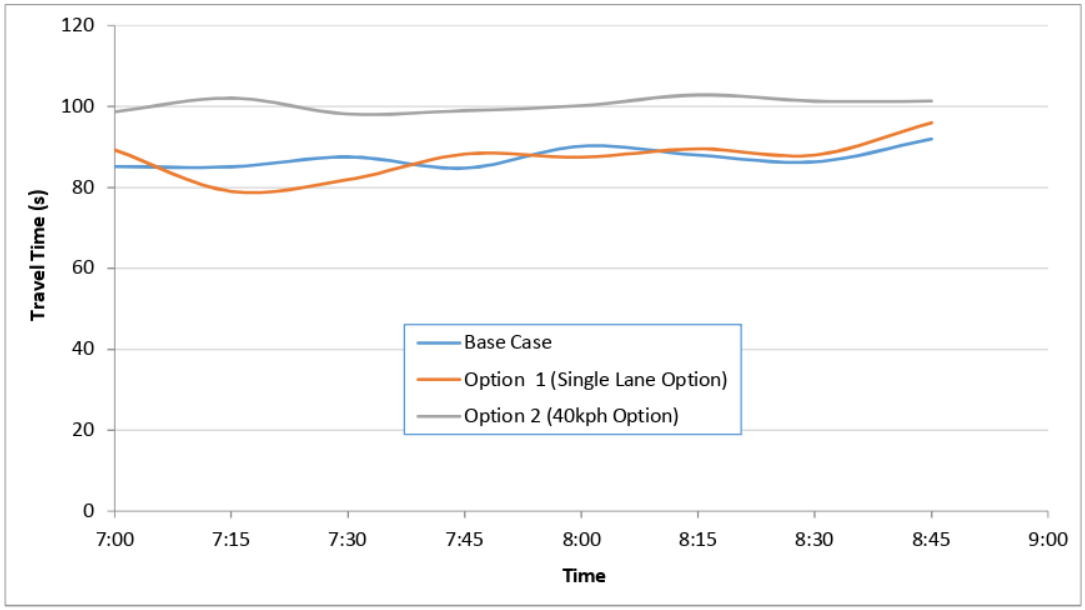


Figure 5.2 : Travel Times Elgin Street to Alexandra Parade (AM Peak)

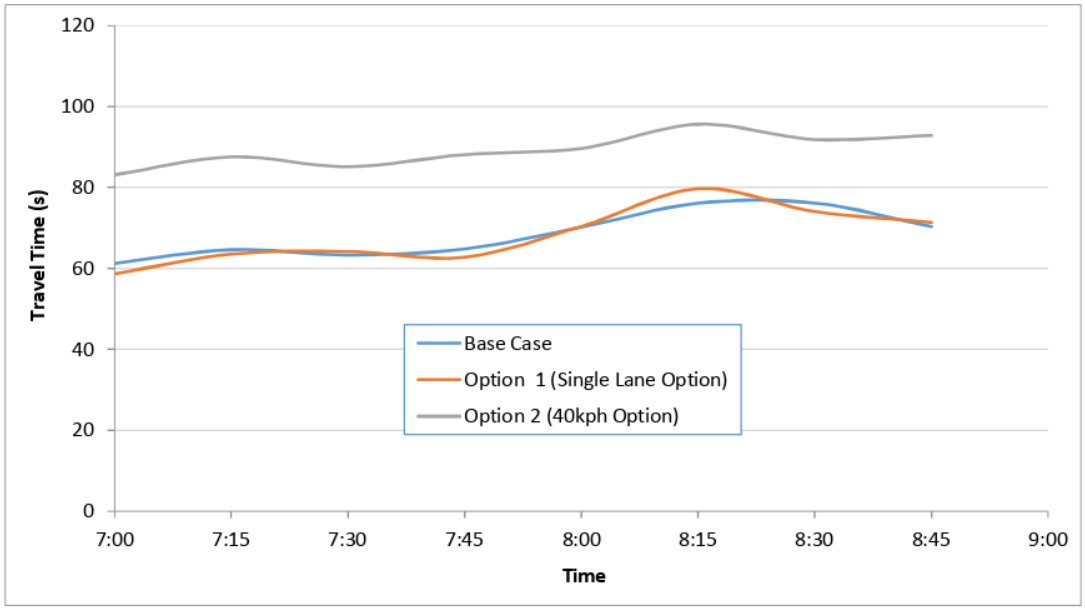


Figure 5.3 : Travel Times Alexandra Parade to Reid Street (AM Peak)

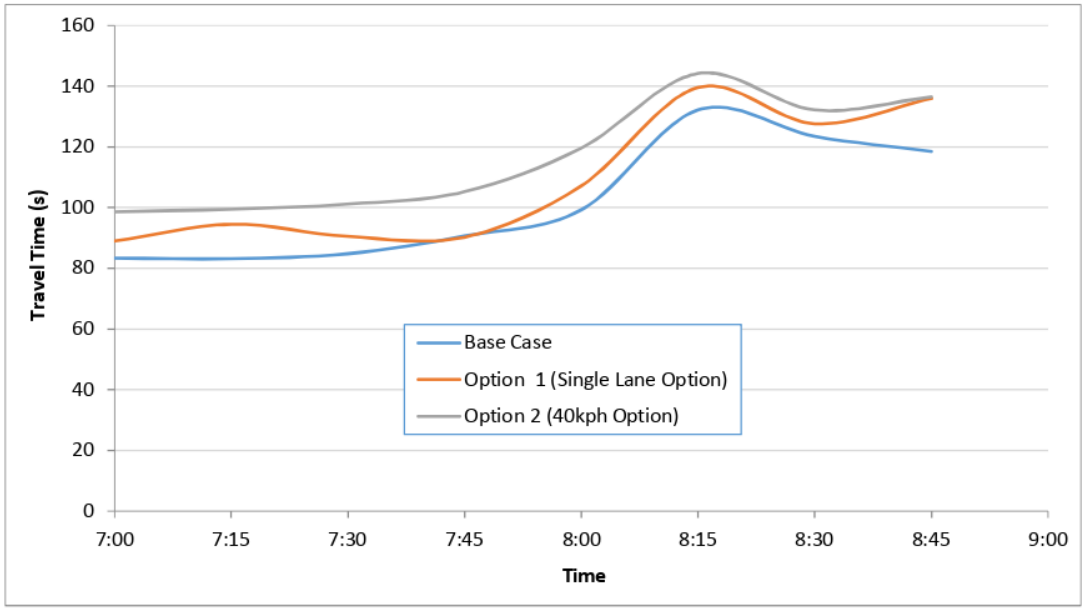


Figure 5.4 : Travel Times Reid Street to Brunswick Road (AM Peak)

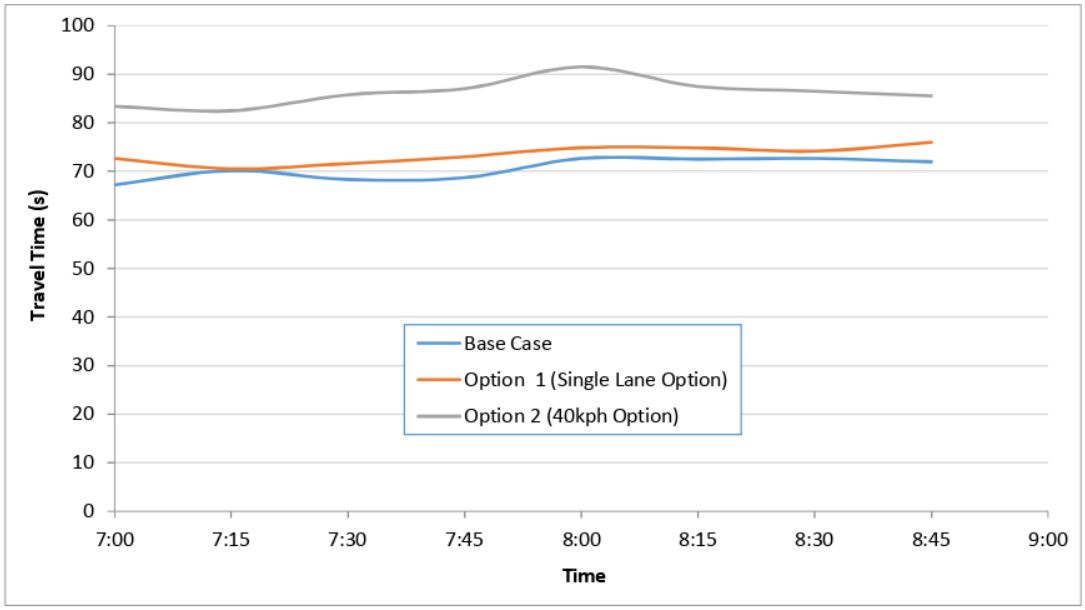


Figure 5.5 : Travel Times Brunswick Road to Reid Street (AM Peak)

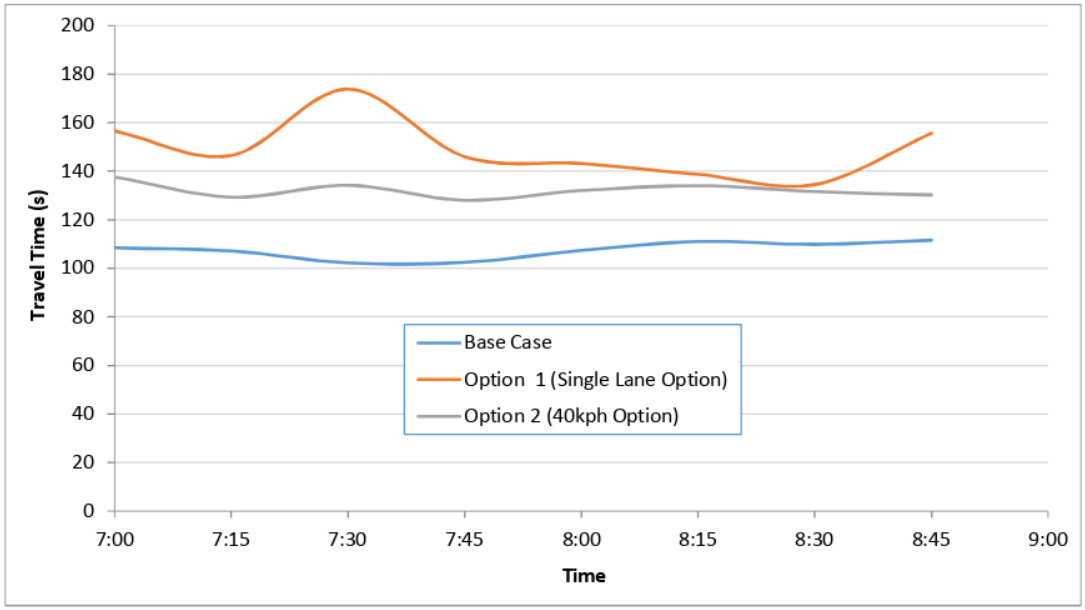


Figure 5.6 : Travel Times Reid Street to Alexandra Parade (AM Peak)

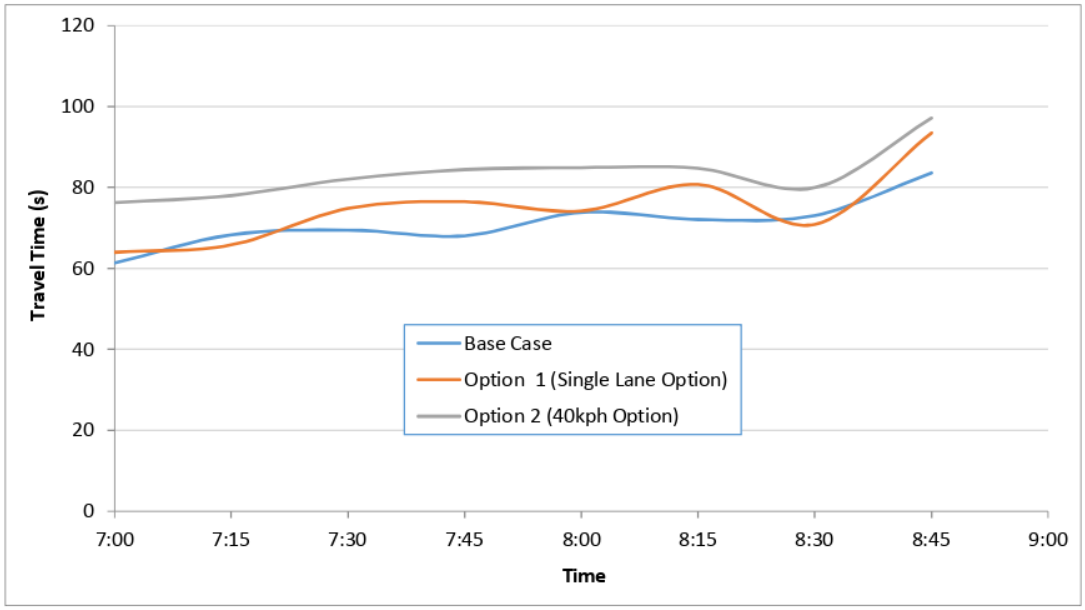


Figure 5.7 : Travel Times Alexandra Parade to Elgin Street (AM Peak)

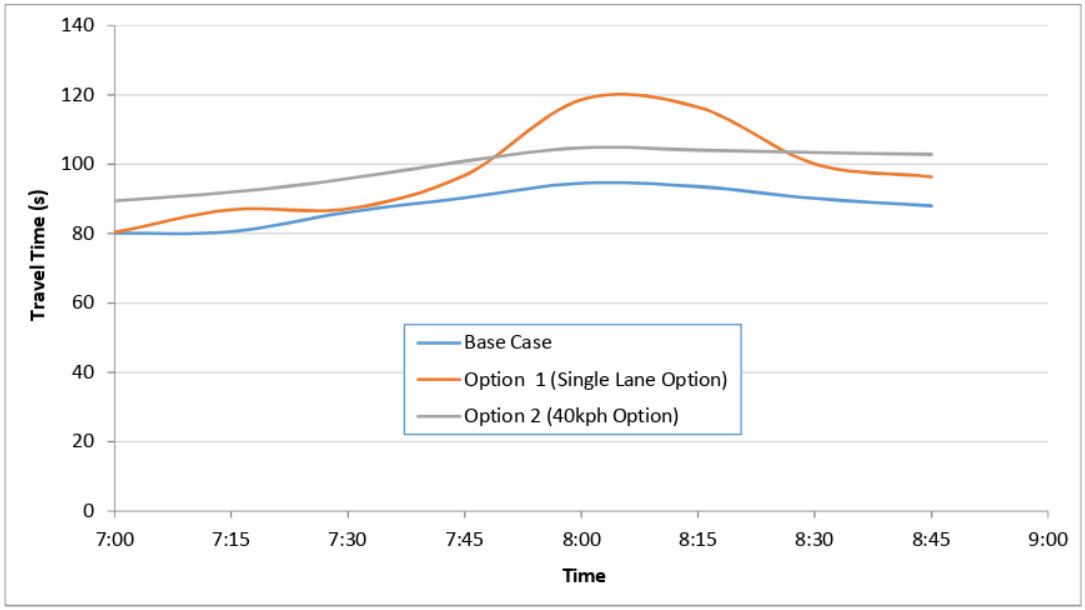


Figure 5.8 : Travel Times Elgin Street to Gertrude Street (AM Peak)

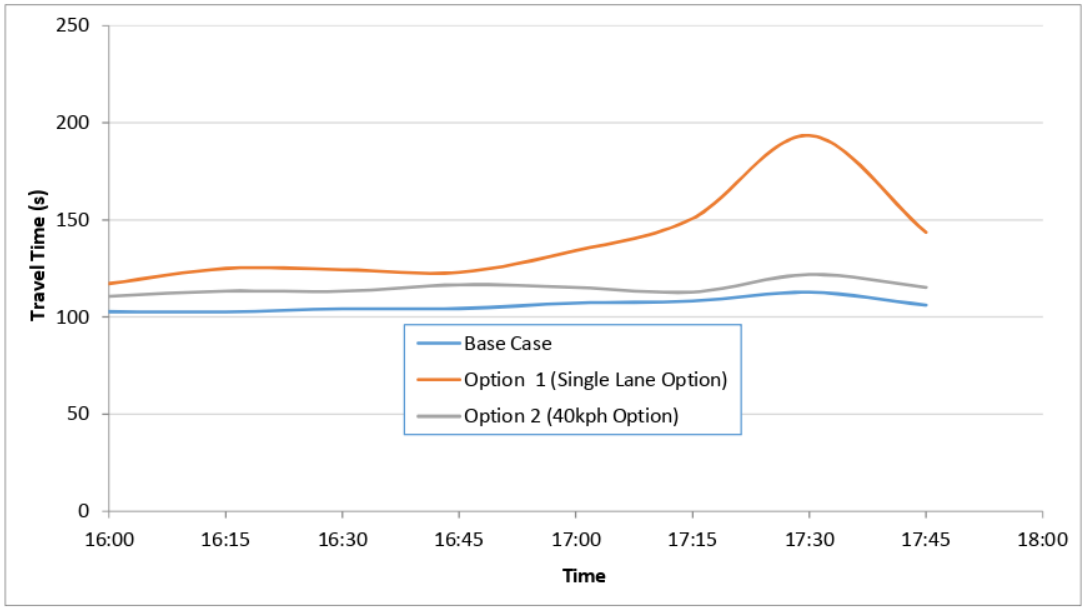


Figure 5.9 : Travel Times Gertrude Street to Elgin Street (PM Peak)

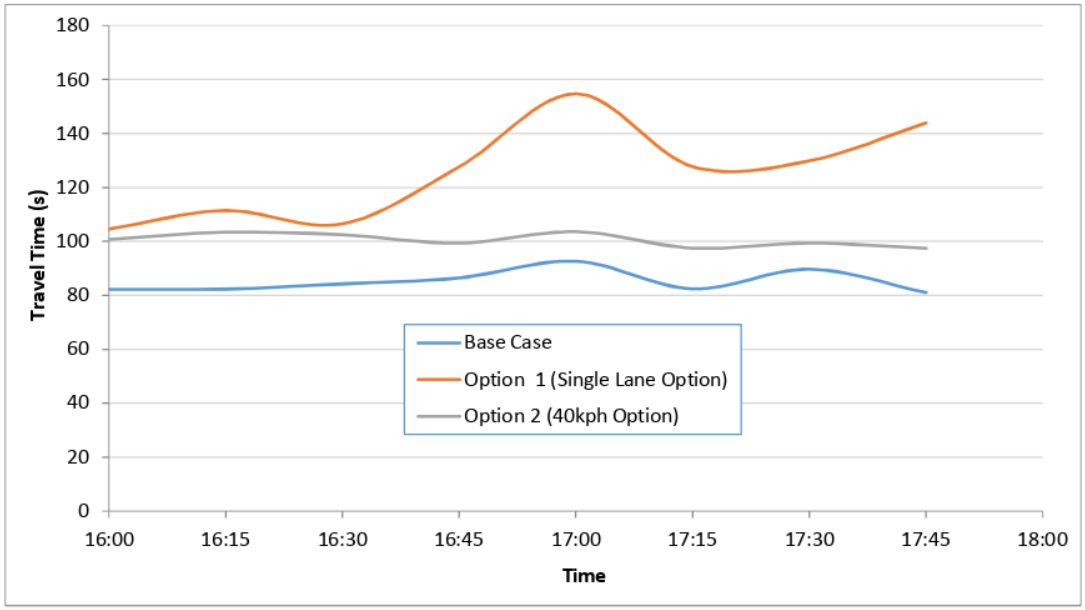


Figure 5.10 : Travel Times Elgin Street to Alexandra Parade (PM Peak)

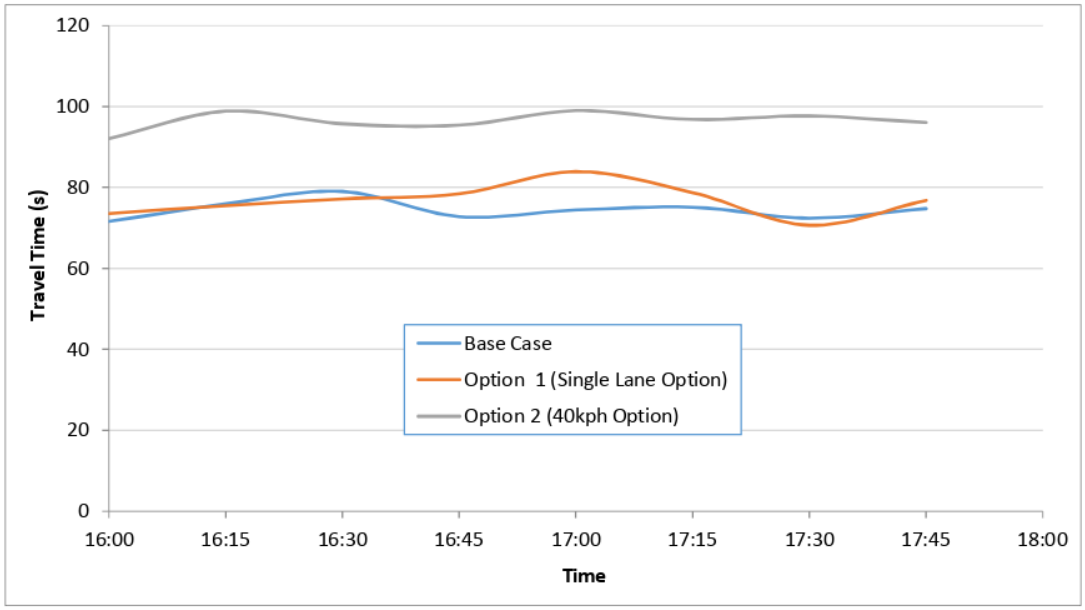


Figure 5.11 : Travel Times Alexandra Parade to Reid Street (PM Peak)

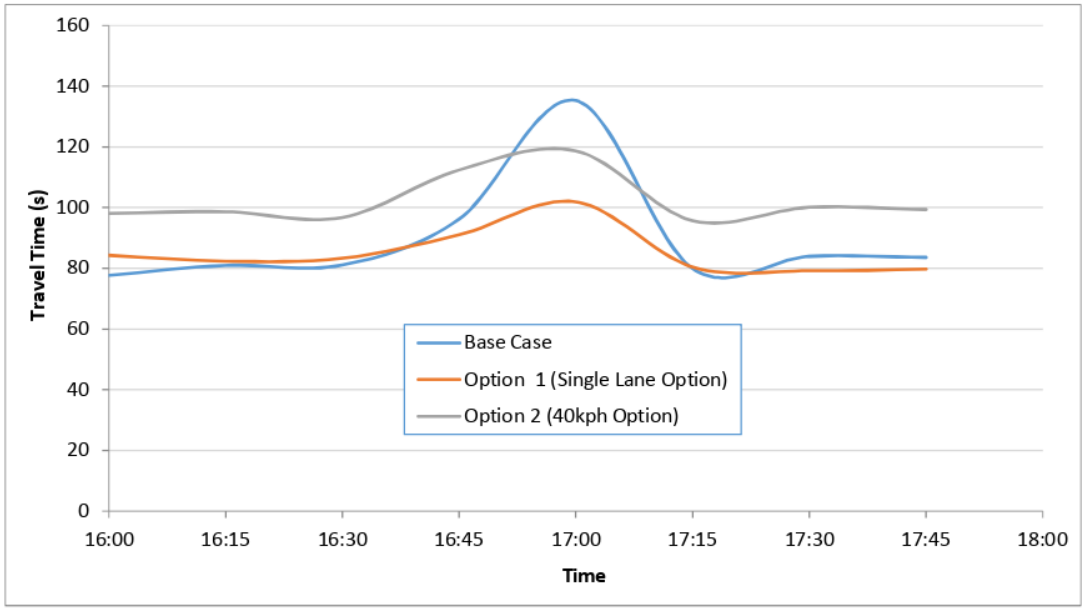


Figure 5.12 : Travel Times Reid Street to Brunswick Road (PM Peak)

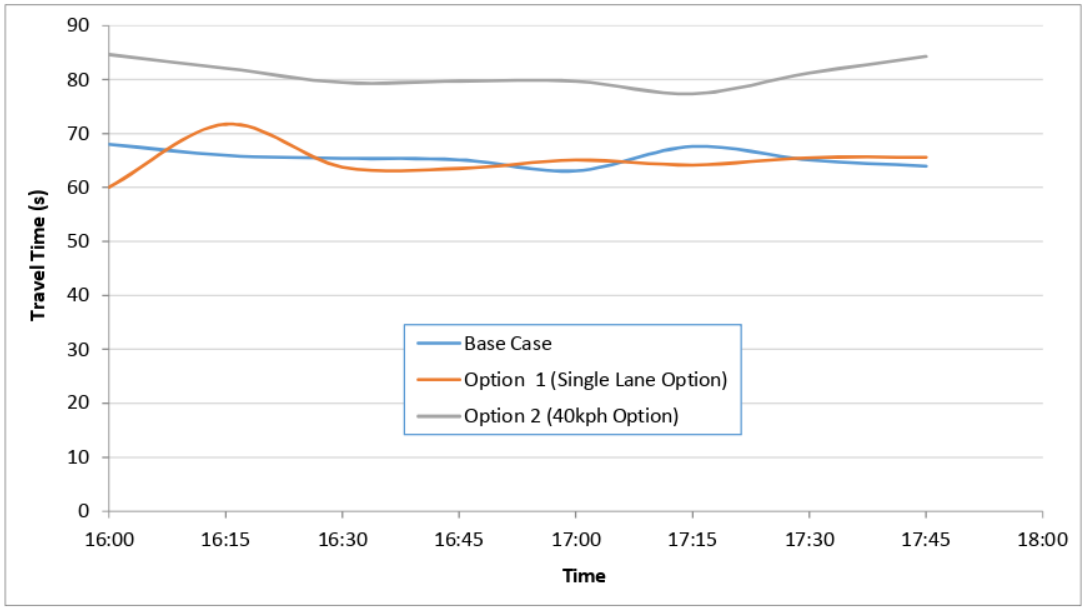


Figure 5.13 : Travel Times Brunswick Road to Reid Street (PM Peak)

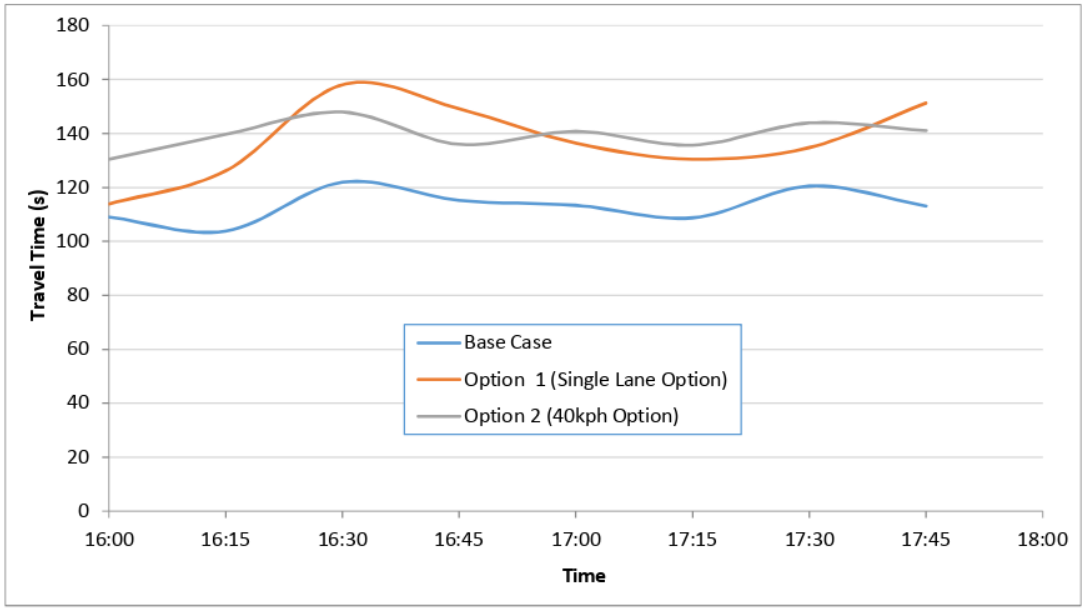


Figure 5.14 : Travel Times Reid Street to Alexandra Parade (PM Peak)

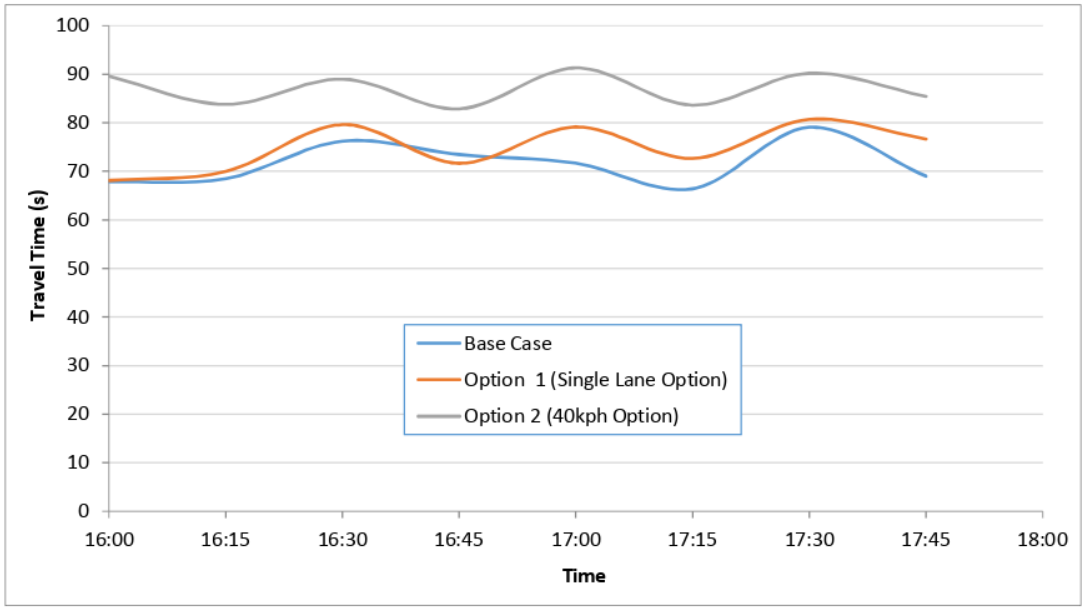


Figure 5.15 : Travel Times Alexandra Parade to Elgin Street (PM Peak)

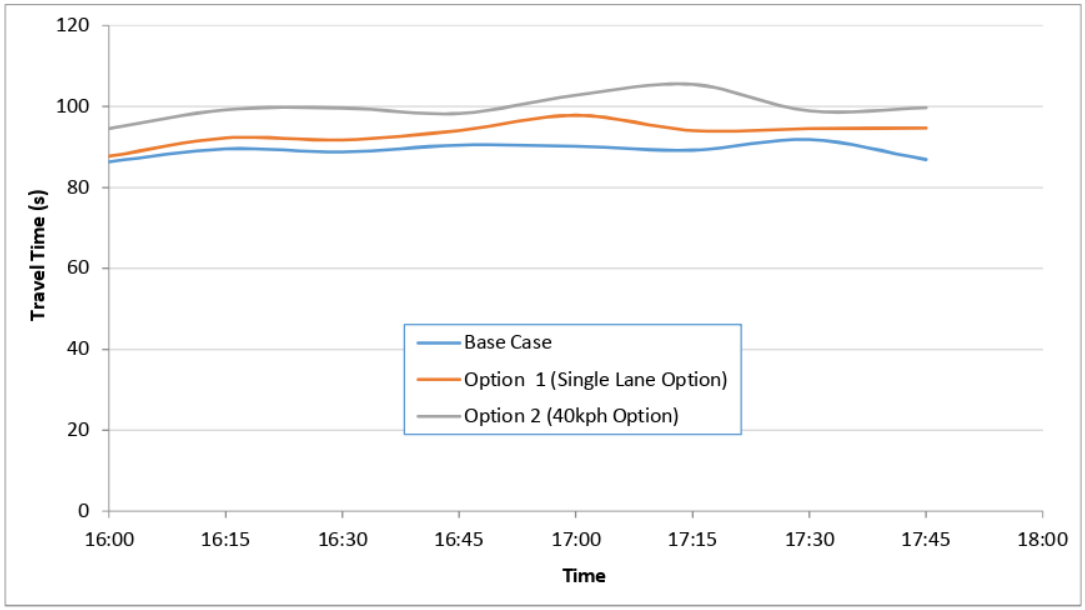


Figure 5.16 : Travel Times Elgin Street to Gertrude Street (PM Peak)

5.5 Option 1 Average Travel Times Along Nicholson Street

The net effect on average travel times along Nicholson Street for the entire modelled periods, is of particular interest to PTV, and this information is set out in Table 5.3 and Table 5.4, and graphically in Figure 5.17 to Figure 5.20.

The results repeat the patterns revealed in the previous sections, where travel time increases tend to be concentrated at specific locations, namely:

- The northern approach the Alexandra Parade (morning and afternoon period); and
- In the peak direction, during the morning and evening peak periods, at the pedestrian signals located at Carlton Street, and at Kay Street, due to the single lane at the stop-line.

Overall, travel time increases for the entire section of Nicholson Street between Gertrude Street and Reid Street are some 55s in the morning peak (or 21% over the base case), and up to 77s in the evening peak (or a 29% increase over the base case).

Table 5.3 : Average Travel Time Comparison for Option 1 (7:00-9:00)

Road Section	Direction	Minimum Travel Time (s)		Maximum Travel Time (s)		Average Travel Time (s)	
		Base Case	Option 1	Base Case	Option 1	Base Case	Option 1
Gertrude to Elgin	Northbound	76	82	116	105	95	95
	Southbound	70	80	110	130	88	98
Elgin to Alexandra	Northbound	55	74	123	99	87	87
	Southbound	45	61	107	95	71	75
Alexandra to Reid	Northbound	54	58	93	81	68	68
	Southbound	84	113	130	199	107	149
Total	Northbound	185	214	332	285	250	250
	Southbound	200	253	347	424	267	322

Table 5.4 : Average Travel Time Comparison for Option 1 (16:00-18:00)

Road Section	Direction	Minimum Travel Time (s)		Maximum Travel Time (s)		Average Travel Time (s)	
		Base Case	Option 1	Base Case	Option 1	Base Case	Option 1
Gertrude to Elgin	Northbound	90	115	127	202	106	139
	Southbound	73	84	110	102	89	93
Elgin to Alexandra	Northbound	59	93	111	180	85	126
	Southbound	46	63	104	89	72	75
Alexandra to Reid	Northbound	59	68	104	90	74	77
	Southbound	87	111	148	180	113	138
Total	Northbound	209	276	341	472	265	342
	Southbound	206	257	362	370	274	306

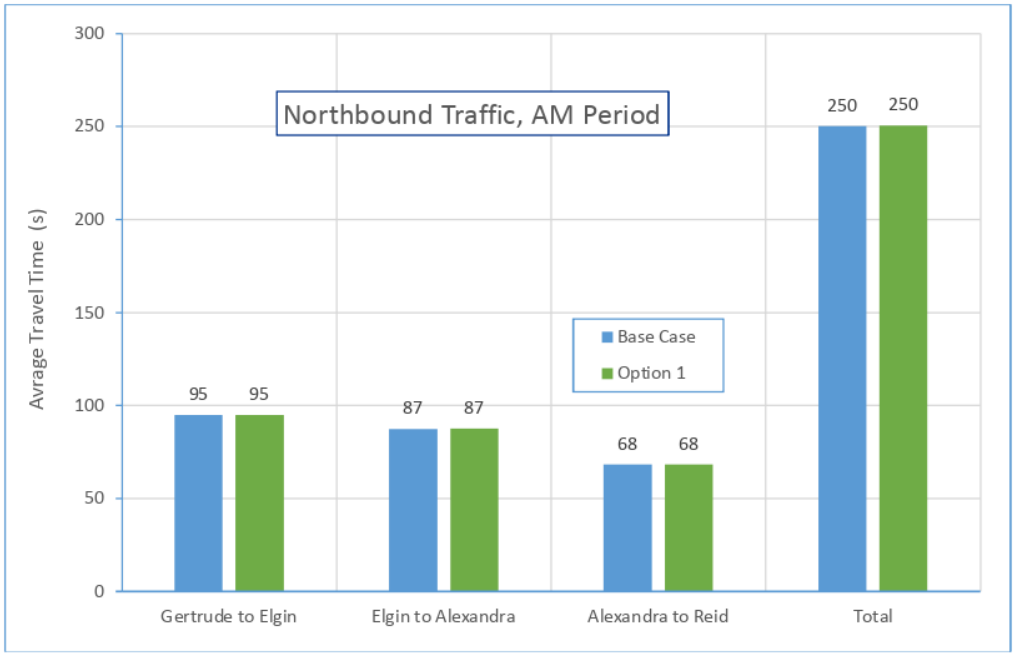


Figure 5.17 : Nicholson Street Average Travel Time Comparison for Option 1 (7:00-9:00, Northbound)

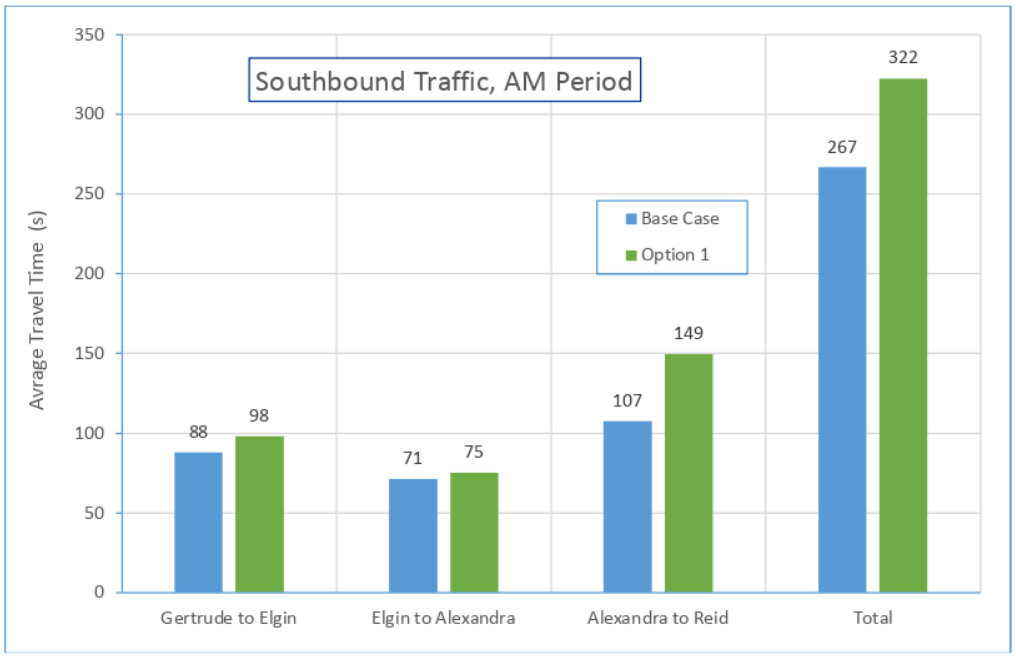


Figure 5.18 : Nicholson Street Average Travel Time Comparison for Option 1 (7:00-9:00, Southbound)

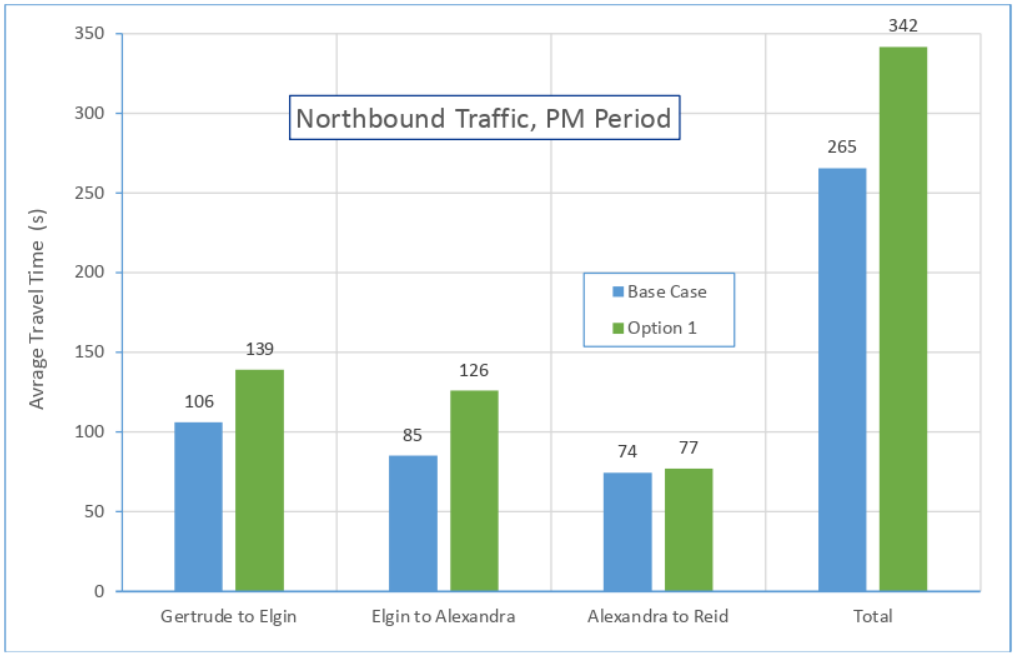


Figure 5.19 : Nicholson Street Average Travel Time Comparison for Option 1 (16:00-18:00, Northbound)

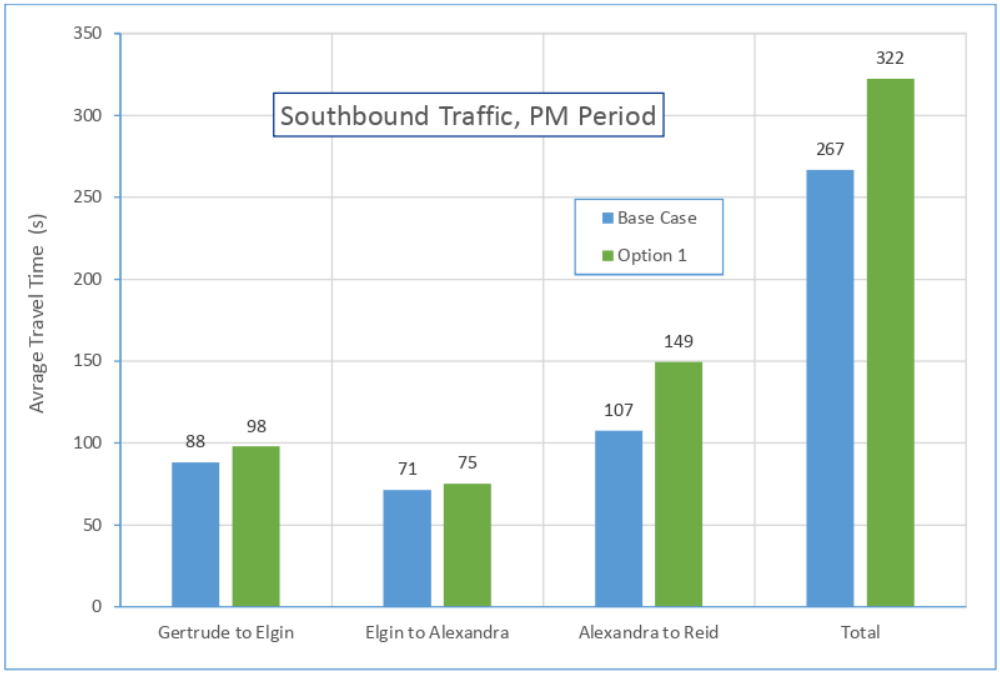


Figure 5.20 : Nicholson Street Average Travel Time Comparison for Option 1 (16:00-18:00, Southbound)

6. Conclusions

Given the results of the simulation modelling, we conclude that:

1) Both Option 1 and Option 2 will result in increased travel times along Nicholson Street during the morning and evening periods;
2) The impacts associated with Option 1 are concentrated at particular locations and time periods, namely:
   - On the northern approach the Nicholson Street/Alexandra Avenue intersection (Stop 17), the reduction of what is presently a continuous through lane to a short lane reduces stop-line capacity. The impact at this location occurs throughout the entire morning and afternoon periods;
   - At the new, consolidated tram stop at Carlton Street (Stop 13/14), where the combination of a single lane, the operation of the pedestrian signals, and the increase in pedestrian demand, combine to reduce the capacity at this location. The impact at this location is significant for about an hour in the *peak direction only* in each of the morning and afternoon periods; and
   - At the new tram stop near Kay Street (Stop 16), where (similar to Carlton Street) a single lane approach to a mid-block POS creates a capacity restriction. The impact at this location occurs in the peak direction from about 4:40 pm onwards.
3) In the case of Option 2, there are consistent and even travel time increase across all time periods and all sections of Nicholson Street[8]. These travel time impacts would likely be perceived quite differently by motorists, as they arise from changes to ambient travel speeds rather than from capacity restrictions and the associated queueing and stop-start driving conditions.
4) The impacts of Option 1 could be mitigated, at least in part, through careful design of the newly created pedestrian signals. For example, increasing the time to respond to pedestrian calls, and coordination with adjacent signals, would increase traffic capacity, although this would be at the expense of pedestrian levels of service; and
5) A further impact of the new tram stop just north of Alexandra Parade is that uncoordinated operation of the POS leads to queuing along Nicholson Street through the intersection. This installation would need to be coordinated with the Nicholson Street/Alexandra Parade signals to avoid this condition.

[8] With the exception of the section from Gertrude Street and Carlton Street, where the speed limit is currently set at 40 kph.

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19

Site: 4426 Thursday, 21 March 2019 Traffic Flow filename:CA1_20190321.VS

Thursday, 21 March 2019

Approach 1, Detector: 1

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	57	27	13	16	15	57	184	210	201	256	249	303
Hourly Total	57	27	13	16	15	57	184	210	201	256	249	303

AM Total: 1588 AM peak 303 11:00 - 12:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	322	368	357	494	577	604	469	373	363	307	329	266
Hourly Total	322	368	357	494	577	604	469	373	363	307	329	266

PM Total: 4829 PM peak 604 17:00 - 18:00

Daily Total 6417

Approach 2, Detector: 2

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	106	68	38	32	43	102	219	216	221	249	285	282
Hourly Total	106	68	38	32	43	102	219	216	221	249	285	282

AM Total: 1861 AM peak 285 10:00 - 11:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	282	328	280	317	355	329	287	271	349	328	396	275
Hourly Total	282	328	280	317	355	329	287	271	349	328	396	275

PM Total: 3797 PM peak 396 22:00 - 23:00

Daily Total 5658

Approach 3, Detector: 3

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	36	22	15	9	32	122	396	526	521	443	357	302
Hourly Total	36	22	15	9	32	122	396	526	521	443	357	302

AM Total: 2781 AM peak 526 07:00 - 08:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	343	346	407	483	518	621	464	354	263	257	200	135
Hourly Total	343	346	407	483	518	621	464	354	263	257	200	135

PM Total: 4391 PM peak 621 17:00 - 18:00

Daily Total 7172

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19

Approach 4, Detector: 4

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	61	45	37	31	58	148	321	356	350	317	305	329
Hourly Total	61	45	37	31	58	148	321	356	350	317	305	329

AM Total: 2358 AM peak 356 07:00 - 08:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	295	338	348	314	316	375	339	308	269	240	212	152
Hourly Total	295	338	348	314	316	375	339	308	269	240	212	152

PM Total: 3506 PM peak 375 17:00 - 18:00

Daily Total 5864

Approach 5, Detector: 5

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	3	4	0	0	4	6	31	33	53	31	24	24
Hourly Total	3	4	0	0	4	6	31	33	53	31	24	24

AM Total: 213 AM peak 53 08:00 - 09:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	22	21	21	39	20	102	112	57	36	29	25	10
Hourly Total	22	21	21	39	20	102	112	57	36	29	25	10

PM Total: 494 PM peak 112 18:00 - 19:00

Daily Total 707

Approach 6, Detector: 6

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	7	3	2	3	8	14	74	51	76	63	45	31
Hourly Total	7	3	2	3	8	14	74	51	76	63	45	31

AM Total: 377 AM peak 76 08:00 - 09:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	34	24	40	67	62	176	203	105	93	51	49	24
Hourly Total	34	24	40	67	62	176	203	105	93	51	49	24

PM Total: 928 PM peak 203 18:00 - 19:00

Daily Total 1305

Approach 7, Detector: 7

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	7	0	1	2	6	16	42	76	115	95	76	89
Hourly												

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19

Total	7	0	1	2	6	16	42	76	115	95	76	89

AM Total: 525 AM peak 115 08:00 - 09:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	100	112	157	201	169	211	187	130	75	52	38	24
Hourly Total	100	112	157	201	169	211	187	130	75	52	38	24

PM Total: 1456 PM peak 211 17:00 - 18:00

Daily Total 1981

Approach 8, Detector: 8

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	2	0	0	0	0	4	7	11	8	10	7	8
Hourly Total	2	0	0	0	0	4	7	11	8	10	7	8

AM Total: 57 AM peak 11 07:00 - 08:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	8	8	8	10	10	8	9	8	4	4	2	4
Hourly Total	8	8	8	10	10	8	9	8	4	4	2	4

PM Total: 83 PM peak 10 15:00 - 16:00

Daily Total 140

Approach 9, Detector: 9

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	2	0	0	0	0	4	7	11	7	11	7	8
Hourly Total	2	0	0	0	0	4	7	11	7	11	7	8

AM Total: 57 AM peak 11 07:00 - 08:00

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:
	9	8	8	11	10	8	9	8	5	5	2	4
Hourly Total	9	8	8	11	10	8	9	8	5	5	2	4

PM Total: 87 PM peak 11 15:00 - 16:00

Daily Total 144

Approach 10, Detector: 10

	01:	02:	03:	04:	05:	06:	07:	08:	09:	10:	11:	12:
	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0

	13:	14:	15:	16:	17:	18:	19:	20:	21:	22:	23:	24:

Attachment 5 - Traffic Modelling Reporting and Data in response to resolution on 2-4-19

	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0

Daily Total 0

Attachment 6 - Tree location map

4. Site Map

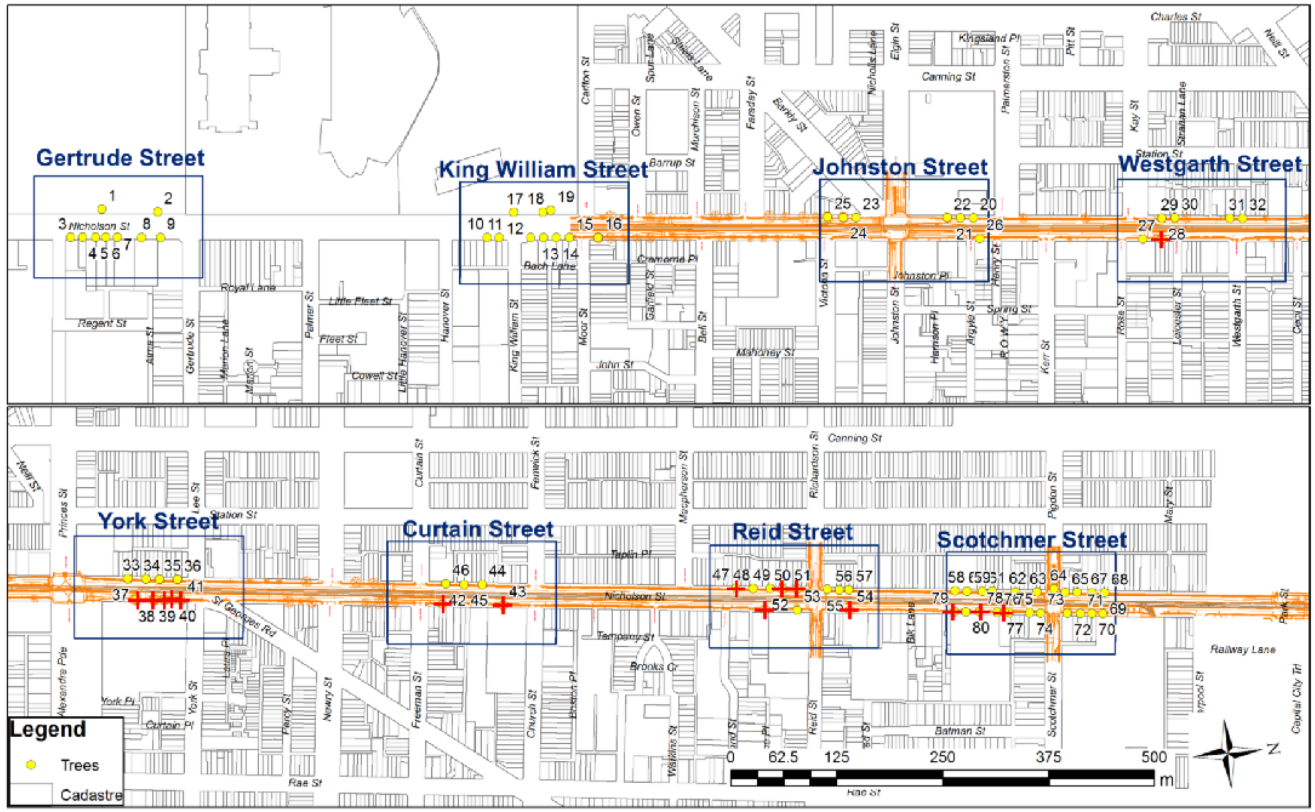


Figure 1: Overview of all trees

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

JACOBS

Route 96 – SP2

YARRA TRAMS

Heritage Impact Assessment

IS168200 | Final

8 February 2018

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

Heritage Impact Assessment

JACOBS

Route 96 – SP2

Project No:	IS168200
Document Title:	Heritage Impact Assessment
Revision:	Final
Date:	8 February 2018
Client Name:	YARRA TRAMS
Project Manager:	Michael Ford
Author:	Andrew Wilkinson and Jennifer Chandler
File Name:	\\Jacobs.com\anz\IE\Admin\03_Southern\Env_Spatial\10_Section_Resources\02_CH_Eco\CH\Projects\Victoria\Yarra Trams\Route 96\SP2\HIA Report\HIA Stop 21 update Feb 2018\IS168200 Route 96 - SP2 HIA V3_final.docx

Jacobs Group (Australia) Pty Limited
ABN 37 001 024 095
Floor 11, 452 Flinders Street
Melbourne VIC 3000
PO Box 312, Flinders Lane
Melbourne VIC 8009 Australia
T +61 3 8668 3000
F +61 3 8668 3001
www.jacobs.com

© Copyright 2018 Jacobs Group (Australia) Pty Limited. The concepts and information contained in this document are the property of Jacobs. Use or copying of this document in whole or in part without the written permission of Jacobs constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Document history and status

Revision	Date	Description	By	Approved
V1	25 November 2016	Technical review	Karen Murphy	Mike Ford
V2	12 April 2017	Update from client comments	Jennifer Chandler	Mike Ford
V3	8 February 2018	Updated with six shop awnings at Stop 21	Jennifer Chandler	-
V3	8 February 2018	Technical review of updates	Karen Murphy	

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

JACOBS

Contents

Abbreviations ..... **v**
Executive Summary **1**
1. Introduction **7**
1.1 Project background 7
1.2 Aim and scope of assessment 7
1.3 Location of the proposed works area 7
1.4 Limitations 7
1.5 Authorship of the report 7
2. Legislative framework **9**
2.1 Commonwealth heritage legislation 9
2.2 State heritage legislation 9
2.2.2 *Planning and Environment Act* 1987 (Victoria) 11
3. Background **13**
3.1 Historical context 13
3.1.1 North Carlton 13
3.1.2 North Fitzroy 13
3.1.3 Cable trams 13
3.1.4 Inner Circle Railway 14
3.2 Heritage context 15
3.2.1 Previous studies and assessments 15
3.2.2 Register results 16
4. Site inspection **21**
4.1 Results 21
4.1.1 Item 1: North Carlton Precinct (HO326) 21
4.1.2 Item 2: North Fitzroy Precinct (HO327) 21
4.1.3 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253) 21
4.1.4 Items 5 and 8: Janet Hillman Reserve / Inner Circle Railway 21
5. Cultural heritage significance **26**
5.1 Basis for assessment 26
5.1 Significance assessment and statements of significance 26
6. Impact assessment **30**
6.1 Proposed works 30
6.2 Potential impacts 30
6.2.1 Item 1: North Carlton Precinct (HO326) 30
6.2.2 Item 2: North Fitzroy Precinct (HO327) 31
6.2.1 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253) 32
6.2.2 Items 5 and 8: Janet Hillman Reserve (HO133) and Inner Circle Railway (NT) 32
6.2.3 Heritage places not impacted by the proposed works 33
7. Mitigation and management measures **34**
7.1 Site-specific measures 34

7.1.1 Items 1 and 2: North Carlton and North Fitzroy Precinct (HO326 and HO327) 34
7.1.1.1 Bluestone pitchers 34
7.1.1.2 Post box 34
7.1.1.3 Shop awnings 34
7.1.2 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253) 34
7.1.3 Items 5 and 8: Janet Hillman Reserve and Inner Circle Railway (HO133 and NT) 34
7.2 General measures 35
7.2.1 Unexpected discoveries of historical heritage 35
7.2.2 Heritage induction training 35
8. Approvals requirements 36
8.1 Items 1 and 2: North Carlton and North Fitzroy Precinct (HO326 and HO327) 36
8.2 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253) 36
8.3 Items 5 and 8: Janet Hillman Reserve (HO133) and Inner Circle Railway (NT) 36
9. References 37

Appendix A. Criteria for heritage significance
A.1 Criteria for the Victorian Heritage Register
Appendix B. Significance assessment and statements of significance
B.1 North Carlton Precinct
B.1.1 Description
B.1.2 Curtilage information
B.1.3 Significance assessment
B.1.4 Statement of significance
B.2 Item 2: Fitzroy North Precinct (HO327)
B.2.1 Description
B.2.2 Curtilage information
B.2.3 Significance assessment
B.2.4 Statement of significance
B.3 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)
B.3.1 Description
B.3.2 Curtilage information
B.3.3 Significance assessment
B.3.4 Statement of significance
B.4 Items 5 and 8: Janet Hillman Reserve (HO133) and Inner Circle Railway (NT), (also listed as an element of HO326 and HO327)
B.4.1 Description
B.4.2 Curtilage information
B.4.3 Significance assessment
B.4.4 Statement of significance

List of figures

Figure 1.1 : Location of the Project area. 8
Figure 3.1 : Location of heritage places within or adjacent to the Project area (south) 18
Figure 3.2 : Location of heritage places within and adjacent to the Project area (central) 19
Figure 3.3 : Location of heritage items within or adjacent to the Project area (north).... 20
Figure 4.1 : Remnant railway tracks within Nicholson Street, facing east, away from Janet Hillman Reserve. .. 22
Figure 4.2 : Section of railway track which ends at the footpath on the western side of Nicholson Street, in Janet Hillman Reserve. 22
Figure 4.3 : Picket fence and post on Nicholson Street on edge of footpath, in Janet Hillman Reserve, facing northwest. 22
Figure 4.4 : Post box on Nicholson Street and Park Street intersection, facing east. 22
Figure 4.5 : Gate post, at edge of Janet Hillman Reserve, facing north. 23
Figure 4.6 : Light post on Scotchmer Street, facing west. 23
Figure 4.7 : Bluestone channel on west side of Nicholson Street, facing north. 23
Figure 4.8 : Bluestone channel on east side of Nicholson Street, facing north. 23
Figure 4.9 : Site of Former Nicholson Street Cable Tram Car Shed and Workshop, facing east. 24
Figure 4.10 : Site of Former Nicholson Street Cable Tram Car Shed and Workshop, and Former Nicholson Street Cable Tram Car Shed Track, facing northeast. 24
Figure 4.11 : The shop awning at 705 Nicholson Street, facing north. 24
Figure 4.12 : The shop awning at 709 Nicholson Street, facing south. 24
Figure 4.13 : The shop awning at 700 Nicholson Street, facing south. 25
Figure 4.14 : The shop awning (white) at 702-704 Nicholson Street, facing south. 25
Figure 4.15 : The shop awning and OHP at 699A Nicholson Street, facing south. 25
Figure 4.16 : The shop awning and OHP at 711 Nicholson Street, facing south. 25

List of tables

Table 1 : Historical heritage places within and adjacent to proposed works, impacts, mitigation measures and statutory requirements. 3
Table 3.1 : Heritage places within or immediately adjacent to the project area 16
Table 5.1 : Summary heritage significance for heritage items 26
Table B.1 : Significance of North Carlton Precinct 39
Table B.2 : Significance assessment for Fitzroy North Precinct 42
Table B.3 : Significance assessment for Former Nicholson Street Cable Tram Car Shed Track 44
Table B.4 :Significance assessment of Inner Circle Railway 45

Abbreviations

CHL	Cultural Heritage List
CIP	Centre Island Platform
CMP	Conservation Management Plan
COP	Central Offset Platform
EPBC Act	*Environment Protection and Biodiversity Conservation Act* 1999 (Commonwealth)
Heritage Act	*Heritage Act* 1995 (Victoria)
HV	Heritage Victoria
Jacobs	Jacobs Group (Australia) Pty Ltd
m	metres
MHO	Moreland Heritage Overlay
NHL	National Heritage List
OHP	Overhead Pole
PTV	Public Transport Victoria
RNE	Register of the National Estate
the Project	Route 96 Premium Line Project
SP	Separable Portion
VHI	Victorian Heritage Inventory
VHR	Victorian Heritage Register
WHL	World Heritage List
YHO	Yarra Heritage Overlay

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

Executive Summary

Introduction

Yarra Trams have engaged Jacobs Group (Australia) Pty Ltd (Jacobs) to prepare a historical heritage impact assessment for the Route 96 Upgrade Project (the Project). The Project has been divided into nine sections, referred to as Separable Portions (SP). This report will address the heritage issues for SP2.

The designs for Stops 20 (Reid Street), 21 (Scotchmer Street) and 22 (Holden Street) on Nicholson Street have been developed as part of the Route 96 – Upgrade Project to upgrade Route 96 to be Melbourne's first fully accessible route. Tram upgrades will improve access and journey time reliability along the route. The Project also creates the opportunity to incorporate an integrated design solution around the tram stops.

The design has consequently been developed with a collaborative delivery approach between Public Transport Victoria (PTV), Yarra Trams, the City of Yarra and the City of Moreland.

The Project involves the upgrade of tram stops 20, 21, 22 through the installation of the Centre Island Platforms (CIP) at Stops 20 and 21 and a Central Offset Platform (COP) at Stop 22 and approximately 650 metres (m) of track renewal alignment design.

This HIA report was updated in 2018 to assess new impacts to six shop awnings at 699A, 700, 702-704, 705, 709 and 711 Nicholson Street, North Carlton and North Fitzroy.

The following works are proposed for each of the stops:

Stop 20 (Richardson Street/Reid Street)

- Road side parking to be removed adjacent to the proposed CIP, seven parking spaces to be removed from the outbound road side (Richardson Street) and nine spaces to be removed from the inbound road side (Reid Street) although this will be offset by two additional new spaces to be provided. Existing blue stone pitchers will need to be removed and the asphalt road service extended to the invert of kerb as specified on the design drawings to provide a suitable road surface for trafficable road lanes.

Stop 21 (Scotchmer Street/Pigdon Street)

- Road side parking to be removed adjacent to the CIP, eleven parking spaces to be removed from the outbound road side (Pigdon Street) and eleven spaces to be removed from the inbound road side (Scotchmer Street). Existing bluestone pitchers will need to be removed and the asphalt road service extended to the invert of kerb as specified on the design drawings to provide a suitable road surface for trafficable road lanes.
- Cutting back/removal of shop awnings is proposed due to clearance requirements of anything within 600 mm of the 2.8 m wide kerbside lane for safety reasons. Shop awnings at 700, 702-704, 705 and 709 Nicholson Street are within the clearance distance and either have to be removed or cut back. In order to minimise impacts it is proposed to cut back the modern cantilevered awnings at 702-704 and 705 Nicholson Street from the front of the awning. The shop awnings at 700 and 709 Nicholson Street are supported by poles. In this instance, it is proposed that part of the awning from the back (closest to the building) will be removed, while keeping the front of the awning intact, and the supporting poles will be reinstated into the pavement.
- Removal and installation of overhead poles (OHP) is proposed due to clearance requirements of anything within 600 mm of the 2.8 m wide kerbside lane for safety reasons. Shop awnings at 711 and 699A Nicholson Street require the OHPs to pass through the shop awnings approximately 300 mm from the front of the awnings. It is not possible to locate the OHPs closer to the road due to clearance requirements.

Stop 22 (Brunswick Road/ Holden Street)

- Road side parking to be removed adjacent to the 67 m long COP, three parking spaces to be removed from the outbound road side (Brunswick Road) and four spaces to be removed from the inbound road side (Holden Street). Existing bluestone pitchers will need to be removed and the asphalt road service extended

to the invert of kerb as specified on the design drawings to provide a suitable road surface for trafficable road lanes.

The excavation across the site will be to a depth of 0.5 m, except the areas where local services works require deeper excavation, and will extend approximately 650 m along Nicholson Street in three sections. The width of the excavation will vary from 5.8 m width (along the standard straight track) to 10 m wide at the location of the new stops.

Desktop assessment

Five historical heritage places are located within the Project area, two of these are listed on the Yarra Heritage Overlay (YHO) (North Carlton Precinct – HO326 and North Fitzroy Precinct – HO327), one is registered on the Victorian Heritage Inventory (VHI) (Former Nicholson Street Cable Tram Car Shed Track – H7822-2253), one is listed on the Moreland Heritage Overlay (MHO) (Janet Hillman Reserve – HO133) and one is listed with the National Trust (NT) (Inner and Outer Circle Railway – B5436). Three historical heritage places are located adjacent to the Project area: these places are registered on the YHO (658 Nicholson Street (residence) – HO423), the VHI (Former Nicholson Street Cable Tram Car Shed and Workshop) and the Register of National Estate (RNE) (Family Butchers Shop – 14943).

Impact assessment

A site inspection was undertaken to obtain information about the potential for impacts of the activities on the heritage values of places within and adjacent to the Project area.

The proposed works will impact on the **bluestone kerbing and guttering** on Nicholson Street within the North Carlton and North Fitzroy Precincts. The bluestone kerbing and guttering contributes to the aesthetic values of the precincts. Due to the existing width of the road reserve in Nicholson Street and minimum clearance requirements for trams and Disability Discrimination Act (DDA) accessibility on the tram platform, it is not possible to accommodate the minimum 2.8 m trafficable lane widths without impacting on the bluestone pitchers. The existing pitchers are not an appropriate trafficable surface, due to their uneven surface, for the carrying capacity and speed of Nicholson Street which is an arterial road managed by VicRoads. Therefore, the design being proposed is to remove all bluestone pitchers for a length of approximately 100 m (west) and 70 m (east) alongside Stop 20, for a length of approximately 90 m (west) and 60 m (east) alongside Stop 21 and for approximately 105 m (west) alongside Stop 22 to enable construction of 2.8 m wide trafficable lanes on both sides of the road.

The proposed works will impact on **six shop awnings** within the North Carlton and North Fitzroy Precincts. Elements which contribute to the heritage significance of the North Carlton and North Fitzroy Precincts include attached Victorian-era and Edwardian-era mainly two-storey shop and residence rows in the major north-south street, having typically post-supported, mainly Corporation Style iron street verandahs. The row of shops impacted by the proposed works is significant as a major shopping centre of grand shop rows, extending from Macpherson Street (south of the Project area) to Park Street (in the northern section of the Project area), which were built along the cable tram route.

The cutting back of the front of the modern awnings at 705 and 702-704 Nicholson Street, and removal of part of the rear of the awnings at 700 and 709 Nicholson Street will not affect the significance of North Carlton or North Fitzroy Precincts as while physical change to the awnings/verandahs will occur, the modified forms would only have negligible impact on their significance.

The proposed installations of two OHPs at 699A and 711 Nicholson Street will pierce the awnings approximately 300 mm from the front of the awnings. The OHPs will not provide any structural capacity to the awnings. During construction a 250 mm diameter hole will be cut into the shop awnings. Once the OHPs have been placed through the holes in the awnings, flashing will be added around the outside of the OHPs to protect the awnings from water seepage. The process will not impact on any other part of the awnings apart from the area where the holes are located. The physical impact to the buildings is minimal and will not impact on the significance of the North Carlton Precinct.

The northern section of Stop 21 proposed works will impact on the **Former Nicholson Street Cable Tram Car Shed Track** which is located on Nicholson Street. The proposed works include excavation at the site to a depth of 0.5 m and a width of 5.8 m width. The Former Nicholson Street Cable Tram Car Shed Track will be directly impacted by the proposed works. The remains of the cable tram network have the potential to include tram tracks, wood blocked and/or stone setts paving, deep concrete cable tunnels centred under each track, and inspection and access manholes having cast iron covers. Archaeological monitoring by an appropriately qualified historical archaeologist during the excavation works within the extent of the VHI site is required to identify and record any archaeological artefacts present in the area.

The proposed works will impact on track remnants of the **Inner Circle Railway** (HO133 and NT). The existing section of railway track extends from the Janet Hillman Reserve into Nicholson Street and is approximately 12.6 m long. A 3.1 m section of the railway track from the middle of Nicholson Street will be required to be cut out of the road to allow for widening of the tram tracks, which will leave a section of track approximately 9.5 m in length. The section of track can be removed without damaging the remainder of track which will stay in the road. As new tram tracks for the Project are required to be constructed in this area it is not possible to retain the 3.1 m section of rail track, due to engineering constraints. The Conservation Management Plan (Allom Lovell and Associates and John Patrick Pty Ltd 2005) for the Inner Circle Railway outlines policies for the management of remnant features of this heritage item. The Inner Circle Railway line was assessed as being *of primary significance* and recommendations were to: *Retain and conserve remaining track, gateposts and fencing. Reconstruct fencing where lacking and where practical given existing conditions.*

Recommendations

A summary of the impacts, mitigation measures and statutory requirements related to the two heritage precincts and the other historical heritage places identified within and adjacent to the proposed works is presented in Table 1 below.

The works are within the North Carlton Precinct (HO326) and North Fitzroy Precinct (HO327); however the *Tramway Infrastructure Upgrades Incorporated Document* (2017) outlines exemptions from planning scheme requirements which relate to the Route 96 – SP2 proposed works. The exemption is subject to the condition that a statement describing any impacts of the development on the significance of the heritage place is submitted to the responsible authority. This heritage impact assessment report, along with the proposed design drawings, should be submitted to City of Moreland and City of Yarra to meet the requirements of this condition.

Table 1 : Historical heritage places within and adjacent to proposed works, impacts, mitigation measures and statutory requirements.

Item name	Number	Impact description	Site-specific mitigation measures	Statutory requirements
North Carlton Precinct	HO326	Direct impact: Removal of bluestone pitchers (gutter stones); Removal of part of the Inner Circle Railway track Minor physical impact to two buildings of contributory significance through removal of a rear section of shop awning and reinstatement of support poles, and removal of front section of shop awning Minor physical impact to two buildings of contributory significance through installation of OHPs.	Retain bluestone kerb stones Archival photographic recording of existing bluestone pitchers prior to removal No prudent or feasible alternative to removal of bluestone pitchers on Nicholson Street Archival photographic recording of Inner Circle Railway track Upon agreement the track section that is removed may be retained incorporated into an interpretive display The proposed construction method of cutting back shop awnings at 705 and 709 Nicholson Street must be undertaken in a manner that will have minimal impact upon the	*Tramway Infrastructure Upgrades Incorporated Document* (2017) outlines exemptions from planning scheme requirements subject to the condition that a statement describing any impacts of the development on the significance of the heritage place is submitted to the responsible authority. This heritage impact assessment report, along with the proposed design drawings, should be submitted to City of Moreland to meet the requirements of this condition.

Item name	Number	Impact description	Site-specific mitigation measures	Statutory requirements
			fabric of the building. If it is not possible to reinstate the existing poles at 709 Nicholson Street, due to their age and condition, new poles of a similar design and materials should be used. The proposed construction method of cutting a 250 mm hole into the shop awnings of the properties located at 699A and 711 Nicholson Street must be undertaken in a manner that will have minimal impact upon the fabric of the building.	
North Fitzroy Precinct	HO327	Direct impact: Removal of bluestone pitchers (gutter stones) Removal of part of the Inner Circle Railway track Minor physical impact to two buildings of contributory significance through removal of a rear section of shop awning and reinstatement of support poles, and removal of front section of shop awning	Retain bluestone kerb stones Archival photographic recording of existing bluestone pitchers prior to removal No prudent or feasible alternative to removal of bluestone pitchers on Nicholson Street Temporary fencing to protect post box from indirect impacts from machinery Archival photographic recording of Inner Circle Railway track Upon agreement the track section that is removed may be retained incorporated into an interpretive display The proposed construction method of cutting back shop awnings at 700 and 702-704 Nicholson Street must be undertaken in a manner that will have minimal impact upon the fabric of the building.	*Tramway Infrastructure Upgrades Incorporated Document* (2017) outlines exemptions from planning scheme requirements subject to the condition that a statement describing any impacts of the development on the significance of the heritage place is submitted to the responsible authority. This heritage impact assessment report, along with the proposed design drawings, should be submitted to City of Yarra to meet the requirements of this condition.
Former Nicholson Street Cable Tram Car Shed Track	VHI H7822-2253	Direct impact: Archaeological remains are potentially directly under the road surface and will be impacted by excavation	Monitoring by an appropriately qualified historical archaeologist must occur while the initial excavation works which may reveal the remains of the cable tram network within the VHI boundary take place. Additional management measures may be required by HV, which will be outlined on the consent when it is issued.	Consent required from Heritage Victoria
Janet Hillman Reserve and Inner Circle	HO133 NT B5436	Direct impact: Removal of track remnants	Archival photographic recording of Inner Circle Railway track Upon agreement the track section that is removed may be retained	*Tramway Infrastructure Upgrades Incorporated Document* (2017) outlines exemptions from planning scheme requirements subject to the condition that a statement describing

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

Item name	Number	Impact description	Site-specific mitigation measures	Statutory requirements
Railway			and incorporated into an interpretive display Temporary fencing to protect picket fencing and gateposts from indirect impacts from machinery	any impacts of the development on the significance of the heritage place is submitted to the responsible authority. This heritage impact assessment report, along with the proposed design drawings, should be submitted to City of Moreland to meet the requirements of this condition.

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

JACOBS

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to complete a Heritage Impact Assessment of the proposed works to upgrade Route 96 – SP2 on Nicholson Street, Carlton North in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs's Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

1. Introduction

1.1 Project background

Yarra Trams have engaged Jacobs Group (Australia) Pty Ltd (Jacobs) to prepare a historical heritage impact assessment for the Route 96 Upgrade Project (the Project). The Project has been divided into nine sections, referred to as Separable Portions (SP). This report will address the heritage issues for SP2.

The designs for Stops 20 (Reid Street), 21 (Scotchmer Street) and 22 (Holden Street) on Nicholson Street, North Fitzroy/North Carlton have been developed as part of the Route 96 – Upgrade Project to upgrade Route 96 to be Melbourne's first fully accessible route. Tram upgrades will improve access and journey time reliability along the route. The Project also creates the opportunity to incorporate an integrated design solution around the tram stops.

The design has consequently been developed with a collaborative delivery approach between Public Transport Victoria (PTV), Yarra Trams, the City of Yarra and the City of Moreland.

The Project involves the upgrade of tram stops 20, 21, 22 through the installation of the Centre Island Platforms (CIP) at Stops 20 and 21 and a Central Offset Platform (COP) at Stop 22 and approximately 650 metres (m) of track renewal alignment design.

This HIA report was updated in 2018 to assess new impacts to six shop awnings at 699A, 700, 702-704, 705, 709 and 711 Nicholson Street, North Carlton and North Fitzroy.

1.2 Aim and scope of assessment

The aim and scope of the assessment is to identify historical heritage items within or immediately adjacent to the Project area, assess the potential impacts on the heritage items from the tram track renewal and the associated Project activities, and develop measures to address impacts and advise on all necessary approvals.

1.3 Location of the proposed works area

The proposed works for SP2 are located along Nicholson Street from Macpherson Street, Carlton North to the southern side of Barkly Street, East Brunswick (Figure 1.1).

1.4 Limitations

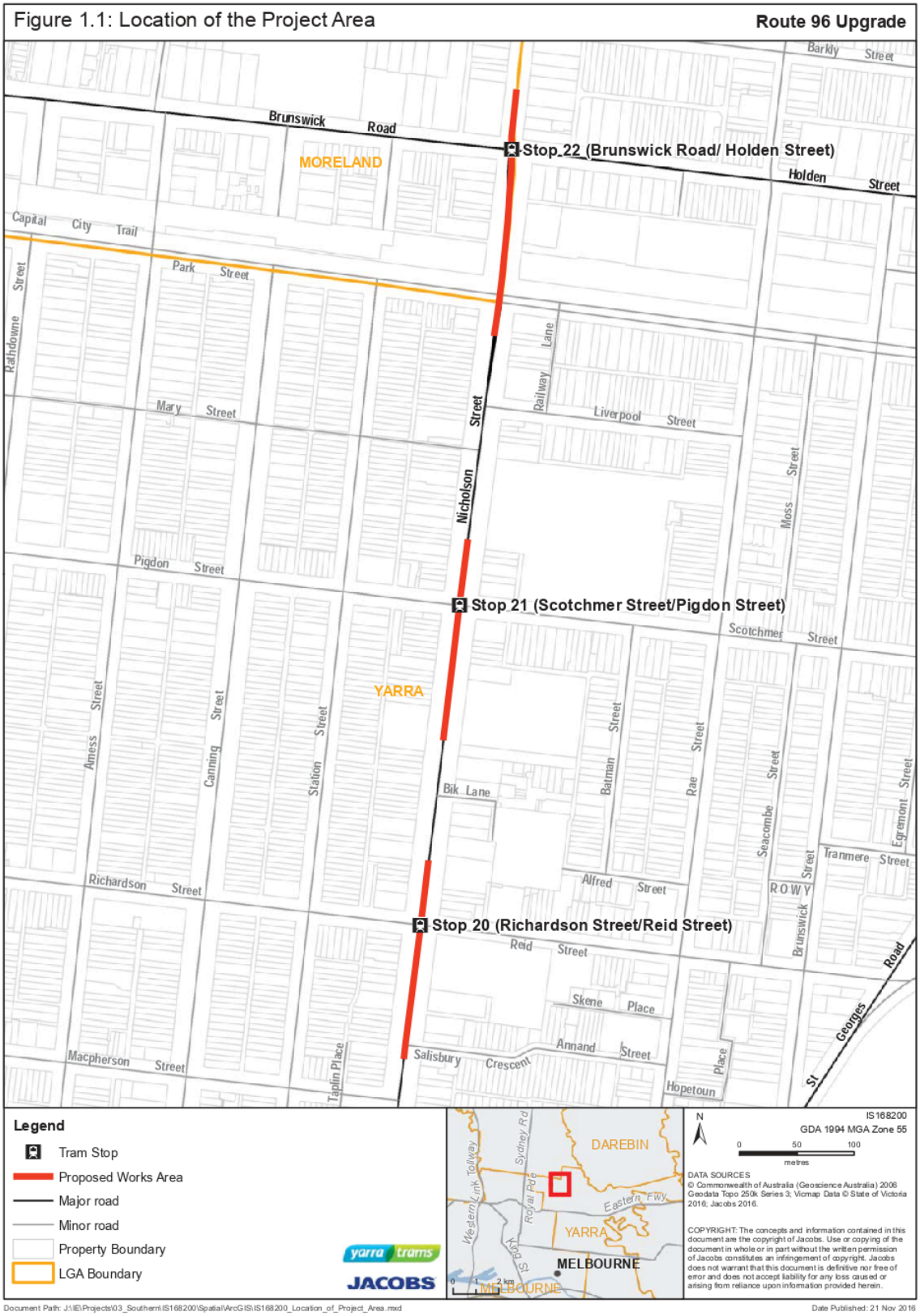
The project area is located on a major road. Due to safety considerations the site inspection was only able to take place from the safe locations of the footpaths and the tram stops.

The Heritage Impact Assessment was based on the Route 96 – Nicholson Street stops 20, 21 and 22: Macpherson Street (OHP157) Platform to Barkly Street (OHP187) Platform, Track and Overhead Renewals Draft Functional Design dated to the 17 October 2016; and Design Drawing Number IS168200-LP-SKT-0002 Rev P3; and OH Plan (Drawing Number IS168200-LO-DRG-0505 Rev P2).

1.5 Authorship of the report

The assessment was prepared by Andrew Wilkinson (Project Archaeologist, Jacobs) and Jennifer Chandler (Project Archaeologist, Jacobs). Mapping was prepared by Ashlea Davy (Spatial Consultant, Jacobs). A quality and practice review of the assessment was undertaken by Dr Karen Murphy (Technical Leader (Historical Heritage), Jacobs).

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018



2. Legislative framework

2.1 Commonwealth heritage legislation

2.1.1 *Environment Protection and Biodiversity Conservation Act* 1999 (Commonwealth)

The *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) includes 'national heritage' as a Matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution. It also establishes the National Heritage List (NHL) and the Commonwealth Heritage List (CHL).

The following is a description of each of the heritage lists and the protection afforded places listed on them.

2.1.1.1 National Heritage List

The NHL is a list of places with outstanding heritage value to Australia, including places overseas. Any proposed actions on NHL places must be assessed for their impact on the heritage values of the place in accordance with *Matters of National Environmental Significance (Significant Impact Guidelines 1.1)*. The guidelines require the proponent to undertake a self-assessment process to decide whether or not the action is likely to have a significant impact on a matter of National Environmental Significance, including the national heritage value of places. If an action is likely to have a significant impact an EPBC Act referral must be prepared and submitted to the Minister for approval.

2.1.1.2 Commonwealth Heritage List

The CHL is established under the EPBC Act. The CHL is a list of properties owned by the Commonwealth that have been assessed as having significant heritage value. Any proposed actions on CHL places must be assessed for their impact on the heritage values of the place in accordance with *Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies (Significant Impact Guidelines 1.2)*. The guidelines require the proponent to undertake a self-assessment process to decide whether or not the action is likely to have a significant impact on the environment, including the heritage value of places. If an action is likely to have a significant impact an EPBC Act referral must be prepared and submitted to the Minister for approval.

2.1.1.3 Register of the National Estate

The Register of the National Estate (RNE) was formerly compiled as a record of Australia's natural, cultural and Aboriginal heritage places worth keeping for the future. The RNE was frozen on 19 February 2007, which means that no new places have been added or removed since that time. From February 2012 all references to the RNE were removed from the EPBC Act. The RNE is maintained on a non-statutory basis as a publicly available archive.

2.2 State heritage legislation

2.2.1 *Heritage Act* 2017 (Victoria)

The *Heritage Act* 2017 (the Heritage Act), which replaced the Heritage Act 1995 on 1 November 2017, is administered by Heritage Victoria (HV), Department of Environment, Land, Water and Planning. The main purpose of the Heritage Act is to 'provide for the protection and conservation of for the cultural heritage of the State'. The Heritage Act protects all categories of cultural heritage relating to the non-Aboriginal settlement of Victoria including shipwrecks, buildings, structures, objects and archaeological sites.

There are two categories of listing provided for under the Heritage Act:

- Victorian Heritage Register (Section 23), and;
- Victorian Heritage Inventory (Section 117).

2.2.1.1 Victorian Heritage Register

This category provides protection for those places, objects, archaeological places, archaeological artefacts or shipwrecks assessed as being of outstanding cultural significance within the State of Victoria. The Heritage Act establishes a Heritage Council, an independent statutory authority which determines which heritage places/objects are included on the Victorian Heritage Register (VHR). Nominations to the VHR can be made to the Executive Director (Heritage Victoria) who will review the nomination and make recommendations to the Heritage Council for inclusion on the VHR.

Under Section 87 and 88 of the Heritage Act it is an offence to knowingly, or negligently, remove, relocate, demolish, damage, despoil, develop, alter or excavation any part of a registered place on the VHR, unless a Permit is granted under the Heritage Act. Permit applications must be submitted to the Executive Director for consideration and determination of the matter. There is a review process for the decisions or conditions of permits through the Heritage Council. Fees for permits to carry out works to a registered place or object are detailed in Section 13 and 14 of the *Heritage Regulations* 2017 and range in scale depending on the nature and costs of the works involved.

2.2.1.2 Victorian Heritage Inventory

The Victorian Heritage Inventory (VHI) includes all known archaeological sites (other than those determined to be of low archaeological value). Archaeological sites are defined as a place (other than a shipwreck) which:

(a) contains an artefact, deposit or feature which is 75 or more years old[1]; and

(b) provides information of past activity in the State; and

(c) requires archaeological methods to reveal information about the settlement, development or use of the place; and

(d) is not associated only with Aboriginal occupation of the place.

Under Section 123 of the Heritage Act it is an offence to knowingly or negligently deface, damage, or otherwise interfere with an archaeological site, whether it is included in the VHI or not, without a Consent. A Consent under Section 124 is required from the Executive Director for works or activities, including excavation, in relation to an archaeological site. Fees for consents are detailed in Section 23 of the *Heritage Regulations* 2017 and range in scale depending on the nature and scale of the works involved.

2.2.1.2.1 'D' listing

Heritage Victoria has introduced a 'D' classification in the VHI for places that don't meet the definitions and requirements for inclusion in the VHI as an archaeological site or those with no cultural heritage significance. There is no requirement to obtain Consent from HV for removal or damage to relics or sites provided with a 'D' classification although HV request they are notified in writing.

2.2.1.3 Discovering archaeological sites

Under Section 127 of the Heritage Act, if an archaeological site is discovered during an investigation or survey of land for a relevant survey purpose (including survey for an Aboriginal Cultural Heritage Management Plan), the person undertaking the survey or investigation must provide a site card to HV within 30 days after the discovery. Even if the survey does not reveal an archaeological site, HV must be notified and a survey report provided, in accordance with Section 31 of the *Heritage Regulations* 2017.

If an archaeological site is discovered during construction or excavation on any land, the person in charge of the construction or excavation must as soon as practicable report the discovery to HV.

[1] Archaeological sites that are less than 75 years old may also be listed on the VHI, if it is determined that the site is of archaeological value.

2.2.2 *Planning and Environment Act* 1987 (Victoria)

The Project area is located within the City of Yarra and the City of Moreland. In accordance with the *Planning and Environment Act* 1987, the City of Yarra and the City of Moreland have developed a Planning Scheme and as part of their Planning Scheme, have produced a Schedule to the Heritage Overlay, which identifies heritage places. The purpose of the Heritage Overlay and Schedule is to conserve and enhance places of natural or cultural significance and those elements which contribute to their significance (both historical and Aboriginal heritage places).

The City of Yarra and the City of Moreland Planning Schemes also have Clause 52.37 (post boxes and dry stone walls), which states that a permit is required to demolish or remove a post box constructed before 1930.

Under Section 43.01-1 Heritage Overlay – Permit Requirement of the City of Yarra and the City of Moreland Planning Scheme, a permit is required for a place listed in the schedule to the Heritage Overlay to:

- Construct a building or construct or carry out works, including:
  - Road works which change the appearance of a heritage place or which are not generally undertaken to the same details, specifications and materials.
  - Street furniture other than:

    Traffic signals, traffic signs, fire hydrants, parking metres, post boxes and seating

    Speed humps, pedestrian refuges and splitter islands

    Non-domestic disabled access, excluding a non-domestic disabled access ramp if the ramp is not visible from a street (other than a lane) or public park
- Externally alter a building by structural work, rendering, sandblasting or in any other way
- Construct or display a sign
- Carry out works, repairs and routine maintenance which change the appearance of a heritage place or which are not undertaken to the same details, specifications and materials

Under Section 43.01-4 Heritage Overlay – Permit Requirement of the City of Yarra and the City of Moreland Planning Scheme, no permit is required for a place listed in the schedule to the Heritage Overlay to develop a heritage place which is included on the Victorian Heritage Register, other than an application to subdivide a heritage place of which all or part is included in the Victorian Heritage Register.

Pursuant to section 6(2)(j) of the *Planning and Environment Act 1987* the Tramway Infrastructure Upgrades Incorporated Document (2017) outlines exemptions from planning scheme requirements as follows:

The use and development of the Land for a Tramway includes, but is not limited to, the

- new level access stops, including tram platforms and associated facilities, tram track and tram overhead infrastructure
- segregation treatments to better separate trams from general traffic
- roadway alterations including bluestone kerbing, building awnings and associated traffic and street furniture
- vegetation pruning and removal
- infrastructure to support improved priority for trams at traffic signals
- pedestrian operated signals and real-time passenger information
- ancillary infrastructure including sub-stations and driver facilities.

Any requirement in the planning scheme:

- which prohibits the use or development of the Land; or
- which requires the use or development of the Land to be carried out in a particular manner; or

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

- to obtain a permit

  does not apply to:

- the use and development of the Land for a Tramway by or on behalf of a public authority, other than the subdivision or consolidation of land; or
- the display of a Promotion sign within a Tramway.

The exemption from planning scheme requirements outlined above is subject to the following conditions:

- 4.2.2 (c) if the land is in a Heritage Overlay, a statement describing any impacts of the development on the significance of the heritage place

Before deciding whether to approve plans submitted under 4.2.2 (c), the responsible authority must consider, as appropriate:

- The decision guidelines of the zone, overlay or other provision that, if not for this incorporated document, would have required a planning permit for the use and/or development.

3. Background

3.1 Historical context

3.1.1 North Carlton

The area of North Carlton was developed from the 1850s as an outpost of Melbourne Town, with a bluestone quarry reserve, an associated penal station, and the Melbourne General Cemetery. The area was surveyed in 1869 as an extension for Melbourne's residential suburbs. The new half-acre blocks extended as far as Fenwick Street, continuing the north-south grid of Carlton, with 30 metre frontage allotments served by generous 20 and 30 metre wide government roads. Reserves were set aside for public buildings and gardens. The renowned surveyor, Clement Hodgkinson, was the initiator of the 1869 North Carlton plan, as head of the Crown Lands and Survey Department (Allom Lovell and Associates 1998b).

In 1876, the area north of Fenwick Street (approximately 173 acres), was subdivided into small suburban lots typically with 15 metre frontages but each was provided with the Victorian-era amenity of rear service lanes, separating utilitarian household functions such as coal and other deliveries, nightsoil cartage and stabling, from the formal house facade. The 30 metre wide roads of Drummond, Rathdowne and Canning Streets were also continued north. The subdivision led to a distinctive form of housing development where closely spaced, sometimes richly decorated, houses are viewed over low formally arranged front gardens and fences, forming a continuous and distinctive residential Victorian era streetscape. Post 1900, infilling of North Carlton's vacant sites proceeded quickly and by about 1915 the suburb was virtually complete, with religious and educational buildings, and government services following each development surge (Allom Lovell and Associates 1998b).

The suburb, once developed, was almost entirely residential with some factory/warehouse development after 1900 serving the commercial development in Nicholson and Rathdowne Streets. As a result North Carlton is a highly homogenous 19th and early 20th century residential suburb largely occupied by dense terrace development, set within a rigid rectilinear grid of north-south and east-west streets, served by rear lanes as an obligatory feature of polite suburban life of the era (Allom Lovell and Associates 1998b).

3.1.2 North Fitzroy

North Fitzroy was first settled by quarry workers due to the number of quarries in the area, including at Clifton Hill, Carlton and Princes Hill. North Fitzroy was an open area with most traffic travelling along Queens Parade (Jacob Lewis Vines and Fitzroy Planning Office 1978: 10). Early street layout in North Fitzroy did not conform with the standard north to south and east to west grid layout, but was based on the diagonal alignment of Heidelberg Road (Jacob Lewis Vines and Fitzroy Planning Office 1978: 13). Land between Park Street and Brunswick Road (overlapping with the Project area) was subdivided into lots and sold between 1877 and 1883. Most of the construction on these lots was completed by the 1890s (Jacob Lewis Vines and Fitzroy Planning Office 1978: 15).

Construction of cable tramway routes along Queens Parade, Nicholson Street and St Georges Road began in 1883 which resulted in the subdivision of existing allotments in North Fitzroy. Quarries and farms in the area north of Holden Street also began to be subdivided at this time. By 1887, when the tram services began, the area had developed into a commercial and residential area. The opening of the Inner Circle Railway took place in 1888 and housing continued to develop. Factories were built along Scotchmer Street in the 1930s, which was by then a commercial strip (Victorian Heritage Database 2014b: 3).

3.1.3 Cable trams

The first type of tram that was in use in Melbourne was the horse tram, however these were not able to be very large, could only go short distances and subsequently were not widely used. Cable trams were approved for construction by the Colonial government in 1883. The Melbourne Tramways trust was created to build tracks and powerhouses the same year (Yarra Trams nd)

The cable trams were based on the designs by Andrew Hallidie for the San Francisco network, which commenced operation in 1873. Each of the tram sets had two cars; the front car was open and contained the mechanism which would connect the tram to the cable which was below the road surface. The cable moved continuously so the tram driver was required to connect and disconnect from the cable to allow the tram to stop, cross other tram lines and to turn corners (Tram Museum Society of Victoria nd). The trams were able to continue moving for short distances using momentum, without being connected to the cable. Each tram set was able to carry 42 people in the open front car (20 seated and 22 standing) and 56 people in the second car (22 seated and 34 standing). The trams were able to operate to a very high frequency, with trams arriving every two minutes on the busiest lines at peak times (Yarra Trams nd).

To construct infrastructure for the cable trams, the road had to be excavated to a depth of 4 feet (1.2 m) and tunnels were constructed to house the cables running in both directions. The cables consisted of six strands of seven-steel wires with a hemp core (Yarra Trams nd). There were white marble marker stones installed in the roadway at the locations where the tram driver was required to disconnect from the cable in order to go through an intersection of two tram routes or around a corner. The tram would rely on momentum to continue moving before it could safely reconnect to the cable (Tram Museum Society of Victoria nd).

3.1.4 Inner Circle Railway

The Inner Circle Railway opened in Melbourne on 8 May 1888 with the aim of transporting passengers from the north of the city, through Carlton and then connecting with other trains at Princes Bridge. The railway line began north of Royal Park Station where it split off from the Coburg line, then continued northeast crossing under The Avenue and Royal Parade. The railway line crossed over Bowen Crescent and Park Street before continuing east along Park Street to Rushall Crescent, North Fitzroy. From here it ran southeast along Merri Creek before joining up with the Alphington and Heidelberg line at Clifton Hill. A line also branched off in a southerly direction, passing through the middle of the Edinburgh Gardens and terminating at the Fitzroy station, located in Queens Parade (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 9).

The infrastructure (platforms, tracks, signal boxes, fences, station buildings, crossings and overhead lines) required for the operation of the Inner Circle Railway was designed by the Victorian Railways drafting office (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 9). Two railway platforms and stations were constructed on Park Street in North Carlton and North Fitzroy and were designed according to the Maldon group design. This design can be seen today at Jewell, Brunswick, Moreland, Coburg and Clifton Hill railway stations (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 11).

The railway tracks and sleepers, signals and lights were built in 1888. Railway crossings were built at Bowen Crescent and at intersections along Park Street including Wilson, Lygon, McIlwraith, Rathdowne, Amess, Nicholson, Rae, Brunswick, Bennett Streets, and St George's Road. The railway crossings were marked out by picket fences. The picket fence and gatepost that formed the Nicholson Street crossing are still present within the Janet Hillman Reserve, adjacent to the Project area. The railway design also included landscaping (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 11).

Steam trains operated on the Inner Circle Railway from 1888 until the 1920s when the railway system was electrified (with the exception of the Fitzroy branch line, which remained un-electrified). Electricity substations were constructed during the changeover, including a large electric substation on the north side of Park Street in 1915. The passenger services between Royal Park and Clifton Hill ceased in 1948, although the Inner Circle Railway was reopened during the Olympic Games in 1956 to transport passengers from Flinders Street to the Carlton football oval (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 11-14).

The tracks and sleepers on the North Carlton section of the Inner Circle Railway were removed in the 1980s when the railway station was converted into a community house and the platform area was landscaped. The existing Canary Island Date Palms were retained. Some of the physical elements of the site were relocated to the Janet Hillman Reserve, located immediately adjacent to the Project area. The Janet Hillman Reserve is located on the site of the previous North Fitzroy Railway Station. Station remains include an elevated area of the former station platform constructed with bluestone and concrete edging, bluestone footings of the station building, a concrete base of the signal mast, and steel power line stanchions (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 16).

The North Carlton Station was converted into a community house between 1982 and 1984. The railway platform and tracks were removed. Remnants of the Inner Circle Railway along Park Street at the intersection of Nicholson Street (within Project area) and other intersections (Wilson Street, McIlwraith Street, Lygon Street, Amess Street, Nicholson Street, Rae Street, Brunswick Street North, St George's Road and Bennett Street) include remnant level crossings, tracks and signage. A shared walking path in the Janet Hillman Reserve was created in 1992-3 (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 17).

3.2 Heritage context

3.2.1 Previous studies and assessments

Vines (2011a) completed a Melbourne Metropolitan Tramway Study which included the Project area. The study included a thematic history, identification of buildings, structures, moveable objects (including rolling stock) and archives, assessment of significance of places, components and networks and recommendations for statutory protection. The study also included a compilation of surviving heritage places including horse tramways, cable tram engine houses, cable tram car sheds, electric tram depots, waiting shelters, substations, overhead and electricity supply, sidings and track work, bridges, workshops, offices, recreation buildings and accommodation buildings. Vines (2011b: 216) recommended that the Former Nicholson Street Cable Tram Car Shed and Workshop be listed on the Heritage Overlay.

A Conservation Management Plan (Allom Lovell and Associates and John Patrick Pty Ltd 2005) was undertaken for the Inner Circle Railway Linear Park Reserve within the City of Yarra to inform a proposed masterplan. The former Inner Circle Railway crosses the Project area. The report assessed the significance of various components of the former Inner Circle Railway Line as being of primary, contributory or of no significance. The policies outlined in the report (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 54) are to 'provide direction and guidelines for the retention of the heritage values of the place, their conservation and future management'. Allom Lovell and Associates and John Patrick Pty Ltd (2005: 32) described the remnants of the Inner Circle Railway where it crosses Nicholson Street as 'gateposts, and fragments of early fencing remain on both sides of the crossing. Some of the track across Nicholson Street is visible, embedded in the roadway'. Allom Lovell and Associates and John Patrick Pty Ltd (2005: 32) assessed the remnants as being *of primary significance* and the Conservation Management Plan policy as: 'Retain and conserve remaining track, gateposts and fencing. Reconstruct fencing where lacking and where practical given existing conditions'.

Primary significance is defined in the report (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 54) as:

> *Places or elements of primary significance are those which contribute in a fundamental way to an understanding of the cultural significance of the buildings and the site, as it exists. They may be predominantly intact in building form and fabric, and/or are particularly demonstrative of the original design or functional concept with regard to form or fabric. Places and elements regarded as being of primary significance would warrant inclusion on a national or state register of places of significance, in addition to local planning scheme protection. As such, they should be retained and, if altered, then it should be done with minimal impact on significant fabric.*

A heritage review for the City of Yarra was prepared by Allom Lovell and Associates (1998a) shortly after the City of Yarra was formed. The review included a thematic history, building citations for buildings outside the proposed Heritage Overlay area, street surveys of the entire municipality except for the former City of Fitzroy (already surveyed), and included heritage precincts, and landscape citations.

A local heritage places review was undertaken for the City of Moreland (Context 2008) to review and assess places of potential heritage significance that were unassessed from previous heritage studies. The study also reviewed previously assessed places. Over 1,900 properties were assessed by the review. In the summary of key findings, the Janet Hillman Reserve (immediately adjacent to the project area) was listed as having potential significance and rated as having 'medium priority' (Context 2008: 39).

A heritage assessment has been undertaken for SP3 and SP4 of the Route 96 Premium Line Project (Andrews 2015). The study area was located on Nicholson Street, south of Alexander Parade and south of the current Project area. The study area included the North Carlton Precinct. Proposed works included the removal of

bluestone kerbing and channels on the edge of Nicholson Street. A series of options to minimise impact to the bluestone pitchers were considered. From a road safety point of view the recommended option was the removal of all existing bluestone pitchers and asphalt road surface being extended to the existing bluestone kerb (Andrews 2015: 25).

3.2.2 Register results

A search of the following heritage registers and databases was undertaken on 21 October 2016 and 22 January 2018:

- Victorian Heritage Register (VHR)
- Victorian Heritage Inventory (VHI)
- Heritage Overlay of the Moreland Planning Scheme (MHO)
- Heritage Overlay of the Yarra Planning Scheme (YHO)
- Register of the National Estate (RNE)
- Commonwealth Heritage List (CHL)
- National Heritage List (NHL)
- World Heritage List (WHL)
- National Trust Register (NT)

There are eight heritage places that are within or immediately adjacent to the proposed works for the Project (Table 3.1, Figure 3.1 - Figure 3.3). One heritage place (Former Nicholson Street Cable Tram Car Shed Track H7822-2253) registered on the VHI is located within the Project area. Two heritage precincts overlap with the works areas of SP2: Carlton North Precinct (HO326) and Fitzroy North Precinct (HO327). One heritage place (Janet Hillman Reserve MHO133) is located immediately adjacent to the Project area but one of the Reserve's elements – remnant railway track from the Inner Circle Railway- extends into the Project area. The Inner Circle Railway is also registered with the National Trust (B5436). The remaining three heritage places Former Nicholson Street Cable Tram Car Shed and Workshop (H7822-2237), 658 Nicholson Street (HO423) and Family Butchers Shop (14943) are located adjacent to the Project area.

Table 3.1 : Heritage places within or immediately adjacent to the project area

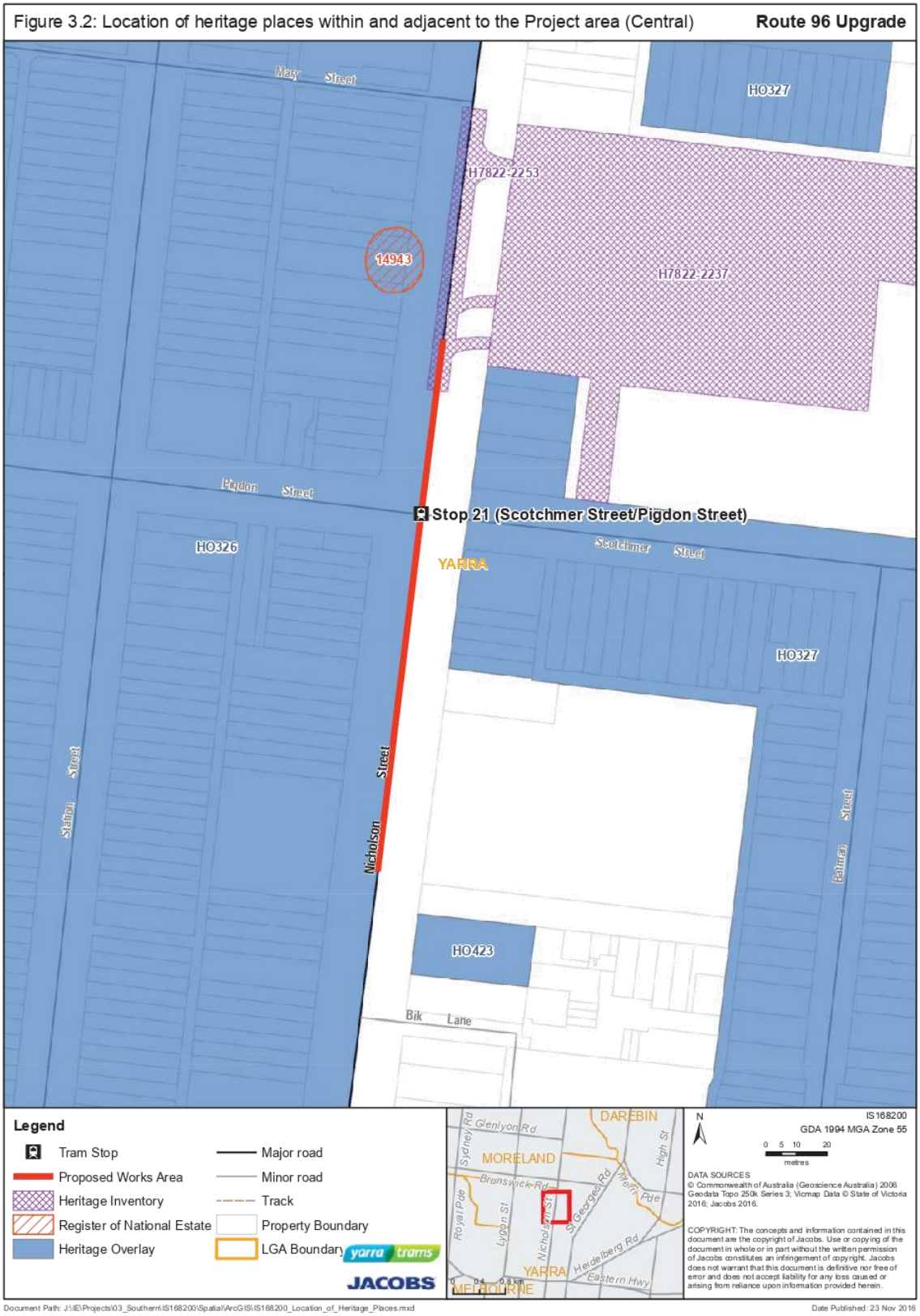
Item number	Name	Register	Number	Location	Within/overlapping/ adjacent to project area
1	North Carlton Precinct	YHO	HO326	West of Nicholson Street	Overlapping
2	North Fitzroy Precinct	YHO	HO327	East of Nicholson Street	Overlapping
3	Former Nicholson Street Cable Tram Car Shed Track	VHI	H7822-2253	Nicholson Street, Fitzroy North	Within
4	Former Nicholson Street Cable Tram Car Shed and Workshop	VHI	H7822-2237	734-768 Nicholson Street, Fitzroy North	Immediately adjacent
5	Janet Hillman Reserve	MHO	HO133	Corner of Park Street and Nicholson Street, East Brunswick. Extends west along Park Street.	Immediately adjacent, with one element within
6	658 Nicholson Street (residence)	YHO	HO423	658 Nicholson Street, North Fitzroy	Immediately adjacent
7	Family Butchers Shop	RNE	14943	745 Nicholson Street, Carlton North	Immediately adjacent
8	Inner and Outer Circle Railway	NT	B5436	Parkville	Boundary of this listing is unknown as heritage place is not mapped on register; however, the Inner Circle

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

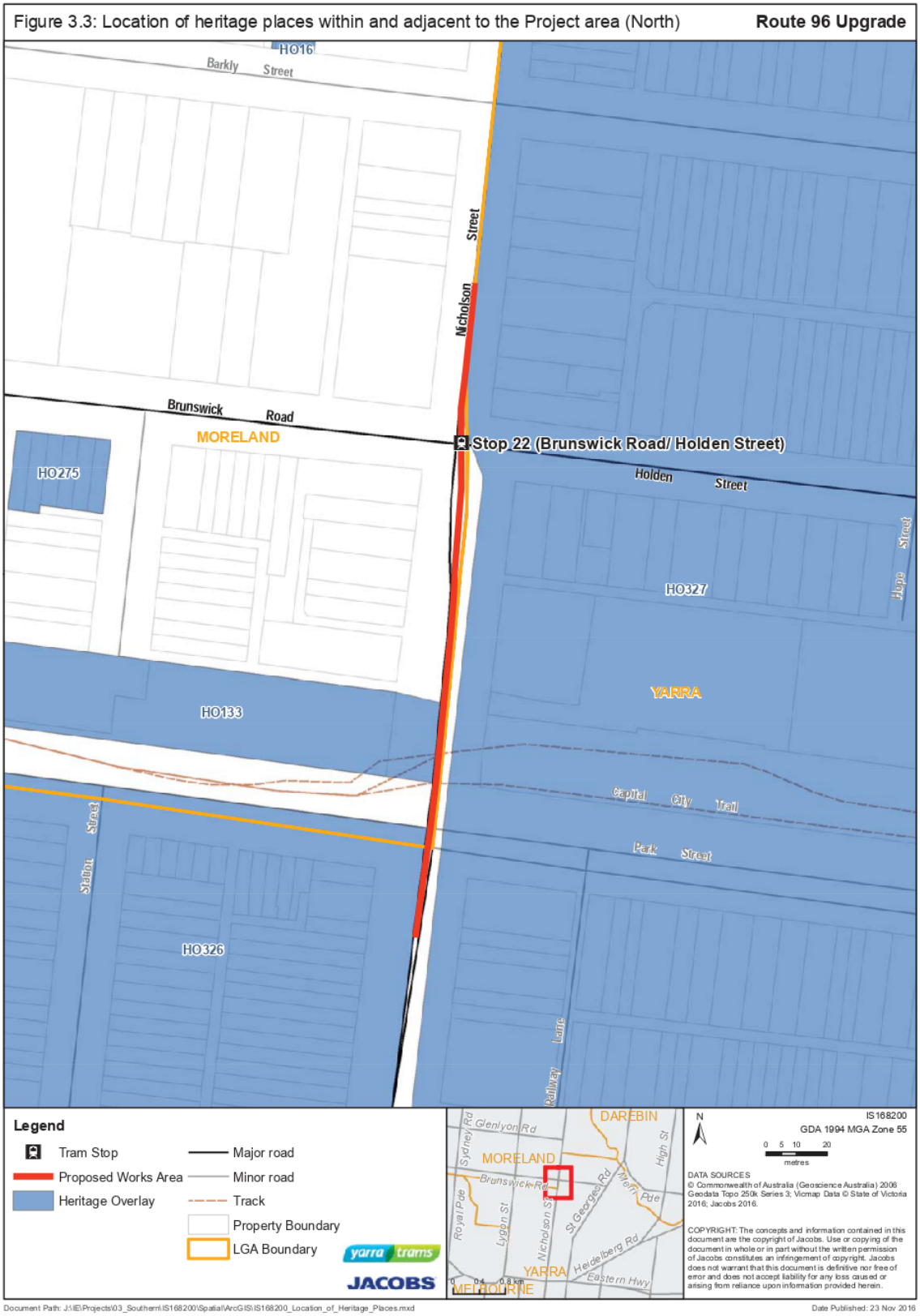
Item number	Name	Register	Number	Location	Within/overlapping/ adjacent to project area
					Railway extends into the project area

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018



Attachment 7 - Heritage Assessment (Jacobs) - updated 2018



4. Site inspection

A site inspection of the Project area was undertaken by Karen Murphy and Andrew Wilkinson on 25 October 2016, and on 25 January and 8 February 2018 by Jennifer Chandler. Photographs below were taken by Andrew Wilkinson and Jennifer Chandler. The aim of the site inspection was to understand the nature and location of the proposed activities and to provide information about the potential for impacts of the activities on the heritage values of any heritage places located within the Project area.

4.1 Results

4.1.1 Item 1: North Carlton Precinct (HO326)

At Park Street the remnant Inner Circle Railway track extends from the current tram track structure and across in a westerly direction towards the footpath, where it ends (Figure 4.1 - Figure 4.2). This section of track is approximately 12.6 m long. There is a metal and timber paling fence on the footpath (Figure 4.3) and a post located on the western side of Nicholson Street (Figure 4.5). A light post is located on the corner of Nicholson Street and Scotchmer Street (Figure 4.6). On the west side of Nicholson Street there is a pitched bluestone channel, four pitchers wide (Figure 4.7).

Four shop awnings located at 699A, 705, 709 and 711 Nicholson Street were inspected. The awning at 705 Nicholson Street is flat, with a corrugated iron roof and two decorative poles supporting the awning at the front (Figure 4.11). The awning at 709 Nicholson Street is cantilevered, flat and modern in appearance (Figure 4.12). The awning at 699A is cantilevered, flat and modern in appearance (Figure 4.15). The awning at 711 Nicholson Street is also cantilevered, flat and modern in appearance (Figure 4.16).

4.1.2 Item 2: North Fitzroy Precinct (HO327)

A post box is located on the western side of Nicholson Street near the reserve on Park Street (Figure 4.4). On the eastern side of Nicholson Street there is a pitched bluestone channel, two pitchers wide (Figure 4.8).

Two shop awnings located at 700 and 702-704 Nicholson Street were inspected. The awning at 700 Nicholson Street is corrugated iron and curved in shape, with three poles supporting the awning at the front (Figure 4.13). The awning at 702-704 Nicholson Street is cantilevered, flat, modern in appearance and extends over both shop fronts (Figure 4.14).

4.1.3 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)

The Fitzroy bus depot is located on the eastern side of Nicholson Street (Figure 4.9). There are tram tracks which extend from the depot into Nicholson Street (Figure 4.10).

4.1.4 Items 5 and 8: Janet Hillman Reserve / Inner Circle Railway

The Inner Circle Railway crosses over the Project area, with the section located west of Nicholson Street falling within the Janet Hillman Reserve and the North Carlton Precinct, and the section located east of Nicholson Street falling within the North Fitzroy Precinct. Features relating to the remnants of the former Inner Circle Railway were noted as described above and relating to remnant tracks (Figure 4.1, Figure 4.2), picket fence and gate post (Figure 4.3, Figure 4.5).

Figure 4.1 : Remnant railway tracks within Nicholson Street, facing east, away from Janet Hillman Reserve.

Figure 4.2 : Section of railway track which ends at the footpath on the western side of Nicholson Street, in Janet Hillman Reserve.

Figure 4.3 : Picket fence and post on Nicholson Street on edge of footpath, in Janet Hillman Reserve, facing northwest.

Figure 4.4 : Post box on Nicholson Street and Park Street intersection, facing east.

Figure 4.5 : Gate post, at edge of Janet Hillman Reserve, facing north.

Figure 4.6 : Light post on Scotchmer Street, facing west.

Figure 4.7 : Bluestone channel on west side of Nicholson Street, facing north.

Figure 4.8 : Bluestone channel on east side of Nicholson Street, facing north.

Figure 4.9 : Site of Former Nicholson Street Cable Tram Car Shed and Workshop, facing east.

Figure 4.10 : Site of Former Nicholson Street Cable Tram Car Shed and Workshop, and Former Nicholson Street Cable Tram Car Shed Track, facing northeast.

Figure 4.11 : The shop awning at 705 Nicholson Street, facing north.

Figure 4.12 : The shop awning at 709 Nicholson Street, facing south.

Figure 4.13 : The shop awning at 700 Nicholson Street, facing south.

Figure 4.14 : The shop awning (white) at 702-704 Nicholson Street, facing south.

Figure 4.15 : The shop awning and OHP at 699A Nicholson Street, facing south.

Figure 4.16 : The shop awning and OHP at 711 Nicholson Street, facing south.

5. Cultural heritage significance

5.1 Basis for assessment

The concept of cultural heritage significance helps in estimating the value of places. Places which are likely to be significant are those which 'help an understanding of the past or enrich the present, and which will be of value to future generations (Australia ICOMOS 2000). In Australia, the significance of a place is generally assessed according to the following values:

- Aesthetic value
- Historic value
- Scientific value
- Social value

The criteria for the Victorian Heritage Register are listed in Appendix A.

5.1 Significance assessment and statements of significance

Statements of significance for each of the four known heritage items have been taken from the relevant register entries and are presented in Table 5.1. When available, detailed significance assessments have also been provided for each place in Appendix A. All of the heritage items are of local significance. The potential impact of the proposed works on the heritage significance of these heritage items is considered in Section 6.

Table 5.1 : Summary heritage significance for heritage items

Name	Statement of significance
North Carlton Precinct (HO326	The North Carlton Precinct is significant for: its association with Melbourne's early history, as seen in the former Collingwood Stockade quarry reserve sites (such as Curtain Square), and the Penal Station (later the Lee St. Primary School site). as a demonstration, in plan form (south of Fenwick St), of 1869 urban design and the formal aesthetic of colonial urban planning for orderly development and suburban amenity within Melbourne's 5-mile township reserve, with the wide streets and intersections (laid out in a north south grid) providing a superb framework for the ornamental, highly cohesive built form of the precinct, with its intact 19th century terraces, corner shops, hotels, and the plan's provision for public, garden and religious building reserves, all enhanced by the adjoining public landscape of the Melbourne General Cemetery; the association with Clement Hodgkinson, the initiator of the 1869 North Carlton plan, who was head of the Lands and Survey Department and an important figure in the development of Melbourne's inner-urban suburbs, parks, and 19th century infrastructure; the historical importance of the 1876 government subdivision (North of Fenwick St) for its deliberate inclusion of much smaller, affordable allotments in order to capture the rising market of small investors, then aided by Building Society finance. This yielded the rapidly built, dense Boom-era terrace housing, and the later similarly dense attached Edwardian housing. No parks or reserves for religious use were provided; inclusion in this subdivision of larger, 1/2 acre allotments, as elevated sites along the wide streets of Lygon, Drummond and Park Streets. The residual adjacent quarry-damaged areas delayed the sale and development of these allotments such that they became superb sites for large detached inter-war villas; the representation in the subdivisions of the conventions of Victorian and Edwardian life where utilitarian features such as coal sheds, privies, stables/garages, rubbish containers, vehicular entrances or driveways, were concealed off lanes from public view; the early engineering and infrastructure such as the strict grid formation of street, lane and allotment layouts, dressed bluestone kerbs, pitched bluestone guttering, lanes and crossovers, asphalt footpaths and roads, and the presence of formally planted street trees which provided an important setting for a fine collection of residential, community and commercial buildings; the high aesthetic value of the precinct as evident in the continuous rows of similarly designed Victorian and

Name	Statement of significance
	Edwardian-era architecture, the regular street pattern and wide north south streets; the valuable landscape features such as Curtain Square, with its monuments and large trees, views to the Melbourne General Cemetery, the formal 20th century European tree and palm plantations in Drummond, Canning, and Rathdowne Streets, and plane trees planted in Newry and Nicholson Streets, plus important private gardens; as a highly intact example of a residential suburb built substantially between 1868 and c1915, reflecting well the 1880-1891 Boom era and the Federation recovery period of 1900-1915, a fine physical illustration of its major development period, with shops and hotels built on corners to the residential streets, providing Victorian-era, pre motor car convenience within walking distance; as evidence of the effect on development of public transport in the form of cable trams in Nicholson and Rathdowne Streets, and the Inner Circle Railway (1888) that promoted dense, rapid development of the precinct and the distinctive late Victorian commercial shopping strips in these streets; as the largest and most cohesive collection of small Victorian and Edwardian terrace and attached housing forms of any suburb in the State, with many small row houses and pairs sited in the longer, narrower streets of the 1876 northern subdivision; the many examples of grandiose terrace housing, contrasting with the simplicity of the less common early terrace forms; the important landmark buildings and community focal points in the locality that include public buildings such as the Lee St Primary School,19th century churches and halls, corner shops and hotels, and the 20thcentury meeting places for immigrants, including Serbian Orthodox, Ukrainian Orthodox Church communities, the 1932-3 Kadimah (former Jewish centre), St. John the Baptist's Greek Orthodox Church, and the more recent Albanian Mosque in Drummond Street; and the individually significant buildings from all eras and well preserved building examples, from pre-World War Two, that express a rich assembly of architectural design within the characteristics of Victorian and Federation era residential styles, some factories and warehouses, Moderne style flats, and large inter-war villas (Victorian Heritage Database 2014a).
North Fitzroy Precinct (HO327)	The Government planned section of Fitzroy North (south of Holden St) is significant for: as a demonstration of the earliest stages in the development of North Fitzroy, commencing with the 1850s Yan Yean tramway and the quarry route of Nicholson St, the establishment of North Fitzroy's first churches and its pre-Boom suburban mixture of small residential and commercial buildings coinciding with provision of horse drawn public transport.; its late 19th century buildings that represent rapid growth and change in the character of the relatively remote suburb to an established residential and business area with a range of commercial and institutional buildings serving the wider population of North Fitzroy; the aesthetic value of its suburban planning, with the combination of curving streets and garden reserves, and the vistas created by the intersections of standard rectilinear subdivision with the strong diagonals formed by St Georges Road and Queens Parade, the exceptionally wide streets and crescents, the triangular garden reserves, and focal views to buildings and parkland. This aesthetic is underscored by the built form seen in the construction of commercial and institutional buildings to the property alignment along a number of streets and on corners; the generous public domain, with street plantings of historic elms and 20th century plane trees, its low rise streetscapes of intact Victorian and Edwardian buildings one and two-storey terrace and villa housing; the range of Victorian and Edwardian-era building form and finish, from the modestly decorated timber cottages and stuccoed Italianate style houses, simply designed corner hotels and shops, to the rich variety of decorative buildings including an extraordinary concentration of decorative bi-chrome and polychrome brickwork and flamboyantly decorated Italianate residential and commercial terraces, banks and hotels, interspersed very occasionally with dominating narrow spire and tower elements of religious, commercial and institutional buildings. as one of Melbourne's early residential commuter suburbs served by train and cable tram services linking it to the city by 1888, with extensive Boom era terrace buildings and closely built row housing within this sub-area providing evidence of the effects of public transport on early development;

Name	Statement of significance
	as essentially a well preserved Boom-era suburb that, despite the abrupt economic collapse of the early 1890s, continued developing during the Great Depression years and into the first decades of the 20th century due to the amenity of its planning, parkland, local schools and shops and extensive public transport. This yielded both the generous frontages and sizes of the post-Depression villa houses and the row house forms and narrow frontages of the Boom era; its traditional Victorian-era residential character, evoked by the formal presentation of the decorated facade to the street with its small ornamental front garden, low front fence, pedestrian gateway and front path, with the functional necessities of delivering coal, removal of nightsoil and occasional stabling provided by the back lanes; landmark buildings and sites that formed key meeting places in the area during the main development era of the 1860s to the 1930s, including religious institutions, schools, monasteries and churches, and the buildings associated with charitable bodies such as the Salvation Army, Church of Christ Bible School, and the temperance movement. Also the former North Fitzroy Police Station, the former Licensed Victualler's School and Asylum site and complexes such as the Old Colonists Homes; the asphalt footpaths, pitched lanes, gutters and lane crossovers and mature street and individual plantings (such as mature elms, planes, palms, and Kurrajongs) that reinforce the unified character of the dense, relatively low-rise residential development; the 19th century landscape of Edinburgh Gardens and its representation of Fitzroy's cultural history in its plantings, memorials, recreation sports club grounds and pavilion buildings, plus the Inner Circle Railway reserve as a cultural landscape strip across the north of the area; the outstanding Victorian and Edwardian-era streetscapes such as those surrounding the Edinburgh Gardens (Alfred Crescent, St Georges Road, Brunswick and Freeman Streets) that include a rich collection of Victorian-era Gothic and Italianate style buildings interspersed with fine buildings from the Edwardian period; the important views and vistas within the area, including those of the Edinburgh Gardens, its mature trees and historic structures, as seen from many parts of the Heritage Overlay Area, and views obtained from Edinburgh Gardens to the many significant buildings at its curtilage and the city skyline, the vista from the elevated position of the Cricket Club grandstand toward the upper facades of buildings in Freeman and Brunswick Streets, and the Brunswick Street vistas (south to the spire of St Patrick's Cathedral, and north to St Luke's spire) the contribution of well-preserved inter-war buildings, particularly the small intact inter-war houses where the building design has adapted to the prevailing built character of the area in siting, scale, decorative quality and stylistic variety (Victorian Heritage Database 2014b).
Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)	The tracks and engine houses of the Melbourne cable tram network were constructed by the Melbourne Tramways Trust (MTT) during 1885-91. It was considered to be the world's largest cable tramway network under single ownership. The cable tram car sheds were built by the Melbourne Tramway and Omnibus Company which leased the lines from the MTT between 1885 and 1916 and operated the tram services. The precinct in the streets outside the former cable tram sheds has potential to contain significant 19th century archaeological remains (such as tram tracks, wood blocked and/or stone setts paving, deep concrete cable tunnels centred under each track, and inspection and access manholes having cast iron covers). They are less likely to be intact for sites where the cable tramway was replaced by an electric tramway because the cable tram infrastructure was unsuitable for electric trams and was generally removed for construction of the electric tracks. The remains in the tram track precinct are highly significant as they display how Melbourne's cable tram system operated (Heritage Victoria site card H7822-2253 2009).
Janet Hillman Reserve and Inner Circle Railway (HO133)	The remains of the Inner Circle Railway Line, including its alignment, the former North Carlton Station, remnants of the North Fitzroy Station, benches, tracks, stanchions, crossings and associated infrastructure, gatekeeper's cottage and significant trees are of metropolitan historic, social and aesthetic significance in respect to the municipalities through which it passes. The Inner Circle Railway Linear Reserve is of historic significance as a remnant of the railway network instigated to connect inner city suburban passengers to the Outer Circle Line which in turn was designed to

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

Name	Statement of significance
	connect passengers to the Gippsland line (through Caulfield) during the peak of Melbourne's Boom in the 1880s. The Inner Circle Railway Line is of social significance as part of a wider scheme, the Outer Circle Railway, constructed during the Boom period of 'Marvellous Melbourne'. While never providing the financial returns anticipated by its creators, it became a means of transport for generations of residents of Carlton and Fitzroy to the city and outer suburbs of Melbourne, including transport to the Melbourne Cricket Ground, Flinders Street Station and the 1956 Olympic Games. Rather than an efficient passenger service, it became an important goods line which operated until 1981. The Linear Reserve is also of some local social significance as evidenced by community agitation in the 1970s to retain its open spaces for public use. Today it is well-used as a community resource being utilized by local residents as a community garden, walking and cycling paths, and other recreation activities. Sections of introduced native and exotic vegetation provide a level of amenity. Elements of the Inner Circle Railway Linear Reserve are of aesthetic significance, as a collection of remnant railway infrastructure (alignment, benches, tracks, stanchions, crossing gates, gatekeeper's cottage, footings) which clearly demonstrates the presence, and former operation, of the passenger railway from 1888-1948 and the good line until 1981. The North Carlton Railway Station, one of only a small number of 'Maldon' style station buildings extant in suburban or country Victoria, is of particular individual significance. The Inner Circle Railway Linear Reserve Park and its heritage elements are of significance at the local level (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 50).

6. Impact assessment

6.1 Proposed works

The Project involves the upgrade of tram stops 20, 21, 22 through the installation of the CIP's at Stops 20 and 21 and a COP at Stop 22 and approximately 650 m of track renewal alignment design.

The following works are proposed for each of the stops:

Stop 20 (Richardson Street/Reid Street)

- Road side parking to be removed adjacent to the proposed CIP, seven parking spaces to be removed from the outbound road side (Richardson Street) and eight spaces to be removed from the inbound road side (Reid Street). Existing blue stone pitchers will need to be removed and the asphalt road service extended to the invert of kerb as specified on the design drawings to provide a suitable road surface for trafficable road lanes.

Stop 21 (Scotchmer Street/Pigdon Street)

- Road side parking to be removed adjacent to the CIP, ten parking spaces to be removed from the outbound road side (Pigdon Street) and ten spaces to be removed from the inbound road side (Scotchmer Street). Existing blue stone pitchers will need to be removed and the asphalt road service extended to the invert of kerb as specified on the design drawings to provide a suitable road surface for trafficable road lanes.
- Cutting back/removal of shop awnings is proposed due to clearance requirements of anything within 600 mm of the 2.8 m wide kerbside lane for safety reasons. Shop awnings at 700, 702-704, 705 and 709 Nicholson Street are within the clearance distance and either have to be removed or cut back. In order to minimise impacts it is proposed to cut back the modern cantilevered awnings at 702-704 and 705 Nicholson Street from the front of the awning. The shop awnings at 700 and 709 Nicholson Street are supported by poles. In this instance, it is proposed that part of the awning from the back (closest to the building) will be removed, while keeping the front of the awning intact, and the supporting poles will be reinstated into the pavement.
- Removal and installation of overhead poles (OHP) is proposed due to clearance requirements of anything within 600 mm of the 2.8 m wide kerbside lane for safety reasons. Shop awnings at 711 and 699A Nicholson Street require the OHPs to pass through the shop awnings approximately 300 mm from the front of the awnings. It is not possible to locate the OHPs closer to the road due to clearance requirements.

Stop 22 (Brunswick Road/ Holden Street)

- Road side parking to be removed adjacent to the 66 m long COP, six parking spaces to be removed from the outbound road side (Brunswick Road) and four spaces to be removed from the inbound road side (Holden Street). Existing blue stone pitchers will need to be removed and the asphalt road service extended to the invert of kerb as specified on the design drawings to provide a suitable road surface for trafficable road lanes.

The excavation across the site will be to a depth of 0.5 m, except the areas where local services works require deeper excavation, and will extend approximately 650 m along Nicholson Street in three sections. The width of the excavation will vary from 5.8 m width (along the standard straight track) to 10 m wide at the location of the new stops.

6.2 Potential impacts

6.2.1 Item 1: North Carlton Precinct (HO326)

The proposed works will impact on the bluestone kerbing and guttering on Nicholson Street within the North Carlton Precinct. The bluestone kerbing and guttering contributes to the aesthetic values of the precinct. Other

contributing features include the asphalt footpaths, pitched lanes, lane crossovers, back lanes and the architecture within the precinct. Currently there is a pitched bluestone channel four pitchers wide on the western side of Nicholson Street. The proposed works require the retention of the bluestone kerbs through the Project area, but change to the bluestone pitchers in the gutters and road surface would be required.

Due to the existing width of the road reserve in Nicholson Street and minimum clearance requirements for trams and Disability Discrimination Act (DDA) accessibility on the tram platform, it is not possible to accommodate the minimum 2.8 m trafficable lane widths without impacting on the bluestone pitchers. The existing pitchers are not an appropriate trafficable surface, due to their uneven surface, for the carrying capacity and speed of Nicholson Street which is an arterial road managed by VicRoads. Therefore, the design being proposed is to remove all bluestone pitchers for a length of approximately 100 m (west) and 70 m (east) alongside Stop 20, for a length of approximately 90 m (west) and 60 m (east) alongside Stop 21 and for approximately 105 m (west) alongside Stop 22 to enable construction of 2.8 m wide trafficable lanes on both sides of the road.

There is a post box located on the corner of the intersection of Park Street and Nicholson Street. Although the proposed works are restricted to the edge of the footpath, the post box may be subject to indirect impacts through use of machinery in the area.

The proposed works will impact on four shop awnings on the western side of Nicholson Street. Elements which contribute to the heritage significance of the North Carlton and North Fitzroy Precincts include attached Victorian-era and Edwardian-era mainly two-storey shop and residence rows in the major north-south street, having typically post-supported, mainly Corporation Style iron street verandahs. The row of shops impacted by the proposed works is significant as a major shopping centre of grand shop rows, extending from Macpherson Street (south of the Project area) to Park Street (in the northern section of the Project area), which were built along the cable tram route.

The cutting back of the front of the modern awning at 705 Nicholson Street and removal of part of the rear of the awning at 709 Nicholson Street will not affect the significance of North Carlton Precinct as while physical change to the awnings/verandahs will occur, the modified forms would only have negligible impact to:

- the high aesthetic value of the precinct as evident in the continuous rows of similarly designed Victorian and Edwardian-era architecture, the regular street pattern and wide north south streets; and
- as evidence of the effect on development of public transport in the form of cable trams in Nicholson and Rathdowne Streets, and the Inner Circle Railway (1888) that promoted dense, rapid development of the precinct and the distinctive late Victorian commercial shopping strips in these streets.

The proposed installations of two OHPs at 699A and 711 Nicholson Street will pierce the awnings approximately 300 mm from the front of the awnings. The OHPs will not provide any structural capacity to the awnings. During construction a 250 mm diameter hole will be cut into the shop awnings. Once the OHPs have been placed through the holes in the awnings, flashing will be added around the outside of the OHPs to protect the awnings from water seepage. The process will not impact on any other part of the awnings apart from the area where the holes are located. The physical impact to the buildings is minimal and will not impact on the significance of the North Carlton Precinct.

The proposed works will impact on the remnants of the Inner Circle Railway line which is a component of the North Carlton Precinct. Further discussion of the Inner Circle Railway line can be found in Section 6.2.2.

6.2.2 Item 2: North Fitzroy Precinct (HO327)

The proposed works will impact on the bluestone kerbing and channel on the eastern side of Nicholson Street within the North Fitzroy Precinct. The bluestone kerbing and guttering contributes to the Victorian and Edwardian aesthetic values of the precinct. Other contributing features include the asphalt footpaths, pitched lanes, lane crossovers, the back lanes and the architecture within the precinct. Currently there are areas with two courses of bluestone pitchers on the east side of Nicholson Street. The proposed works require the retention of the bluestone kerbs through the Project area, but change to the bluestone pitchers in the gutters and road surface would be required.

Due to the existing width of the road reserve in Nicholson Street and minimum clearance requirements for trams and Disability Discrimination Act (DDA) accessibility on the tram platform, it is not possible to accommodate the minimum 2.8 m trafficable lane widths without impacting on the bluestone pitchers. The existing pitchers are not an appropriate trafficable surface, due to their uneven surface, for the carrying capacity and speed of Nicholson Street which is an arterial road managed by VicRoads. Therefore, the design being proposed is to remove all bluestone pitchers for a length of approximately 100 m (west) and 70 m (east) alongside Stop 20, for a length of approximately 90 m (west) and 60 m (east) alongside Stop 21 and for approximately 105 m (west) alongside Stop 22 to enable construction of 2.8 m wide trafficable lanes on both sides of the road.

The proposed works will impact on two shop awnings on the eastern side of Nicholson Street. Elements which contribute to the heritage significance of the North Fitzroy Precinct include attached Victorian-era and Edwardian-era shops and residences above, with post-supported, street verandahs.

The cutting back of the front of the modern awning at 702-704 Nicholson Street and removal of part of the rear of the awning at 700 Nicholson Street will not affect the significance of North Fitzroy Precinct as while physical change to the awnings/verandahs will occur, the modified forms would only have negligible impact to:

- its low rise streetscapes of intact Victorian and Edwardian buildings one and two-storey terrace and villa housing; and
- as one of Melbourne's early residential commuter suburbs served by train and cable tram services linking it to the city by 1888, with extensive Boom era terrace buildings and closely built row housing within this sub-area providing evidence of the effects of public transport on early development.

The proposed works will impact on the remnants of the Inner Circle Railway line which is a component of the North Fitzroy Precinct. Further discussion of the Inner Circle Railway line can be found in Section 6.2.2.

6.2.1 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)

The northern section of Stop 21 proposed works will impact on the Former Nicholson Street Cable Tram Car Shed Track which is located on Nicholson Street. The proposed works include excavation at the site to a depth of 0.5 m and a width of 5.8 m width.

The Former Nicholson Street Cable Tram Car Shed Track will be directly impacted by the proposed works. The full extent of the remains of the cable tram network is unclear from the information available, however the remains may include tram tracks, wood blocked and/or stone setts paving, deep concrete cable tunnels centred under each track, and inspection and access manholes having cast iron covers. Archaeological monitoring during the works within the extent of the VHI site boundary is required to identify and record any archaeological artefacts present in the area related to the cable tram infrastructure.

6.2.2 Items 5 and 8: Janet Hillman Reserve (HO133) and Inner Circle Railway (NT)

The proposed works will impact on the remnant section of railway track which is related to the Inner Circle Railway. The existing section of railway track extends from the Janet Hillman Reserve into Nicholson Street and is approximately 12.6 m long. A 3.1 m section of the railway track from the middle of Nicholson Street will be required to be cut out of the road to allow for widening of the tram tracks, which will leave a section of track approximately 9.5 m in length. The section of track can be removed without damaging the remainder of track which will stay in the road. As new tram tracks for the Project are required to be constructed in this area it is not possible to retain the 3.1 m section of rail track, due to engineering constraints.

As the proposed works extend only to the edge of the footpath it is unlikely that the picket fence and gate posts situated within Janet Hillman Reserve will be impacted directly, although these items may be indirectly impacted through the use of machinery in the area.

The Conservation Management Plan (Allom Lovell and Associates and John Patrick Pty Ltd 2005) for the Inner Circle Railway outlines policies for the management of remnant features of this heritage item. The Inner Circle Railway line was assessed as being *of primary significance* and recommendations were to: *Retain and conserve remaining track, gateposts and fencing. Reconstruct fencing where lacking and where practical given existing conditions.*

Attachment 7 - Heritage Assessment (Jacobs) - updated 2018

6.2.3 Heritage places not impacted by the proposed works

The following heritage items will not be impacted by the proposed works as the Project area is constrained within the Nicholson Street road reserve:

- Item 4 – Former Nicholson Street Cable Tram Car Shed and Workshop – 734-768 Nicholson Street, Fitzroy North
- Item 6 – 658 Nicholson Street, North Fitzroy
- Item 7 – Family Butchers Shop – 745 Nicholson Street, Carlton North

7. Mitigation and management measures

7.1 Site-specific measures

7.1.1 Items 1 and 2: North Carlton and North Fitzroy Precinct (HO326 and HO327)

The works are within the North Fitzroy Precinct and North Carlton Precinct and will impact on several elements as outlined below.

7.1.1.1 Bluestone pitchers

A heritage assessment (Andrews 2015) for another section of the Route 96 Project considered options to minimise impact on bluestone pitchers in Nicholson Street. The assessment determined that there is no prudent or feasible alternative to their removal, despite some impact on contributory heritage elements of the heritage precincts. The substantial elements of the significant Victorian and Edwardian setting of the precincts (including the layout of the streets and the substantial sections of residential, commercial and institutional buildings) would be retained. The existing bluestone kerb would not be removed, retaining some visual representation of the original bluestone kerbing and guttering in the streetscape of the precincts.

Prior to the removal of the bluestone pitchers an archival photographic record of the bluestone kerbing and guttering would be prepared to document the extent and locations of the original bluestone. This would be undertaken in accordance with Heritage Victoria's *Technical Note: Photographic Recording for Heritage Places and Objects*.

7.1.1.2 Post box

A post box is located on the Nicholson Street and Park Street intersection and may be subject to indirect impacts. The post box should be protected from indirect impacts from machinery through the implementation of temporary fencing.

7.1.1.3 Shop awnings

The proposed construction method of cutting back shop awnings at 700, 702-704, 705 and 709 Nicholson Street must be undertaken in a manner that will have minimal impact upon the fabric of the building. If it is not possible to reinstate the existing poles at 709 Nicholson Street, due to their age and condition, new poles of a similar design and materials should be used.

The proposed construction method of cutting a 250 mm hole into the shop awnings of the properties located at 699A and 711 Nicholson Street must be undertaken in a manner that will have minimal physical impact upon the fabric of the building.

7.1.2 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)

The proposed works are within the VHI site, therefore a consent from HV will be required. Monitoring by an appropriately qualified historical archaeologist must occur while the initial excavation works which may reveal the remains of the cable tram network within the VHI boundary take place. Additional management measures may be required by HV, which will be outlined on the consent when it is issued.

7.1.3 Items 5 and 8: Janet Hillman Reserve and Inner Circle Railway (HO133 and NT)

The Janet Hillman Reserve is immediately adjacent to the Project area and the Inner Circle Railway dissects the Project area. Therefore, prior to the removal of the Inner Circle Railway tracks an archival photographic record of the tracks would be prepared to document the extent and locations of the original tracks. This would be undertaken in accordance with Heritage Victoria's *Technical Note: Photographic Recording for Heritage Places and Objects*. Upon agreement the track section that is removed may be retained and incorporated into an interpretive display.

Other remnants of the Inner Circle Railway which are located adjacent to the Project area, such as the picket fencing and gateposts, should be protected from indirect impacts from machinery through the implementation of temporary fencing.

7.2 General measures

7.2.1 Unexpected discoveries of historical heritage

All historical archaeological sites in Victoria older than 75 years are protected by the Heritage Act, whether they are recorded on the VHI or not. It is an offence to knowingly or negligently deface, damage, or otherwise interfere with an archaeological site without obtaining the appropriate consent from the Executive Director of HV.

Under Section 127 of the Heritage Act, if an archaeological site is discovered during construction or excavation on any land, the person in charge of the construction or excavation must as soon as practicable report the discovery to HV. If any unexpected archaeological sites are uncovered during construction works, the following procedure must be followed by Yarra Trams and/or their contractors:

STOP

- Stop any activity which may impact on the discovery
- Ensure that other people working in the area are aware of it and have also stopped work in the area
- Protect the artefacts or site by erecting temporary fencing or other suitable barrier

ADVISE

- A supervisor or the cultural heritage consultant must be consulted if they are on site
- Supervisors are to contact Yarra Trams to advise of the discovery
- Supervisors are to advise HV where the discovery was made and provide a description or photograph of the discovery

MANAGE

- HV, the onsite heritage consultant or supervisor will advise on how to manage the discovery
- Management of the discovery may involve protection, recovery, recording or removal of the artefacts or features and is likely to require Consent to Damage from HV.

7.2.2 Heritage induction training

Historical heritage awareness training should be completed as part of the site induction for Yarra Trams personnel and/or contractors prior to the commencement of construction works to ensure understanding of potential heritage items that may be impacted during the project, and the procedure required to be undertaken in the event of discovery of historical heritage material, features or deposits, or the discovery of human remains.

8. Approvals requirements

8.1 Items 1 and 2: North Carlton and North Fitzroy Precinct (HO326 and HO327)

The works are within the North Carlton Precinct (HO326) and North Fitzroy Precinct (HO327) which are listed in the Heritage Overlays of the City of Moreland and City of Yarra planning schemes; however the *Tramway Infrastructure Upgrades Incorporated Document* (2017) outlines exemptions from planning scheme requirements which relate to the Route 96 – SP2 proposed works. The exemption is subject to the condition that a statement describing any impacts of the development on the significance of the heritage place is submitted to the responsible authority. This heritage impact assessment report, along with the proposed design drawings, should be submitted to City of Moreland and City of Yarra to meet the requirements of this condition.

8.2 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)

Under section 124 of the Heritage Act, consent is required from the Executive Director of Heritage Victoria for works or activities, including excavation, in relation to a site listed on the VHI.

The application for consent is to be made to the Executive Director of Heritage Victoria and accompanied by the prescribed fee (currently up to $2,844) and this report.

A consent may be issued with terms and conditions such as the following:

a) That the activity authorised by the consent be supervised by a person with appropriate professional qualifications and experience as specified in the consent; and

b) That archaeological artefacts found in the course of the activity authorised by the consent are to be conserved and curated in a way specified in the consent; and

c) Any other terms and conditions that the Executive Director thinks fit.

The terms and conditions contained in the consent must be complied with. This heritage impact assessment report should be submitted as part of the consent application.

8.3 Items 5 and 8: Janet Hillman Reserve (HO133) and Inner Circle Railway (NT)

The works are within the Janet Hillman Reserve (HO133) which is listed in the Heritage Overlay of the City of Moreland planning scheme; however the *Tramway Infrastructure Upgrades Incorporated Document* (2017) outlines exemptions from planning scheme requirements which relate to the Route 96 – SP2 proposed works. The exemption is subject to the condition that a statement describing any impacts of the development on the significance of the heritage place is submitted to the responsible authority. This heritage impact assessment report, along with the proposed design drawings, should be submitted to City of Moreland to meet the requirements of this condition.

9. References

Allom Lovell and Associates 1998a *City of Yarra Heritage Review, Volume 1, Thematic History*. Report prepared for City of Yarra, Allom Lovell and Associates, Melbourne.

Allom Lovell and Associates 1998b *City of Yarra Heritage Review, Volume 3, Heritage Precincts.* A report for City of Yarra.

Allom Lovell and Associates and John Patrick Pty Ltd 2005 *Inner Circle Railway Linear Park Reserve: Park Street, North Carlton and North Fitzroy. Conservation Management Plan.* A report to City of Yarra.

Andrews, R. 2015 *Route 96 - SP3 and SP4. Heritage Impact Assessment*. A report to Yarra Trams.

Australia ICOMOS 2000 *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999*. Burwood, Victoria: Australia ICOMOS Incorporated.

Context 2008 *Moreland Local Heritage Places Review*. A Report to City of Moreland.

Jacob Lewis Vines and Fitzroy Planning Office 1978 *North Fitzroy Conservation Study*. A report commissioned by the Historic Buildings Preservation Council and the Australian Heritage Commission for the Fitzroy City Council.

Tram Museum Society of Victoria nd *Cable Trams of Melbourne and Sydney - Historical Highlights Pt. 1*. Retrieved 23 June 2014 from http://www.tramway.org.au/reflections.php?p=cable_pt_1.

Victoria State Government 2017 *Tramway Infrastructure Upgrades, incorporated document pursuant to section 6(2)(j) of the Planning and Environment Act 1987*.

Victorian Heritage Database 2014a *North Carlton Precinct*. Retrieved 21 October 2016 from http://vhd.heritagecouncil.vic.gov.au/places/73442.

Victorian Heritage Database 2014b *North Fitzroy Precinct*. Retrieved from http://vhd.heritagecouncil.vic.gov.au/places/73443.

Vines, G. 2011a *Melbourne Metropolitan Tramway Heritage Study,* . Report for Heritage Victoria, Biosis Research, Melbourne.

Vines, G. 2011b *Melbourne Metropolitan Tramway Study. List of Surviving Heritage Places.* A report for Heritage Victoria.

Yarra Trams nd *Trams in Melbourne*. Retrieved 23 June 2014 from http://www.yarratrams.com.au/about-us/our-history/trams-in-melbourne/.

Appendix A. Criteria for heritage significance

A.1 Criteria for the Victorian Heritage Register

Places with outstanding heritage values, and of a type or class of place or associated with an event, a movement, person or group that is of particular importance to the State of Victoria may be entered on the Victorian Heritage Register. Under the *Heritage Act 1995* a place is assessed by the following criteria:

- Criterion A - Importance to the course, or pattern, of Victoria's cultural history
- Criterion B - Possession of uncommon, rare or endangered aspects of Victoria's cultural history
- Criterion C - Potential to yield information that will contribute to an understanding of Victoria's cultural history
- Criterion D - Importance in demonstrating the principal characteristics of a class of cultural places or objects
- Criterion E - Importance in exhibiting particular aesthetic characteristics
- Criterion F - Importance in demonstrating a high degree of creative or technical achievement at a particular period
- Criterion G - Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of their continuing and developing cultural traditions
- Criterion H - Special association with the life or works of a person, or group of persons, of importance in Victoria's history

Appendix B. Significance assessment and statements of significance

B.1 North Carlton Precinct

B.1.1 Description

The North Carlton Precinct is a grid of spacious streets with provision for public and religious buildings and public gardens reserves. The area has intact decorative one and two storey 19th and early 20th century terrace housing, decorative front fences, small corner shops and hotels. There are also small Victorian and Edwardian terrace and attached housing forms. The area displays engineering and infrastructure with grid formation of street, lane and allotment layouts. The streets have dressed bluestone kerbs, pitched bluestone guttering, lanes and crossovers, asphalt footpaths and roads, and mature exotic street trees. The area displays picturesqueness in the Italianate style with decorative cement mouldings, coloured brickwork and parapets, portico and recessed verandah elements and details or the Edwardian preference for prominent asymmetrical hipped or gabled roofs with tall chimneys, terra cotta and timber decoration, and elaborate gable ends, verandah posts and friezes. The North Carlton Precinct has a skyline of decorative parapets, entablatures, curved wing walls, chimneys and complex hipped and gabled rooflines. The northern section of the Precinct has late Victorian and Post Federation detached villas, The Precinct also has small factories and warehouses.

Public transport within the North Carlton Precinct was at first a horse-drawn omnibus service along Nicholson St to the city, which stimulated development in Canning and Station Streets where standard pattern terrace housing predominated. With population growth came the first government primary school (opening 1873, later replaced by the Lee St Primary School, 1878), shops, shop rows, and corner hotels.

The 1883 announcement of Rathdowne and Nicholson Streets as future cable tram routes meant an explosion of dense residential development of terrace housing in almost every street north to Park Street. In 1887-8 new cable tram and Inner Circle Railway services gave this area perhaps the best access to public transport of any Victorian-era inner Melbourne suburb: rows of shops and residences were built along the tram routes. At the cable tram terminus in Nicholson St, adjoining the North Fitzroy Inner Circle Railway station, a major shopping centre developed with grand shop rows, extending from Macpherson to Park Streets. Then at the fringe of suburbia, northern sections of Canning and Drummond Streets were popular for larger, detached late Victorian houses that might have been served by private transport in the form of stabling. The Inner Circle passenger train link to the Melbourne (Princes Bridge) was completed in 1901 and operated until 1948 which explains the popularity of North Carlton in the Edwardian and Interwar eras (Victorian Heritage Database 2014a).

B.1.2 Curtilage information

As shown in Figure 3.3.

B.1.3 Significance assessment

The below significance assessment was reproduced from the VHD.

Table B.1 : Significance of North Carlton Precinct

Criterion	Heritage assessment
A - Importance to the course or pattern of Victoria's cultural history	Meets this criterion (see statement of significance below).
B - Possession of uncommon, rare or endangered aspects of Victoria's cultural history	Does not meet this criterion.

Criterion	Heritage assessment
C - Potential to yield information that will contribute to an understanding of Victoria's cultural history	Does not meet this criterion.
D - Importance in demonstrating the principal characteristics of a class of cultural places or objects	Does not meet this criterion.
E - Importance in exhibiting particular aesthetic characteristics	Meets this criterion (see statement of significance below).
F - Importance in demonstrating a high degree of creative or technical achievement at a particular period	Does not meet this criterion.
G - Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of their continuing and developing cultural traditions	Meets this criterion (see statement of significance below).
H - Special association with the life or works of a person, or group of persons, of importance in Victoria's history	Does not meet this criterion.

B.1.4 Statement of significance

The North Carlton Precinct is significant for:

- its association with Melbourne's early history, as seen in the former Collingwood Stockade quarry reserve sites (such as Curtain Square), and the Penal Station (later the Lee St. Primary School site).
- as a demonstration, in plan form (south of Fenwick St), of 1869 urban design and the formal aesthetic of colonial urban planning for orderly development and suburban amenity within Melbourne's 5-mile township reserve, with the wide streets and intersections (laid out in a north south grid) providing a superb framework for the ornamental, highly cohesive built form of the precinct, with its intact 19th century terraces, corner shops, hotels, and the plan's provision for public, garden and religious building reserves, all enhanced by the adjoining public landscape of the Melbourne General Cemetery;
- the association with Clement Hodgkinson, the initiator of the 1869 North Carlton plan, who was head of the Lands and Survey Department and an important figure in the development of Melbourne's inner-urban suburbs, parks, and 19th century infrastructure;
- the historical importance of the 1876 government subdivision (North of Fenwick St) for its deliberate inclusion of much smaller, affordable allotments in order to capture the rising market of small investors, then aided by Building Society finance. This yielded the rapidly built, dense Boom-era terrace housing, and the later similarly dense attached Edwardian housing. No parks or reserves for religious use were provided;
- inclusion in this subdivision of larger, 1/2 acre allotments, as elevated sites along the wide streets of Lygon, Drummond and Park Streets. The residual adjacent quarry-damaged areas delayed the sale and development of these allotments such that they became superb sites for large detached inter-war villas;

- the representation in the subdivisions of the conventions of Victorian and Edwardian life where utilitarian features such as coal sheds, privies, stables/garages, rubbish containers, vehicular entrances or driveways, were concealed off lanes from public view;
- the early engineering and infrastructure such as the strict grid formation of street, lane and allotment layouts, dressed bluestone kerbs, pitched bluestone guttering, lanes and crossovers, asphalt footpaths and roads, and the presence of formally planted street trees which provided an important setting for a fine collection of residential, community and commercial buildings;
- the high aesthetic value of the precinct as evident in the continuous rows of similarly designed Victorian and Edwardian-era architecture, the regular street pattern and wide north south streets;
- the valuable landscape features such as Curtain Square, with its monuments and large trees, views to the Melbourne General Cemetery, the formal 20th century European tree and palm plantations in Drummond, Canning, and Rathdowne Streets, and plane trees planted in Newry and Nicholson Streets, plus important private gardens;
- as a highly intact example of a residential suburb built substantially between 1868 and c1915, reflecting well the 1880-1891 Boom era and the Federation recovery period of 1900-1915, a fine physical illustration of its major development period, with shops and hotels built on corners to the residential streets, providing Victorian-era, pre motor car convenience within walking distance;
- as evidence of the effect on development of public transport in the form of cable trams in Nicholson and Rathdowne Streets, and the Inner Circle Railway (1888) that promoted dense, rapid development of the precinct and the distinctive late Victorian commercial shopping strips in these streets;
- as the largest and most cohesive collection of small Victorian and Edwardian terrace and attached housing forms of any suburb in the State, with many small row houses and pairs sited in the longer, narrower streets of the 1876 northern subdivision;
- the many examples of grandiose terrace housing, contrasting with the simplicity of the less common early terrace forms;
- the important landmark buildings and community focal points in the locality that include public buildings such as the Lee St Primary School,19th century churches and halls, corner shops and hotels, and the 20th century meeting places for immigrants, including Serbian Orthodox, Ukrainian Orthodox Church communities, the 1932-3 Kadimah (former Jewish centre), St. John the Baptist's Greek Orthodox Church, and the more recent Albanian Mosque in Drummond Street; and
- the individually significant buildings from all eras and well preserved building examples, from pre-World War Two, that express a rich assembly of architectural design within the characteristics of Victorian and Federation era residential styles, some factories and warehouses, Moderne style flats, and large inter-war villas (Victorian Heritage Database 2014a).

B.2 Item 2: Fitzroy North Precinct (HO327)

B.2.1 Description

The main development period evident in the heritage overlay south of Holden Street is that of the Victorian era with a substantial contribution from the Edwardian-period. There is also a contribution from some well-preserved inter-war buildings and individually significant places of all eras.

When cable tram routes along Queen's Parade, Nicholson Street and St. Georges Road commenced construction in 1883, North Fitzroy landowners began subdividing their allotments. On the Nicholson Street tram route, owners of the 1850s stone quarries and the 1839 farm allotments north of Holden St, followed suit.

When tram services began in 1887 many new houses were ready for sale or under construction. North Fitzroy emerged as a late-Victorian commuter suburb with local shopping strips along the cable tram routes, the commercial strip of St Georges Road extending east and west along Scotchmer Street. Convenience shops were built on pedestrian street corners as households multiplied. The Inner Circle Railway running via Royal Park, North Carlton, Nicholson St, and Clifton Hill was completed in 1888 with a spur line dividing the Edinburgh Gardens into two, and terminating at the 'Fitzroy' station, Queen's Parade. A new rail link direct to the city (the Clifton Hill to Princes Bridge line) opened in 1901 (85) and saw Edwardian buildings filling out the suburban streets east of St. Georges Road and the revitalising of the main shopping strips. Public transport continued to support North Fitzroy as a commuter suburb during the 1920s with the opening of Rushall railway station and the electrification and extension of the St Georges Rd and Nicholson St tramways.

North Fitzroy's suburban development, especially east of St George's Road to Rushall Crescent, was far from complete when the Boom collapsed in 1893. However its good access to public transport led to a rapid recovery. A number of small factories were built in or near the 19th century commercial strip of Scotchmer Street, the best architectural examples being of the late 1930s (Victorian Heritage Database 2014b).

B.2.2 Curtilage information

As shown in Figure 3.3.

B.2.3 Significance assessment

The below significance assessment was reproduced from the VHD.

Table B.2 : Significance assessment for Fitzroy North Precinct

Criterion	Heritage assessment
A - Importance to the course or pattern of Victoria's cultural history	Meets this criterion (see statement of significance below).
B - Possession of uncommon, rare or endangered aspects of Victoria's cultural history	Does not meet this criterion.
C - Potential to yield information that will contribute to an understanding of Victoria's cultural history	Does not meet this criterion.
D - Importance in demonstrating the principal characteristics of a class of cultural places or objects	Does not meet this criterion.
E - Importance in exhibiting particular aesthetic characteristics	Meets this criterion (see statement of significance below).
F - Importance in demonstrating a high degree of creative or technical achievement at a particular period	Does not meet this criterion.
G - Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of their continuing and developing cultural traditions	Does not meet this criterion.
H - Special association with the life or works of a person, or group of persons, of importance in Victoria's history	Does not meet this criterion.

B.2.4 Statement of significance

The Government planned section of Fitzroy North (south of Holden St) is significant for:

- as a demonstration of the earliest stages in the development of North Fitzroy, commencing with the 1850s Yan Yean tramway and the quarry route of Nicholson St, the establishment of North Fitzroy's first churches and its pre-Boom suburban mixture of small residential and commercial buildings coinciding with provision of horse drawn public transport.;

- its late 19th century buildings that represent rapid growth and change in the character of the relatively remote suburb to an established residential and business area with a range of commercial and institutional buildings serving the wider population of North Fitzroy;
- the aesthetic value of its suburban planning, with the combination of curving streets and garden reserves, and the vistas created by the intersections of standard rectilinear subdivision with the strong diagonals formed by St Georges Road and Queens Parade, the exceptionally wide streets and crescents, the triangular garden reserves, and focal views to buildings and parkland. This aesthetic is underscored by the built form seen in the construction of commercial and institutional buildings to the property alignment along a number of streets and on corners;
- the generous public domain, with street plantings of historic elms and 20th century plane trees,
- its low rise streetscapes of intact Victorian and Edwardian buildings one and two-storey terrace and villa housing;
- the range of Victorian and Edwardian-era building form and finish, from the modestly decorated timber cottages and stuccoed Italianate style houses, simply designed corner hotels and shops, to the rich variety of decorative buildings including an extraordinary concentration of decorative bi-chrome and polychrome brickwork and flamboyantly decorated Italianate residential and commercial terraces, banks and hotels, interspersed very occasionally with dominating narrow spire and tower elements of religious, commercial and institutional buildings.
- as one of Melbourne's early residential commuter suburbs served by train and cable tram services linking it to the city by 1888, with extensive Boom era terrace buildings and closely built row housing within this sub-area providing evidence of the effects of public transport on early development;
- as essentially a well preserved Boom-era suburb that, despite the abrupt economic collapse of the early 1890s, continued developing during the Great Depression years and into the first decades of the 20th century due to the amenity of its planning, parkland, local schools and shops and extensive public transport. This yielded both the generous frontages and sizes of the post-Depression villa houses and the row house forms and narrow frontages of the Boom era;
- its traditional Victorian-era residential character, evoked by the formal presentation of the decorated facade to the street with its small ornamental front garden, low front fence, pedestrian gateway and front path, with the functional necessities of delivering coal, removal of nightsoil and occasional stabling provided by the back lanes;
- landmark buildings and sites that formed key meeting places in the area during the main development era of the 1860s to the 1930s, including religious institutions, schools, monasteries and churches, and the buildings associated with charitable bodies such as the Salvation Army, Church of Christ Bible School, and the temperance movement. Also the former North Fitzroy Police Station, the former Licensed Victualler's School and Asylum site and complexes such as the Old Colonists Homes;
- the asphalt footpaths, pitched lanes, gutters and lane crossovers and mature street and individual plantings (such as mature elms, planes, palms, and Kurrajongs) that reinforce the unified character of the dense, relatively low-rise residential development;
- the 19th century landscape of Edinburgh Gardens and its representation of Fitzroy's cultural history in its plantings, memorials, recreation sports club grounds and pavilion buildings, plus the Inner Circle Railway reserve as a cultural landscape strip across the north of the area;
- the outstanding Victorian and Edwardian-era streetscapes such as those surrounding the Edinburgh Gardens (Alfred Crescent, St Georges Road, Brunswick and Freeman Streets) that include a rich collection of Victorian-era Gothic and Italianate style buildings interspersed with fine buildings from the Edwardian period;
- the important views and vistas within the area, including those of the Edinburgh Gardens, its mature trees and historic structures, as seen from many parts of the Heritage Overlay Area, and views obtained from Edinburgh Gardens to the many significant buildings at its curtilage and the city skyline, the vista from the elevated position of the Cricket Club grandstand toward the upper facades of buildings in Freeman and Brunswick Streets, and the Brunswick Street vistas (south to the spire of St Patrick's Cathedral, and north to St Luke's spire)

- the contribution of well-preserved inter-war buildings, particularly the small intact inter-war houses where the building design has adapted to the prevailing built character of the area in siting, scale, decorative quality and stylistic variety (Victorian Heritage Database 2014b).

B.3 Item 3: Former Nicholson Street Cable Tram Car Shed Track (H7822-2253)

B.3.1 Description

The Former Nicholson Street Cable Tram Car Shed and Workshop was converted to a central bus depot and workshop in 1929. In 1935 the site was the Melbourne and Metropolitan Tramways Board's main bus depot and maintenance workshop. The depot provided facilities such as servicing and refuelling. Offices and amenities were built in a modernist style at the site (Vines 2011a: 95). The North Fitzroy tram and bus depot opened at the site in 1955 following the reintroduction of trams in Bourke St after conversion of these routes from cable tram. The depot serviced the 96 route but ceased operation in 1993 when the South Melbourne depot took over route 96. For around 13 years the depot was used to store privately owned trams, until 2009 when the trams were relocated. The depot is currently used to house City Circle W-Class trams (Vines 2011b: 12).

B.3.2 Curtilage information

As shown in Figure 3.3.

B.3.3 Significance assessment

The below significance assessment was reproduced from the Heritage Victoria site card.

Table B.3 : Significance assessment for Former Nicholson Street Cable Tram Car Shed Track

Criterion	Local level
Archaeological significance – A measure of the context, content, integrity, representativeness and research potential of an archaeological site	There is potential for archaeological remains that will yield information about the operation of Melbourne's cable tram system
Aesthetic significance – A consideration of form, scale, colour, texture and material of the fabric at the site, and the smells and sounds associated with the place and its use	Does not meet this criterion
Historical significance – Associated with an historical figure, event, phase or activity	The heritage item is associated with the world's largest cable tramway network under single ownership
Scientific significance – Includes both the archaeological significance and its scientific or research value more generally	Does not meet this criterion
Social significance – The qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group	Does not meet this criterion

B.3.4 Statement of significance

The tracks and engine houses of the Melbourne cable tram network were constructed by the Melbourne Tramways Trust (MTT) during 1885-91. It was considered to be the world's largest cable tramway network under single ownership. The cable tram car sheds were built by the Melbourne Tramway and Omnibus Company which leased the lines from the MTT between 1885 and 1916 and operated the tram services.

The precinct in the streets outside the former cable tram sheds has potential to contain significant 19th century archaeological remains (such as tram tracks, wood blocked and/or stone setts paving, deep concrete cable tunnels centred under each track, and inspection and access manholes having cast iron covers). They are less likely to be intact for sites where the cable tramway was replaced by an electric tramway because the cable tram infrastructure was unsuitable for electric trams and was generally removed for construction of the electric tracks.

The remains in the tram track precinct are highly significant as they display how Melbourne's cable tram system operated (Heritage Victoria site card H7822-2253 2009).

B.4 Items 5 and 8: Janet Hillman Reserve (HO133) and Inner Circle Railway (NT), (also listed as an element of HO326 and HO327)

B.4.1 Description

Allom Lovell and Associates and John Patrick Pty Ltd (2005: 32) described the remnants of the Inner Circle Railway where it crosses Nicholson Street as 'gateposts, and fragments of early fencing remain on both sides of the crossing. Some of the track across Nicholson Street is visible, embedded in the roadway'. Allom Lovell and Associates and John Patrick Pty Ltd (2005: 32) assessed the remnants as being *of primary significance* and the Conservation Management Plan policy as: *Retain and conserve remaining track, gateposts and fencing. Reconstruct fencing where lacking and where practical given existing conditions.*

Primary significance is defined in the report (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 54) as:

Places or elements of primary significance are those which contribute in a fundamental way to an understanding of the cultural significance of the buildings and the site, as it exists. They may be predominantly intact in building form and fabric, and/or are particularly demonstrative of the original design or functional concept with regard to form or fabric. Places and elements regarded as being of primary significance would warrant inclusion on a national or state register of places of significance, in addition to local planning scheme protection. As such, they should be retained and, if altered, then it should be done with minimal impact on significant fabric.

B.4.2 Curtilage information

As shown in Figure 3.3.

B.4.3 Significance assessment

The below significance assessment was reproduced from the Conservation Management Plan for the Inner Circle Railway (Allom Lovell and Associates and John Patrick Pty Ltd 2005).

Table B.4 :Significance assessment of Inner Circle Railway

Criterion	Heritage assessment
A - Importance to the course or pattern of Victoria's cultural history	The former Inner Circle Railway is demonstrative of the spread of urban development in the suburbs of North Carlton and North Fitzroy. Built during the land boom of the 1880s, the presence of a railway line to connect local residents to the nearby Clifton Hill and Whittlesea lines, enables greater mobility via an emerging rail network.
B - Possession of uncommon, rare or endangered aspects of Victoria's cultural history	Does not meet this criterion.
C - Potential to yield information that will contribute to an understanding of Victoria's cultural history	Does not meet this criterion.
D - Importance in demonstrating the principal characteristics of a class of cultural places or objects	Does not meet this criterion.
E - Importance in exhibiting particular aesthetic characteristics	The former railway stations at North Carlton and North Fitzroy, built by the Victorian Railways in the style of the Maldon railway station, exhibit the rich aesthetic of the late nineteenth century railway architecture.
F - Importance in demonstrating a high degree of creative or technical achievement at a particular period	Does not meet this criterion.

Criterion	Heritage assessment
G - Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of their continuing and developing cultural traditions	The former Inner Circle Railway Linear Reserve is of social and cultural significance as a community resource instigated by the local government to facilitate the use by communities of public land. Since the inception of the Linear Reserve, the land has been utilised by a range of social and cultural groups within the City of Yarra.
H - Special association with the life or works of a person, or group of persons, of importance in Victoria's history	Does not meet this criterion.

B.4.4 Statement of significance

The remains of the Inner Circle Railway Line, including its alignment, the former North Carlton Station, remnants of the North Fitzroy Station, benches, tracks, stanchions, crossings and associated infrastructure, gatekeeper's cottage and significant trees are of metropolitan historic, social and aesthetic significance in respect to the municipalities through which it passes.

The Inner Circle Railway Linear Reserve is of historic significance as a remnant of the railway network instigated to connect inner city suburban passengers to the Outer Circle Line which in turn was designed to connect passengers to the Gippsland line (through Caulfield) during the peak of Melbourne's Boom in the 1880s.

The Inner Circle Railway Line is of social significance as part of a wider scheme, the Outer Circle Railway, constructed during the Boom period of 'Marvellous Melbourne'. While never providing the financial returns anticipated by its creators, it became a means of transport for generations of residents of Carlton and Fitzroy to the city and outer suburbs of Melbourne, including transport to the Melbourne Cricket Ground, Flinders Street Station and the 1956 Olympic Games. Rather than an efficient passenger service, it became an important goods line which operated until 1981. The Linear Reserve is also of some local social significance as evidenced by community agitation in the 1970s to retain its open spaces for public use. Today it is well-used as a community resource being utilized by local residents as a community garden, walking and cycling paths, and other recreation activities. Sections of introduced native and exotic vegetation provide a level of amenity.

Elements of the Inner Circle Railway Linear Reserve are of aesthetic significance, as a collection of remnant railway infrastructure (alignment, benches, tracks, stanchions, crossing gates, gatekeeper's cottage, footings) which clearly demonstrates the presence, and former operation, of the passenger railway from 1888-1948 and the good line until 1981. The North Carlton Railway Station, one of only a small number of 'Maldon' style station buildings extant in suburban or country Victoria, is of particular individual significance.

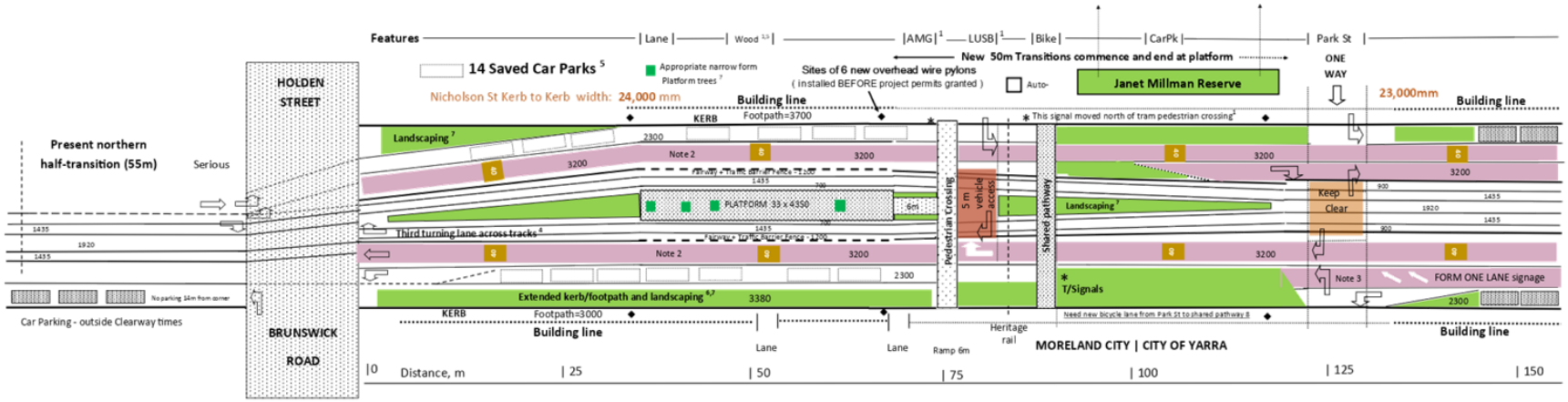
The Inner Circle Railway Linear Reserve Park and its heritage elements are of significance at the local level (Allom Lovell and Associates and John Patrick Pty Ltd 2005: 50).

Attachment 8 - Alternate Designs by Mr Jeff Walker (community member)

STOP 22: Brunswick Road and Holden Street

2. OPTION 2A: Central Island Platform (33m x 4350mm); SINGLE Traffic Lane

CONCEPT SKETCH (E&OE): Scale approx. 500:1 (1cm = 5m)



STOP 22 - Option 2 Component dimensions (mm) at platform	
Parking lane	2300
Road lane	3200
Fairway + fence	1200
Rail 1	1435
Platform clearance	700
PLATFORM	4350
Platform clearance	700
Rail 2	1435
Fairway + fence	1200
Road lane	3200
Parking Lane	2300
TOTAL:	**20,020**
Spare Road-space	**3380**
Use for Kerb/footpath extension/landscaping	

Notes:

1. Option 2A utilises a standard 33m Central Island Platform (CIP), to replace the Yarra Trams/PTV Proposal - dual road traffic lanes around a double length, 67m long CIP - which destroys access to the premises of L.U. Simon Builders, A.M.G. Panel Beaters and the Firewood Business. **It restores this access** across the tram tracks. (It is not possible to understand the PTV logic associated with the design of this Stop 22, in the widest section of Nicholson Street, when all the other stops are 33m long CIP's, located in narrower sections of the street.) Additionally, we have learned that only single lanes pass all the other stops, while it is proposed that dual lanes pass this Stop. There seems to be NO reason why single lanes should not be permitted here. The pedestrian ramp and crossing is located at the southern end of the platform, to exploit its proximity to the present signals at the 'Shared Pathway'. The present east side signal would simply need to be moved north of the pedestrian crossing.
2. This Option continues the existing single north and south traffic lanes, to and from the narrow section of Nicholson St, between BrunswickRoad/ Holden Street, and the tram terminus at Blythe St. ***A new speed limit of 40 kph is appropriate.***
3. This means that the two north bound lanes of traffic which currently merge across the Brunswick Road intersection, could now merge more easily, short of Park St, and thereby avoid the congestion and competition at Brunswick Road, which effectively reduces the traffic speed to 10 kph (or even less), particularly during the evening peak. The south bound lane from north of Holden Street is unaffected.
4. This design also allows three lanes at Brunswick Road; left turn, straight ahead and a right turn over the tram tracks. With appropriate signal synchronisation, this would not impact tram movements, as evidenced by the Blythe Street example.
5. The Table of Dimensions (left) indicates that with only single lanes, this Option uses considerably less road space, and allows for parking/delivery lanes to be retained - including access to the Firewood business.
6. This design allows the kerb/footpath along the western side of Nicholson St to be extended by 3380mm, sufficient for a respectable width of landscaping; this would greatly enhance the amenity of this section of our Nicholson Village Activity Centre.
7. This design also permits some landscaping between the platforms and the rail transitions at each end of the platforms, and at the other locations, marked in green, within the design boundary. Suitable narrow form trees could shade sections of the wide platform.

Jeff Walker: [redacted] 7.03.19 (E&OE)) **FEEDBACK APPRECIATED**

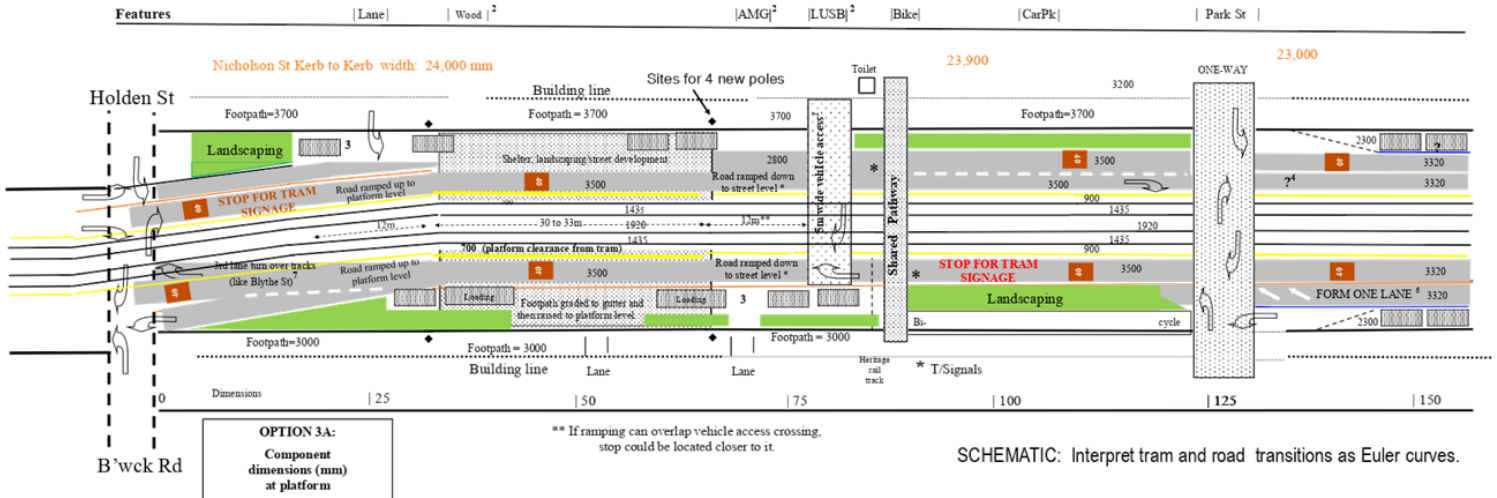
Attachment 8 - Alternate Designs by Mr Jeff Walker (community member)

ROUTE 96 UPGRADE; STOP 22
Brunswick Road/Holden Street

OPTION 3A: Easy Access Trafficable Stop; Single Lane, Road Ramp 'Platform'

NOTE THAT THIS OPTION IS ALSO APPLICABLE FOR OTHER STOPS - PARTICULARLY AT PIGDON/SCOTCHMER STREETS - and those within other Activity Centres

CONCEPT SKETCH



OPTION 3A: Component dimensions (mm) at platform	
Landscaping	**2000**
Parking/delivery lane	2300
Road lane 1	**3500**
Fairway (Incl 700 for Platform clearance)	900
Rail 1	1435
Rail spacing	1920
Rail 2	1430
Fairway (Incl 700 for Platform clearance)	900
Road lane 2	**3500**
Parking/delivery lane	2300
Landscaping	**2010**
TOTAL:	**24,000**
Road width:	**24,000**
[utilised for wider roads (3500) and landscaping]	

** If ramping can overlap vehicle access crossing, stop could be located closer to it.

SCHEMATIC: Interpret tram and road transitions as Euler curves.

Notes:

1. An Urban Design Consultant (to the Department of Transport) considers that "these stops deliver a better outcome in terms of accessibility and use of public space, than Central Island Stops".
2. This Option provides access across Nicholson Street to the east side businesses and therefore maintains their present and future utility and value - which are both destroyed by PTV's proposed 67m long Central Island platform.
3. The dimensions table (left), shows that with single road lanes, space is released for limited parking and delivery purposes, plus landscaping, which would greatly improve the public amenity and retail appeal of this Activity Centre.
4. The section of Nicholson Street south of Park Street, is also amenable to single lane treatment, with similar opportunities for additional landscaping and improvement of public amenity.
5. Released road space permits a generous single road width of 3500mm and a **reduction of the speed limit to 40 kph.**
6. As for Option 2A, north-bound traffic can be forced to merge short of park Street, thereby preventing the current congestion as it merges across Brunswick Road and effectively reduces speeds to10 kph or less.
7. Three lanes are available for north-bound traffic at Brunswick Road - left turn, straight ahead, and right turn into Holden Street, across the tram tracks - with appropriate signalling - similar to that installed effectively at Blythe Street.

Jeff Walker: [redacted] 5.03.19 (E&OE)) **FEEDBACK APPRECIATED**

Attachment 9 - PTV response to Councillor Fristacky dated 21 February 2019.

Response to Yarra Councillor questions

PUBLIC TRANSPORT VICTORIA PT

Route 96 Upgrade – stops 16 to 22

Public Transport Victoria (PTV) plans to upgrade tram stops 16 to 22 on Nicholson Street in the second half of 2019 as part of the Route 96 upgrade project to make it Melbourne's first fully accessible tram route.

70 per cent of the route is already serviced by accessible stops, and this next stage of upgrades will complete the project.

Yarra Council provided PTV with questions about the project on 25 January 2019 and the following information in response has been compiled by PTV with assistance from project design consultant Jacobs.

PTV is currently engaging with key stakeholders in relation to this project and will continue to work with the community, traders and Council as the project progresses.

Attachment 9 - PTV response to Councillor Fristacky dated 21 February 2019.

Responding to Council's concern regarding central island platforms potentially extending boarding time due to the width of the platform

Central island platforms are typically 33m long x 4.4m wide* and are one of the most effective tram stop types for minimising boarding and disembarking time.

As the stops are level with the tram, the time to board a tram compared to the current stops, where passengers must step up on to a tram, is greatly reduced. The platforms also provide a larger waiting area than the current stops on Nicholson Street.

Easy access stops, while providing even access for passengers with accessibility requirements, have a longer boarding time than central island stops, as passengers are required to wait on the footpath and walk across the raised road area when the tram has come to a complete stop.

Road vehicles are required to stop behind a stationary tram at easy access stops until all passengers have cleared the shared traffic lane and tram boarding area and the tram doors are closed, which is not required at central island stops, where road traffic can continue to move while a tram is being boarded allowing more effective use of the road space.

**due to the limited road width at stop 22 at Brunswick Road, this stop is designed as a Central Offset Platform (typically 67m long x 3.1m wide). This stop will have two designated waiting areas at either side of the stop, separating northbound and southbound passengers. An example of this stop type is in operations in Flinders Street at Russell Street in Melbourne CBD.*

Responding to Council's concern that central island stops could limit access from one side of the road to the other due to their length

The upgraded tram stop designs incorporate existing or new signalised pedestrian crossings at all stops, providing safe and direct access to either side of the Nicholson Street Activity Centre. Stop 22 (67m central offset stop) utilises the existing intersection crossing at Brunswick Road on one side, and the Capital City Trail signalised crossing on the other.

Responding to Council's concerns that central island stops:

- **could prevent people from waiting for their tram on the footpath – limiting their ability to window shop or order coffee while waiting for a tram.**
- **limit the scope to widen footpaths to support the activity centre, footpath activity and landscaping.**
- **are not as efficient as extending the footpath for an easy access stop, which could be used for waiting as well as a variety of economic uses.**
- **limit the possibility of a cycle path on Nicholson Street**

Centre island platform stops have been selected for this section of Nicholson Street to minimise the removal of on-street parking spaces, keep traffic moving, and to provide the safest stop option for passengers in the busy Nicholson Village area.

It is not possible to install easy access stops in this area for a range of reasons, including the need to keep the footpaths clear for trader infrastructure – such as tables and chairs and retail displays – and maintain space on the footpath for pedestrians to access businesses.

Attachment 9 - PTV response to Councillor Fristacky dated 21 February 2019.

All upgraded tram stops need to have seating, shelter, real time passenger information (visual and audio) and bins installed, which requires footpath space that is not available in this area, and a minimum amount of waiting area space is required at each accessible tram stop if it is to meet Disability Discrimination Act requirements.

It is not possible to widen the footpath on Nicholson Street while maintaining traffic flow, limiting car space removals and providing the required space for accessible tram stops – regardless of the stop type.

As multiple traffic lanes are currently in operation at intersections where tram stops are operational, an easy access stop would greatly reduce the traffic movements and increase traffic queuing, which could not continue to flow when a tram is at a stop.

Based on the current VicRoads-approved road configuration, it is not feasible for an easy access stop be located at an intersection with multiple traffic lanes adjacent to the tram stop. The Victorian Road Laws do not cater for multiple traffic lane vehicles stopping adjacent to an easy access tram stop.

For the sections of Nicholson Street where a single northbound lane is proposed, it remains unfeasible to install an easy access stop, as the pair stop on the southbound side maintains two lanes and the stops need to be consistent in type.

Under the roads classification for Nicholson Street, its defined as an arterial road with priority to trams. It is not classified as an on-road cycling route and no bike markings are provided on the road. VicRoads and the Bicycle Network have confirmed there is no intention for Nicholson Street to become a principal bicycle route.

All accessible tram stops – regardless of the stop type – are required to meet minimum widths and lengths. Due to the limited available road area in this section of Nicholson street, it is not possible to incorporate a cycle path if traffic flow is to be maintained.

The Route 96 project is providing enhanced bicycle access across Nicholson Street (east-west routes), including widening the signalised crossing point of the Capital City Trail at Nicolson Street.

Responding to Council's concern that centre island stops will mean more on-street parking space removals and affect access for disability by vehicles and vehicles needing to load and unload in the area

Centre island stops require fewer on-street car space removals than easy access stops.

The removal of some on-street car spaces is required at all upgraded stops to ensure traffic flow is maintained. In designing the accessible tram stops, vehicle and pedestrian use of the area was considered, and adjustments have been made where possible to minimise the loss of on-street parking.

Following traffic modelling, traffic has been taken down to one lane when passing northbound stops 16, 17 and 18 to maintain on-street car parking at these stops.

Responding to Council's concern that removal of parking to replace the lane with traffic next to the footpath undermines footpath trading activity and street dining, presents a greater risk of cars mounting the footpath and increases traffic noise and fumes, water splashing on pedestrians etc.

Attachment 9 - PTV response to Councillor Fristacky dated 21 February 2019.

The proposed changes to the lane configuration when passing the upgraded tram stops is consistent with many other main roads in Melbourne, including Nicholson Street north of Brunswick Road during peak hour when clearways are in operation.

Easy access stops would also require traffic to move across to the lane immediately adjacent to the footpath.

Central island platform stops provide a designated area for pedestrians, with safety barriers separating them from vehicles.

This section of Nicholson Street has been assessed by the roads authority and road auditor and central island stops with the proposed lane configuration have been deemed the most appropriate stop upgrade type in this area.

In response to Council's communication to PTV that in light of the problems set out above, tram priority for route 96 requires a better design than central island tram stops. Needed is a design that supports and does not undermine the operation of an activity centre by creating the above problems.

In addition to the above responses to concerns, an options assessment for the most appropriate type of tram stop for Nicholson Street was undertaken during the Concept Design Development stage of the project in 2014. The assessment showed central island stops were the most appropriate tram stop type. This was supported by key stakeholders, including VicRoads.

Central island stops provide the safest level access tram stops for passengers to board and alight trams. Easy access stops are a compromised tram stop design to provide level access boarding for passengers when there is insufficient road width to accommodate central island stops.

A Monash University Study on "Accident Analysis and Prevention" conducted in 2015 found that there was an 86% improvement in the reduction in pedestrian involved injuries after platforms have been installed highlighting that platform stops have significant safety benefits for pedestrians as well as improving accessibility to the tram network.

In response to Council's communication that there are other options, such as footpath stops as per Swanston Street, or Victoria Street and that there are many examples of tram stops across Melbourne where passengers access the tram from the footpath by crossing 2 lanes of traffic.

There are no stops on Melbourne's tram network where passengers access the tram directly from the footpath by crossing two or more lanes of traffic.

The Victorian Road Laws do not cater for multiple traffic lane vehicles stopping adjacent to an easy access tram stop.

11.4 Yarra Planning Scheme Amendment C328 (Yarra DCP) - Panel report

Trim Record Number: D19/54850
Responsible Officer: Director Planning and Place Making

Purpose

1. The purpose of this report is to present to Council the Panel Report for Amendment C238 to enable consideration of the Panel's recommendations and a decision on proposed changes to the exhibited Amendment. This report recommends that the changes be adopted by Council and the Amendment forwarded to the Minister of Planning for approval.

Background

2. Yarra Planning Scheme Amendment C238 proposes to introduce a municipal wide Development Contributions Plan (DCP) into the planning scheme.

3. The changes made by the Amendment include:

   (a) introduction of the Development Plan Overlay (Clause 45.06);

   (b) introduction of Schedule 1 to the Development Plan Overlay at Clause 45.06 (DCPO1);

   (c) incorporation of the Yarra Development Contributions Plan 2017 into the planning scheme;

   (d) changes to all nine planning scheme maps to show the DCPO1; and

   (e) consequential administrative changes to Clause 72.03 and 72.04.

4. On 21 November 2017 Council considered a report on the preparation of a DCP for the City of Yarra and resolved:

   1. *That:*

      (a) Council note the officer report outlining the proposed Development Plan Contribution for the municipality.

      (b) Council resolves to seek authorisation from the Minister for Planning to prepare and exhibit Amendment C238 to the Yarra Planning Scheme to implement the Yarra DCP as detailed in the documents that make up Attachments 4 to 10 inclusive.

      (c) upon receipt of authorisation from the Minister for Planning, Amendment C238 be placed on public exhibition and given the Christmas period, this exhibition not commence before 1 February 2018.

      (d) Council authorise the CEO to make minor changes to the Amendment C238 documents, prior to exhibition.

      (e) following the exhibition of Amendment C238, a report be provided to Council on the submissions received.

   2. That, should authorisation be provided by the Minister for Planning, the officer report and the attachments be made public as part of the exhibition process.

   3. That the following modifications be made to the attached documents:

      (a) Include a reference to the Bicycle Strategy Refresh 2016 in the list of strategies in Section 4 of the Yarra Development Contributions Plan 2017 report;

      (b) Replace references to the Walking Strategy in the projects list with a reference to the Strategic Transport Statement in the Yarra Development Contributions Plan 2017 report; and

(c) Replace the draft Long term Financial Statement in Attachment 2 of Background Paper 2 DCP Projects with the Adopted (August 2017) version.

5. Amendment C238 was *authorised* by the Minister for Planning on 22 July, 2018. It was then placed on public exhibition from 23 August until 21 September, 2018.

6. A total of 26 submissions to the Amendment were received and of these:

   (a) 12 supported the Amendment;

   (b) 7 opposed it; and

   (c) 6 supported it subject to changes.

7. On 30 October 2018, Council considered a report on the exhibition of the Amendment including a response to submissions and resolved:

   1. That Council:

      (a) note the Officer Report regarding exhibition of Amendment C238 relating to the City of Yarra Development Contributions Plan; and

      (b) note all the submissions received and officer's comments as summarised in Attachment 2.

   2. That Council resolves, based on the submissions received in respect to the exhibition period of Amendment C238:

      (a) to note and consider submissions to Amendment C238, in accordance with section 22 of the Planning and Environment Act 1987 as detailed in Attachment 2 to this report;

      (b) that the GTV 9 site at 22 Bendigo Street Richmond is exempt from the DCP on the basis of the existing section 173 Agreement;

      (c) in accordance with Section 23 of the Planning and Environment Act 1987, refer the submissions, including any late submissions, to an independent panel appointed by the Minister for Planning;

      (d) to request the Minister for Planning to appoint an independent panel under Part 8 of the Planning and Environment Act 1987 to consider Amendment C238 and all submissions received;

      (e) to notify submitters of the Council resolution;

      (f) that officers write to owners of the GTV 9 site at 22 Bendigo Street, Richmond and advise that under the exemption provisions of the Development Contributions Plan Overlay, the land is exempt from the DCP; and

      (g) that the wording of the exemptions in section 8 of the Yarra Development Contributions Plan Report - 30 July 2018 be replaced with the exemptions wording in Clause 4.0 of the Development Contributions Plan Overlay Schedule 1

8. The Panel Hearing was scheduled from 25 February to 28 February, 2019.

9. As part of Council's preparation for the Hearing a peer review of the DCP documents was undertaken by consultants Mesh Communities in conjunction with Councils legal team. This peer review supported the DCP and made some recommendations mainly on editorial changes to the DCP report to improve clarity and transparency. Both Council's DCP consultants and Mesh were engaged to present evidence to the Panel.

<u>The DCP Plan</u>

10. The DCP divides the municipality into 11 charge areas and categorises development into residential, retail, commercial and industrial uses. Where a use cannot readily fit into one of these four use categories, as a default, it is considered a commercial use.

11. The DCP levies are indexed annually using the Consumer Price Index (all groups) for Melbourne. Given the DCP was prepared using 2016/2017 costings, the Panel

recommended that the Amendment documents be updated to the most recent figures. The most recent annual CPI is for 2017/2018. The levies in the DCPO1 have been updated accordingly to 2017/2018 costings. An addendum has been provided in the DCP report to include the updated levies.

12. For residential development the DCP applies to any new, additional dwelling. The levies vary from $1,204.97 per new additional dwelling in Fairfield-Alphington to $3,754.85 per new additional dwelling in Clifton Hill. The DCP only applies to new additional dwellings and consequently does not apply to extensions or renovations of existing dwellings nor the replacement of an existing dwelling.

13. The DCP applies to new, additional floorspace for retail, commercial and industrial use developments. For retail development the levies vary from $3.51 to $42.01 per new additional square metre of floorspace.

14. For commercial development the levies vary from $2.47 to $42.18 per new additional square metre of floorspace.

15. For industrial development the levies vary from $1.18 to 11.44 per new additional square metre of floorspace.

16. The DCP levies are calculated on the basis of the number and type of projects in each charge area as well as the projected level of new development. . Consequently the more new development the lower the levy per dwelling. The higher the number and cost of projects, the higher the levy.

17. However some projects, such as works to the leisure centres, are allocated to more than one charge area. Consequently the calculation of the DCP levy per charge is based on the combination of a number of factors.

18. As a generalisation, Fairfield-Alphington has a low levy because of the relatively low number of DCP projects in that charge area. Collingwood, North, Central and South Richmond, Cremorne and Abbottsford have lower levies due to the higher level of development projected for those charge areas. Carlton North- Princess Hill, Fitzroy, Fitzroy North and Clifton Hill have a higher charge rates because the level of new development is projected to be lower and consequently there is a smaller number of new developments to contribute to the DCP projects in that area.

The Panel Report

19. Council has now received the Panel's report (**Attachment 1**).

20. The Panel Report traces the background, the submissions received and the Panel conclusions.

21. The Panel reached the following conclusions:

    (a) Amendment C238 to the Yarra Planning Scheme is strategically justified;

    (b) The Development Contributions Plan has been well prepared, with rigorous processes used to identify the projects to be funded;

    (c) The apportioning of costs between the 11 charge areas and between existing and future users is appropriate;

    (d) In preparing the Development Contributions Plan and the associated Overlay Schedule, relevant legislation, Ministerial Directions and guidelines have been broadly followed, and

    (e) The few outstanding issues considered by the Panel are minor and can be readily resolved by minor changes to the Development Contributions Plan and the Development Contributions Plan Overlay Schedule 1.

22. Council's closing submission to the Panel included a proposal to change the method of indexation of the DCP projects from CPI to the use of the relevant building industry indices where these were above CPI and using CPI when the building indices fell below CPI. The

Mesh peer review recommended using the building indices. The exhibited DCP proposed using CPI. The Panel did not accept this proposal and recommended the use of CPI.

23. Council's closing submission also proposed the removal of the 5% external usage allowance. This is a discount of 5% for the use of infrastructure by non-Yarra residents. The exhibited DCP included a 5% allowance and the peer review recommended its removal because it is effectively embedded in the Council contribution to each DCP project. The Panel did not accept this proposal and recommended the retention of the 5% external usage allowance.

24. The Panel made the following recommendations:

Adopt Yarra Planning Scheme Amendment C238 as exhibited, subject to the inclusion of the revised Development Contributions Plan included in Tabled Document 16, and the Development Contributions Plan Overlay Schedule 1 as shown in Appendix D to this report, subject to:

- *Setting the infrastructure levies for charge area 10, Burnley - Richmond South, and charge area 11, Cremorne at the exhibited level and updating relevant tables in the Development Contributions Plan and Development Contributions Plan Overlay Schedule 1.*
- *Replacing the sentence in Clause 3.0 of the Development Contributions Plan Overlay Schedule 1 commencing "The amount of the adjustment …", with the words "The amount of the adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period" and making the same wording change to the section headed Indexation of Development Contribution Plan Charges in section 7. of the Development Contributions Plan.*
- *Updating all costings in the Development Contributions Plan and Development Contributions Plan Overlay Schedule 1 to latest year costings and amending relevant tables accordingly.*

25. In effect the Panel recommended adoption of the exhibited DCP with some editorial edits to the DCP report and the DCPO1.

26. The revised Development Contributions Plan referred to as Document 16 in the Panel's recommendation is attached (**Attachment 2**) and would, on approval by the Minister, become an incorporated document in the Yarra Planning Scheme.

27. The revised DCPO1 is included in **Attachment 3**.

28. The remaining amendment documents which have not changed post exhibition are included in **Attachment 4**.

Options

29. Council has the option of accepting the Panel's recommendations in part, in full or not at all.

30. Council may also elect to change parts of the Amendment. However, given the Panel is appointed by the Minister for Planning who is responsible for approving the Amendment, substantial justification would be required not to adopt the Panel's recommendations or make further changes.

31. Given the Panel's report supports the Amendment and the introduction of the DCP, it is appropriate for Council to adopt the Panel's report and its recommendations.

External Consultation

32. External consultation has occurred through the statutory process for a planning scheme amendment.

Internal Consultation (One Yarra)

33. A Steering Committee has been overseeing the progress of the project and has met regularly. A Working Group with representatives of all affected areas of Council also has

been established and met as required. To date both groups have been provided with all relevant information.

Financial Implications

34. The DCP will provide contributions to the Council according to the plan. This money must be acquitted against the DCP projects.

Economic Implications

35. The DCP would apply to all new development in Yarra (except extensions to an existing dwelling) and it is proposed that the DCP is to operate over a 20 year period.

Sustainability Implications

36. There are no specific environmental sustainability implications in adopting the Panel recommendations. A number of DCP projects will assist in broad environmental aspects such as drainage.

Social Implications

37. Some concern may be expressed about the impact of the DCP on housing affordability if the DCP is passed on to the home buyer.

38. The DCP would apply to new developments only (not to extensions to dwellings) and in the residential sector these would consist mainly of apartments. The Valuer General's published average apartment price for Yarra in 2017 was $686,346. The average Yarra DCP charge is $2,101.54 which is 0.31% of the average apartment price, if the full value of the DCP is passed on to the purchaser.

Human Rights Implications

39. There are no known human right implications.

Communications with CALD Communities Implications

40. There are no CALD community implications in seeking the progression of this proposal.

Council Plan, Strategy and Policy Implications

41. The DCP projects can only come from the 10 year capital works plan so that it is consistent with that plan and the Long Term Financial Strategy.

Legal Implications

42. Council engaged legal representation for the Panel Hearing. No further legal implications are envisaged.

43. The DCP contributions must only be acquitted against the projects in the plan.

Other Issues

44. Some additional resources will be required for managing the acquittals of the contributions.

Conclusion

45. The City of Yarra is experiencing significant development intensification on urban renewal sites and across established areas. The number of dwellings in the municipality is expected to increase from approximately 41,800 in 2016 to 64,600 in 2036. Retail and commercial floorspace is also expected to increase significantly whereas industrial floorspace is expected to contract over time.

46. In this context, Council will be required to construct a range of new infrastructure items and upgrade, extend or replace existing infrastructure in order to maintain and improve the functionality and amenity of the area.

47. To assist this significant task, the Yarra DCP has been prepared to determine a fair and reasonable developer contribution charge for the City of Yarra. The purpose of this DCP is to ensure that the cost of providing new infrastructure is shared between developers and the wider community on a fair and reasonable basis.

48. The funds collected via the developer contribution charge will be used to help deliver the required infrastructure over the next 20 years.

49. The independent Panel concluded that the DCP is consistent with the Guidelines, the relevant Ministerial Directions and Planning Practice Notes as well as the provisions of the Planning and Environment Act.

50. Council now needs to formally receive the Panel Report, make appropriate changes to the exhibited documents, adopt them and forward the Amendment to the Minister for Planning seeking approval of the Planning Scheme Amendment.

RECOMMENDATION

1. That Council:

   (a) note the officer's report in relation to the Panel's findings in relation to Amendment C238, the Yarra Development Contributions Plan: and

   (b) note findings and recommendations of the Panel regarding Amendment C238.

2. That Council:

   (a) having considered the report of the Planning Panel, adopts Amendment C238 as recommended by the Panel including the revised Yarra Development Contributions Plan 2017 as contained in **Attachment 2** and the revised Development Contributions Plan Overlay Schedule 1 as contained in **Attachment 3**;

   (b) submits the adopted amendment to the Minister for Planning for approval, in accordance with Section 31 of the Act; and

   (c) officers notify submitters to Amendment C238 of Council's decision.

CONTACT OFFICER: **Michael Ballock**
TITLE: **Executive Planner Strategic Projects**
TEL: **9205 5669**

Attachments

1⇩ Yarra C238 Panel Report
2⇩ Yarra Development Contributions Plan (incorporated document)
3⇩ Revised Development Contributions Plan Overlay Schedule 1
4⇩ Amendment C238 documents - unchanged

Attachment 1 - Yarra C238 Panel Report

Planning and Environment Act 1987

Panel Report

Yarra Planning Scheme Amendment C238
Yarra Development Contributions Plan

1 April 2019

VICTORIA State Government | Planning Panels Victoria

Attachment 1 - Yarra C238 Panel Report

Planning and Environment Act 1987

Panel Report pursuant to section 25 of the Act

Yarra Planning Scheme Amendment C238

Yarra Development Contributions Plan

1 April 2019

Rodger Eade, Chair

Nick Wimbush, Member

VICTORIA State Government | Planning Panels Victoria

Attachment 1 - Yarra C238 Panel Report

Contents

Page

1 Introduction 1

1.1 The Amendment 1
1.2 Background 1
1.3 Panel process 1
1.4 Procedural issues 2
1.5 Summary of issues raised in submissions 2
1.6 Limitations 3

2 Planning context 4

2.1 Planning policy framework 4
2.2 Other relevant planning strategies and policies 5
2.3 Planning scheme provisions 7
2.4 Amendment VC148 7
2.5 Ministerial Directions and Practice Notes 7
2.6 Discussion and conclusion 8

3 Appropriateness of the DCP 9

3.1 Strategic justification 9
3.2 Conformity with DCP principles and guidelines 10
3.3 Nexus 11
3.4 Impacts on housing affordability 14

4 Content of the DCP 15

4.1 Choice of projects 15
4.2 Charge areas 18
4.3 Sharing of costs 19
4.4 Forecast of future commercial floor space 23
4.5 Recommendations 24

5 Implementation of the DCP 25

5.1 Indexation of DCP charges 25
5.2 Timing of payments due under the DCPO 26
5.3 Transitional provisions 27
5.4 Exemptions 28
5.5 Review of the DCP 29
5.6 Recommendations 30

6 DCP Amendment documentation 31

6.1 Final form of Development Contributions Plan 31
6.2 Recommendations 32

VICTORIA State Government | Planning Panels Victoria

Appendix A **Submitters to the Amendment**

Appendix B **Parties to the Panel Hearing**

Appendix C **Document list**

Appendix D **Panel preferred version of the Development Contributions Plan Overlay Schedule 1**

List of Tables

Page

Table 1: Baseline documents ii

Table 2: Relevant sections of Plan Melbourne 5

Table 3: Commercial floor space in DCP (square metres) 23

Table 4: Indices 25

Glossary and abbreviations

Act	*Planning and Environment Act 1987*
Council	Yarra City Council
CPI	Consumer Price Index
DCP	Development Contributions Plan
DCPO	Development Contributions Plan Overlay
EIWS	Encouraging and Increasing Walking Strategy
HIA	Housing Industry Association
LAPMs	Local Area Place Making districts
PPF	Planning Policy Framework
PPI	Producer Price Index
VPA	Victorian Planning Authority

Attachment 1 - Yarra C238 Panel Report

Overview

Amendment summary	
The Amendment	Yarra Planning Scheme Amendment C238
Common name	Yarra Development Contributions Plan
Brief description	Introduces a Development Contributions Plan to apply to new residential, industrial and commercial development in the City of Yarra
Subject land	All land in the City of Yarra
The Proponent	Yarra City Council
Planning Authority	Yarra City Council
Authorisation	Letter from the Minister for Planning dated 22 July 2018
Exhibition	23 August to 21 September 2018
Submissions	26, including one late submission. Of these, 12 supported the Amendment, 7 opposed it, and 6 supported it subject to changes to the Development Contributions Plan.

Panel process	
The Panel	Rodger Eade (Chair) and Nick Wimbush
Directions Hearing	Planning Panels Victoria, 17 December 2018
Panel Hearing	Planning Panels Victoria, 25, 27 and 28 February 2019
Site inspections	None required
Citation	Yarra C238 (PSA) [2019] PPV
Date of this Report	1 April 2019

VICTORIA State Government | Planning Panels Victoria

Executive summary

Yarra Planning Scheme Amendment C238 seeks to insert a Development Contributions Plan and Development Contributions Plan Overlay Schedule 1 into the Yarra Planning Scheme and make consequential changes including inserting relevant maps.

Key issues raised in submissions were whether:

- the Amendment and projects proposed are strategically justified
- the Development Contributions Plan complies with the principles set out in the Act and relevant guidelines
- there is appropriate nexus between the charges levied for projects and the likely future users
- the charges imposed will inappropriately impact on housing affordability
- the choice of projects is appropriate
- the charge areas are appropriate
- costs are shared equitably between users and between charge areas
- the projections of future commercial floor space provision are appropriate
- the use of the Consumer Price Index to adjust charges for future project cost increases is appropriate
- the timing of payment of charges levied is appropriate
- transitional arrangements should be made for development applications commenced
- exemptions proposed are appropriate
- the proposed allowance for external use of projects is appropriate.

The resulting Development Contributions Plan proposes to part fund 777 projects over the period to 2036. It is based on projected growth in population, commercial, industrial and retail uses over that period. Approximately 30 per cent of the total project cost is funded through Development Contribution Plan levies on new development in these categories. The balance of the total project costs will be funded by existing residents through rates and other Council revenue sources.

The Development Contributions Plan is based on significant strategic work undertaken by Yarra Council. Some of these adopted plans, policies and strategies are referenced in the planning scheme and some not.

A significant number of issues were raised in submissions, but many were resolved prior to the Hearing. These included dividing charge area 10 Cremorne and Burnley – Richmond South into charge area 10, Burnley – Richmond South and charge area 11, Cremorne. Further strategic work will be done in Cremorne.

The key conclusions reached by the Panel are:

- Amendment C238 to the Yarra Planning Scheme is strategically justified
- The Development Contributions Plan has been well prepared, with rigorous processes used to identify the projects to be funded
- The apportioning of costs between the 11 charge areas and between existing and future users is appropriate

- In preparing the Development Contributions Plan and the associated Overlay Schedule, relevant legislation, Ministerial Directions and guidelines have been broadly followed
- The few outstanding issues considered by the Panel are minor and can be readily resolved by minor changes to the Development Contributions Plan and the Development Contributions Plan Overlay Schedule 1.

Recommendations

The baseline documents for the recommendations set out below are:

Table 1: Baseline documents

Document	Version
Development Contributions Plan	Tabled document 16 – Changes accepted version of DCP dated 26/2/19
Development Contributions Plan Overlay Schedule	Tabled Document 14 – Changes accepted version of DCPO1 dated 26/2/19

Based on the reasons set out in this Report, the Panel recommends:

1. **Adopt Yarra Planning Scheme Amendment C238 as exhibited, subject to the inclusion of the revised Development Contributions Plan included in Tabled Document 16, and the Development Contributions Plan Overlay Schedule 1 as shown in Appendix D to this report, subject to:**
   - **Setting the infrastructure levies for charge area 10, Burnley - Richmond South, and charge area 11, Cremorne at the exhibited level and updating relevant tables in the Development Contributions Plan and Development Contributions Plan Overlay Schedule 1.**
   - **Replacing the sentence in Clause 3.0 of the Development Contributions Plan Overlay Schedule 1 commencing "*The amount of the adjustment …*", with the words "*The amount of the adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period*" and making the same wording change to the section headed Indexation of Development Contribution Plan Charges in section 7. of the Development Contributions Plan.**
   - **Updating all costings in the Development Contributions Plan and Development Contributions Plan Overlay Schedule 1 to latest year costings and amending relevant tables accordingly.**

Attachment 1 - Yarra C238 Panel Report

1 Introduction

1.1 The Amendment

(i) Amendment description

The Amendment will introduce a Development Contributions Plan (DCP) into the Yarra Planning Scheme to apply a charge to all new residential, commercial and industrial development to partly fund new and upgraded infrastructure.

Specifically, the Amendment proposes to:

- insert a new Clause 45.06 Development Contributions Plan Overlay (DCPO) and a new Schedule 1 to the Clause 45.06
- amend the Schedule to Clause 72.03 to include new Planning Scheme Maps: 1DCPO1, 2DCPO1, 3DCPO1, 4DCPO1, 5DCPO1, 6DCPO1, 7DCPO1, 8DCPO1, 9DCPO1
- amend the Schedule to Clause 72.04 to incorporate the Yarra Development Contributions Plan –2017.

(ii) The subject land

The Amendment applies to all land in the City of Yarra. Land developed for public purposes, for non-government schools and certain types of development including renovations, alterations, demolition and construction of a replacement building, outbuildings, and reinstatement of damaged buildings will be exempt from contributions.

1.2 Background

The Amendment implements the municipal-wide *Yarra Development Contributions Plan 2017*. The DCP imposes a development infrastructure levy and/or a community infrastructure levy to fund a range of social and physical infrastructure throughout the municipality. The DCP includes capital infrastructure projects such as roads, footpath, streetscape works as well as community infrastructure projects (for example- a community centre).

The infrastructure is required to cater for the growing population of the municipality and the consequential increased demand on infrastructure.

The DCP will provide certainty for Yarra City Council (Council), developers and the broader community about how and to what extent new residential, commercial and industrial developments will be levied to ensure the necessary infrastructure is delivered in a timely manner. The DCP will further reduce the uncertainty and resource intensity associated with the current case-by-case agreements for contributions between Council and proponents.

The DCP provides for approximately 30 per cent of the costs of the projects listed in the DCP to be funded by new development. The balance will be funded from existing means such as rates.

1.3 Panel process

Parties appearing at the Panel Hearing are listed in Appendix B.

1.4 Procedural issues

On 15 February 2019, the Panel received correspondence from Norton Rose Fulbright on behalf of SZM Holdings Pty Ltd (SZM)[1] informing the Panel that it had been in discussions with Council and that they had reached agreement, summarised as follows:

- the Cremorne and Burnley - Richmond South charge area would be divided into two charge areas
- existing projects would be split between the two charge areas such that there would be no net increase in proposed charges in either area
- the DCP would be amended to refer to future strategic work in the area which will result in further projects being added in the Cremorne charge area.

In the correspondence, Norton Rose Fulbright stated that if the Panel supported the changes by way of a recommendation, SZM would no longer call evidence or require the allocated time at the Hearing.

Subsequently Harwood Andrews on behalf of Council confirmed the agreement reached between it and SZM.

On the first day of the Hearing, Mr Townshend QC, outlined the agreement to the Panel and explained the background and reasoning behind it.

The Panel stated that it was not common practice to make recommendations during a Hearing and, unless there were contrary submissions during the remainder of the Hearing, it could see no reason why it needed to hear further submissions from SZM. The Panel assured Mr Townshend that if opposing submissions were subsequently made it would afford SZM the opportunity to make further submissions and if necessary, call the evidence it had initially proposed. No further submissions on this issue were made.

In its correspondence, SZM requested that the amended DCP wording refer to the DCP in the Cremorne area being regarded as 'interim'. At the Hearing, SZM acknowledged that the DCP would not be 'interim' in a statutory sense but that the DCP would need to be revised through either a regular review or a future process.

Mr Cooper for Cremorne Properties Pty Ltd, attended the first day of the Hearing and supported the agreement reached between Council and SZM. He subsequently withdrew his request to be heard during the Hearing.

The issues raised by SZM are addressed in chapter 4.2.

1.5 Summary of issues raised in submissions

The key issues raised in submissions were whether:

- the Amendment and projects proposed are strategically justified
- the DCP complies with the principles set out in the *Planning and Environment Act 1987* (the Act) and relevant guidelines

[1] SZM Holdings was not a submitter to the exhibited Amendment, however Winehall Pty Ltd was submitter 9. At the request of the Panel, Mr Townshend explained that Winehall is the nominee purchaser of property in Cremorne for SZM Holdings.

- there is appropriate nexus between the charges levied for projects and the likely future users
- the charges imposed will inappropriately impact on housing affordability
- the choice of projects is appropriate
- the charge areas are appropriate
- costs are shared equitably between users and between charge areas
- the projections of future commercial floor space provision are appropriate
- the use of the Consumer Price Index (CPI) to adjust charges for future project cost increases is appropriate
- the timing of payment of charges levied is appropriate
- transitional arrangements should be made for development applications commenced
- exemptions proposed are appropriate
- the proposed allowance for external use of projects is appropriate.

The Panel considered all written submissions made in response to the exhibition of the Amendment, submissions, evidence and other material presented to it during the Hearing. It has reviewed a large volume of material and has been selective in referring to the more relevant or determinative material in the Report. All submissions and materials have been considered by the Panel in reaching its conclusions, regardless of whether they are specifically mentioned in the Report.

This Report deals with the issues under the following headings:

- Planning context
- Appropriateness of the DCP
- Content of the DCP
- Implementation of the DCP
- DCP Amendment documentation.

1.6 Limitations

Some submissions suggested further project types be included in the DCP, most notably further open space projects. Council indicated that projects which will be funded under the open space provisions of the Planning Scheme or the *Subdivision Act 1988* were specifically excluded from the DCP project list. For this reason, this issue is not addressed by the Panel.

2 Planning context

2.1 Planning policy framework

Council submitted that the Amendment is supported by various clauses in the Planning Policy Framework (PPF), which the Panel has summarised below.

Victorian planning objectives

The Amendment will assist in implementing State policy objectives set out in section 4 of the Act by:

- providing for the fair, orderly, economic and sustainable use, and development of land
- enabling the orderly provision and co-ordination of public utilities and other facilities for the benefit of the community.

The Amendment will assist in implementing the following clauses of the PPF.

Clause 19 (Infrastructure)

The Amendment supports Clause 19.03 -1S, which has the objective of facilitating the timely provision of planned infrastructure to communities through the preparation and implementation of DCPs. The Clause lists strategies to achieve this:

- prepare development contribution plans and infrastructure contribution plans under the Act, to manage contributions towards infrastructure
- collect development contributions based on approved development and infrastructure contributions plans
- require annual reporting by collecting and development agencies to monitor the collection and expenditure of levies and the delivery of infrastructure.

In the exhibited Explanatory Statement, Council stated that the Amendment is consistent with the following clauses in the Council's Local Planning Policy Framework:

Clause 21 (the Municipal Strategic Statement)

Clause 21.05-4 - Public environment

The Clause requires new development to contribute positively to Yarra's overall character and help create a safe and engaging public environment where pedestrian activity and interaction are encouraged.

Clause 21.06-1 - Walking and cycling

Strategy 31 encourages improved pedestrian and cycling links in association with development where possible.

Clause 21.07 – Water quality

Strategy 38.1 encourages the use of stormwater retention and treatment devices to improve water quality.

Clause 21.10 – Future work

This Clause nominates the investigation of an appropriate contributions system for areas forecast to experience significant rates of residential development as further work required.

Clause 22 (local planning policies)

There are no local planning policies included in the Yarra Planning Scheme referred to in the exhibited Explanatory Statement or Part A submission. There are however a number of Council adopted plans strategies and policies which it indicates support the DCP or more particularly the projects listed within it and these are listed in chapter 2.2(iii).

2.2 Other relevant planning strategies and policies

(i) Plan Melbourne

Plan Melbourne 2017-2050 (Plan Melbourne) sets out strategic directions to guide Melbourne's development to 2050, to ensure it becomes more sustainable, productive and liveable as its population approaches 8 million. It is accompanied by a separate implementation plan that is to be regularly updated and refreshed every five years.

Plan Melbourne is structured around seven desired outcomes. The outcomes are supported by directions and policies, which outline how the outcomes will be achieved. Those particularly relevant to the Amendment are summarised in Table 2.

Table 2: Relevant sections of Plan Melbourne

Outcome	Directions	Policies
2. Housing choice near jobs	2.1 Housing in right locations	2.1.2 Increased housing in established areas.
	2.2 Housing closer to jobs and transport	2.2.3 Housing in activity centres close to jobs. Plan Melbourne lists five major activity centres in Yarra.
3. Vibrant and healthy neighbourhoods	5.1 Create 20-minute neighbourhoods	5.1.1 Mixed use neighbourhoods
		5.1.2 Support vibrant neighbourhood activity centres
	5.2 Neighbourhoods that support safe communities and healthy lifestyles	5.2.1 Neighbourhoods that enable walking and cycling

To accommodate the type of population growth, neighbourhoods and activity centres envisaged in Plan Melbourne, new and upgraded infrastructure is needed.

(ii) Local Structure Plans

Council is currently preparing structure plans, built form frameworks and local plans for each of its major and neighbourhood activity centres.

Plan Melbourne lists five major activity centres and in its Part A submission. Council listed seven designated neighbourhood activity centres.

(iii) Other local plans and policies

Council's Part A Submission listed a significant number of other endorsed plans strategies and policies which it submitted underpin the DCP and more particularly the projects listed within it. These are:

- Access and Inclusion Plan 2014 to 2017
- Arts and Cultural Strategy 2016 to 2020
- Asset Management Policy 2011
- Asset Management Policy 2017
- Bike Strategy 2010-2015 part 1
- Bike Strategy 2010-2015 part 2
- Bike Strategy September 2016
- Bridge Rd Streetscape Masterplan
- Buildings Asset Management Plan adopted 2013
- Buildings Asset Management Plan revision 2017
- Community Infrastructure Planning Framework
- Events in Public Places Policy
- Early Years Strategy 2015-2018
- Economic Development Strategy 2015-2020
- Encouraging and Increasing Walking Strategy 2005
- Final Stage Two Action Plan 2014-2017
- Guidelines for Public Art in Private Development in Yarra
- Local Area Traffic Management Policy 2013
- Local Area Place Making Policy 2017
- Long Term Financial Strategy June 2016
- Long Term Financial Strategy 2017/18 to 2026/27
- Middle Years Strategy 2014- 2017
- Nicholson Street Place Making Initiative Concept Design
- Night Time Economy Strategy 2014-2018
- Open Space Strategy 2006-2016
- Parking Management Strategy Action Plan 2013-2015
- Positive Ageing Strategy 2007-2016
- Public Art Policy 2015 to 2020
- Road Management Plan 2013
- Social and Affordable Housing Strategy 2012-2014
- Strategic Advocacy Framework November 2013
- Stormwater Drainage Management Strategy
- Strategic Transport Statement 2006
- Victoria Street Streetscape Masterplan
- Urban Design Strategy 2011
- Water Sensitive Urban Design Policy 2016
- Yarra Health Plan 2013-2017
- Yarra Youth Policy Action Plan 2013 to 2016.

The Panel was informed that the *Yarra Housing Strategy* and the *Spatial and Economic Strategy* were endorsed by Council subsequent to exhibition of this Amendment.

In addition, three background papers informed the preparation of the DCP. These are:

- Background Paper No. 1 *Demographics* – which identifies relevant population change
- Background Paper No. 2 *DCP Projects* - which lists projects and the methodology identifying them
- Background Paper No. 3 *DCP charge areas* – which outlines the basis for identifying the proposed charge areas.

2.3 Planning scheme provisions

The DCP applies to most land in Yarra which is predominantly in residential, commercial and industrial zones. No changes to zones are proposed as part of this Amendment.

There are a range of overlays applied across the municipality which are not listed here as they are not directly relevant to the Amendment. It is noted that there is a significant number of Design and Development Overlays and Development Plan Overlays in place, indicative of the development pressure which is occurring in the municipality. In particular, there appears to be significant development pressure in and around a number of the major activity centres.

Recently, interim controls have recently been approved for:

- Johnston Street (DDO15 gazetted on 2 March 2018 through Amendment C237)
- Queens Parade (DDO20 gazetted on 23 August 2018 through Amendment C241)
- Swan Street (DDO17 gazetted on 22 November 2018 through Amendment C236)
- Bridge Road (DDO21 gazetted on 15 November 2018 through Amendment C248)
- Victoria Street (DDO22 gazetted on 15 November 2018 through Amendment C249).

Of these, Swan Street, Bridge Road and Victoria Street are amongst the five major activity centres listed in Plan Melbourne.

2.4 Amendment VC148

Amendment VC148, gazetted on 31 July 2018 made substantial changes to the structure and content of the planning policy framework, as well as other provisions in the Planning Scheme. In its submission, Council has referenced the updated Clause numbers in the State section of the Planning Scheme. Changes made as part of this Amendment appear to have only marginal relevance to the current Amendment.

2.5 Ministerial Directions and Practice Notes

The Explanatory Report indicates that the Amendment is consistent with each of:

- Ministerial Direction on the Preparation and Content of Development Contributions Plans
- Ministerial Direction on the Form and Content of Planning Schemes.

No reference is made in the Explanatory Report or the Council submission of how the Amendment complies with the relevant requirements of Ministerial Direction 11 (Strategic Assessment of Amendments) and *Planning Practice Note 46: Strategic Assessment Guidelines*, August 2018 (PPN46).

There is however a strategic assessment of the Amendment in the Part A submission and further comment is made on the strategic underpinning of the DCP projects in chapter 3.1.

2.6 Discussion and conclusion

For the reasons set out in the following chapters, the Panel concludes that the Amendment is supported by, and implements, the relevant sections of the PPF, and is consistent with the relevant Ministerial Directions and Practice Notes. The Amendment is well founded and strategically justified, and the Amendment should proceed subject to addressing the more specific issues raised in submissions as discussed in the following chapters.

3 Appropriateness of the DCP

3.1 Strategic justification

(i) The issues

The issue addressed is whether the proposed DCP projects are strategically justified.

(ii) Relevant policies, strategies and studies

The strategies, plans and policies which underpin the DCP projects are listed in chapter 2.2(iii).

(iii) Evidence and submissions

Ms Liddell for Meydan Group (Meydan) submitted that a review of the DCP raises questions about the strategic basis of the projects chosen. In his cross examination of the two Council expert witnesses, Mr Chiappi for Salta Properties (Salta) focussed on a small number of the projects which involved works in existing laneways and rights of way. He put to the witnesses that the major beneficiaries of the laneway works were the abutting landowners and that they did not have broader strategic justification. Mr Hrelja, called by Council, responded that he understood that the basis of the inclusion of these projects was included in the documents listed in the 'Reference Document' column in the DCP project table at Appendix 2 to the DCP.

The Panel requested Council explain in more detail the strategic justification of laneway works, pointing out that Council's *Encouraging and Increasing Walking Strategy, 2005*, (EIWS) appears to make no reference to the use of laneways as part of the movement network. The *Road Management Plan 2013* refers to laneways as part of the responsibilities of Council but does not appear to refer to them in terms of active transport networks.

In closing, Mr Finanzio SC for Council tabled a detailed project sheet for the laneway project used as an example by Mr Chiappi together with an extract from the EIWS which does make specific reference to the use of laneways as short cuts and proposed that these are retained when redevelopment occurs.

Mr Townshend for SZM and Mr Cooper for Cremorne Properties submitted that further strategic work in Cremorne would result in further projects being added to the DCP and that this DCP should be regarded as interim as far as Cremorne is concerned. The procedural issues raised by SZM and Cremorne Properties are outlined in chapter 1.4.

Riverlee Management Pty Ltd (Riverlee) submitted that some of Yarra's local strategies listed are not linked in any way to any of the projects listed.

Others, including submitters 6, 15 and 19, referenced further strategies which are required in Yarra.

(iv) Discussion

The Panel notes that the strategic justification of projects such as laneway works might not in all cases have been obvious from the documentation. The Panel is satisfied with Council's response. The Panel notes that in at least some cases works are proposed in laneways one dwelling distant from a trafficable street and that the use of the lane as a short cut may not

always be a desirable option. The Panel does not see its role as individually assessing the details and strategic underpinning of each of the 777 DCP projects. No examples or evidence were drawn to the Panels attention to lead to conclude that projects are not sufficiently strategically justified.

The Panel understands that strategies and plans are prepared for a number of purposes and while there may be a lack of project detail in some underpinning documents, it is satisfied that detail is generally available and that the projects included in the DCP are broadly strategically justified.

It is not the Panel's role in the context of this Amendment to assess the need for further strategies in Yarra.

(v) Conclusion

The Panel concludes the DCP projects are strategically justified.

3.2 Conformity with DCP principles and guidelines

(i) The issues

The issues addressed are whether the proposed DCP conforms with the principles of DCPs as set out in Part 3B of the Act, the *Ministerial Direction on the Preparation and Content of Development Contributions Plans, October 2016* and the *Development Contributions Guidelines* (the Guidelines).

(ii) Evidence and submissions

Council submitted that it appears to be common ground that the Act and the Ministerial Direction are complied with.

The Guidelines set out the following nine principles headed:

- DCPs must have a strategic basis
- infrastructure projects must be justified
- nexus between new development and new infrastructure
- DCPs must have a reasonable time horizon
- infrastructure costs must be apportioned on the basis of project share of usage
- a commitment to provide the infrastructure
- accountability
- transparency
- DCP must be in the planning scheme.

Council submitted that Mr Hrelja's evidence demonstrates that these principles informed and were actively considered in the preparation of the DCP. Principles 1, 2, 5, and 9 are addressed in other sections of this report. Except for the nexus principle which is addressed in chapter 3.3, conformity with other principles was not contested.

(iii) Discussion

The Panel accepts that the relevant sections of the Act and the Ministerial Directions and Guidelines not discussed elsewhere have been complied with.

The Panel observes that the Guidelines were prepared in the context of DCPs mainly applying in greenfield growth areas and some aspects, for example the equitable sharing of costs which is addressed in chapter 4.3 do not readily translate to an existing area such as Yarra.

(iv) Conclusion

The Panel concludes as relevant, the Act, the *Ministerial Guideline on the Preparation and Content of Development Contribution Plans* and the Guidelines are broadly complied with.

3.3 Nexus

Nexus between users of infrastructure and who pays for it is one of the underpinning principles of DCPs. It is addressed separately from consideration of other principles because of the emphasis placed on it by some submitters and the Panel's view that it is desirable to clearly spell out the parameters for establishing nexus in this inner urban environment.

(i) The issue

The issue addressed is whether there is sufficient nexus between the development to be levied and likely use of the infrastructure.

(ii) Evidence and submissions

As indicated in chapter 3.2, the DCP guidelines set out nine principles for DCPs. One is headed:

> Nexus between new development and the need for new infrastructure
>
> It must be demonstrated that the new development to be levied is likely to use the new infrastructure to be provided. New development should not be considered on an individual basis, but as part of the wider community that will use the infrastructure project. The wider community may also include existing development. This is all that is required to demonstrate 'nexus' to justify the application of the charge.[2]

In cross examination of Mr Hrelja, Mr Chiappi took him to DCP project 162, a laneway project near Fitzroy and Mahoney Streets, Fitzroy and put to him that the only beneficiaries of work in that laneway would be the abutting land owners. In response Mr Hrelja responded that each laneway is part of a network of paths and contribute to the permeability of the area and should be viewed as part of the wider network.

When questioned by the Panel on what needs to be done to ensure nexus between users of development and DCP charges, both Mr Hrelja and Mr De Silva (also called by Council) addressed the issue in terms of the need to ensure that the charge areas chosen are appropriate.

Ms Liddell presented a table assessing the nexus of a range of project categories in the Abbotsford and Richmond Central charge areas which assessed the nexus between Meydan's

[2] Guidelines for Development Contributions Plans 2003 (revised 2007) p13.

commercial sites and users of them. In many cases, she assessed the nexus as low. The Housing Industry Association (HIA), Vicinity Centres (Vicinity) and Salta each submitted levies were proposed to be charged without legitimate nexus having been established. The Epworth Hospital submitted that several projects were maintenance items, there was no nexus established, and that this was not a proper use of a DCP. Salta submitted that some footpath works will be required regardless of new development.

(iii) Discussion

The relevant principle in the Guidelines for Development Contributions Plans states:

> It must be demonstrated that the new development to be levied is likely to use the infrastructure to be provided …

The principle has three interrelated elements as follows:

- new development
- likely to use
- infrastructure provided.

Through established practice, each of these have become relatively straight forward in greenfield areas, but each requires exploration and refinement in existing urban areas. There is a growing body of work on existing urban area DCPs and their related Panel reports; the Yarra DCP and this report add to this.

New development

Most greenfield DCPs and indeed ICPs, provide for mostly new urban development. This is not the case with DCPs in existing urban areas where existing development users will be significant contributors to projects. In Yarra's case about 70 per cent of the provision is for existing development. This impacts significantly on the remaining two elements of the principle listed above.

Likely to use

The Moreland Panel[3] quoted by Council stated that development may be required to contribute to development even though it might not derive direct benefit from it. This Panel concurs. In Yarra, about 70 per cent of the project costs will effectively be met by existing users, so the 'nexus' between charges levied and 'new development' arguably can be interpreted differently than in greenfield development. The Panel agrees with Mr Hrelja and Mr De Silva meeting the 'likely to use' criterion is getting the charge areas right and not seeking to define a clear nexus between a levy on a particular user and an individual project. For example, the Panel accepts Ms Liddell's submission that users of the Meydan developments may not use the public toilet in their charge area. However, these projects are important to the broad amenity of the areas being redeveloped, particularly where external users visit the area, and thus it is appropriate that a portion of the infrastructure be charged to new development.

[3] Moreland C133 (PSA) [2014] PPV157

Infrastructure provided

Clearly, any infrastructure provided must be strategically justified and must be strategically linked to future development. It is not appropriate to provide infrastructure just for existing residents. However, if enhanced or improved infrastructure is provided as a result of new development, and will be used by existing development, it is appropriate that it is in part paid for by existing users.

The Panel accepts the submission by Salta that some footpath works would be required anyway but disagrees with Salta that these should not be included. The reason for this is that the Guidelines use terms such as 'replacement' and 'upgrading'. These are less common in greenfield DCPs and ICPs but by necessity are going to be common in existing area DCPs.

Many of the projects listed in the DCP were referred to as 'renewal'. The Panel is satisfied that the process to prepare this DCP was sufficiently rigorous to eliminate most maintenance (discussed further in chapter 4.1). The Panel regards it as unfortunate that the term renewal was used extensively and would prefer the terms 'upgrading' and 'replacement' as used in the Guidelines.

In most greenfield settings, completely new road, open space and community infrastructure is required to accommodate new communities. This differs significantly from new development in existing areas more often characterised as infrastructure which:

- replaces and upgrades existing infrastructure which may have reached the end of its economic life
- upgrades the standard of existing infrastructure to increase capacity within a restricted land or building footprint
- Increases the broad amenity of an area so it aligns with current community expectations.

The Panel is of the view that each conforms with the Guidelines.

(iv) Conclusions

Based on the discussion above, the Panel concludes that:

- consistent with the Moreland Panel and as appropriate for the differing categories of development, that all development contribute to infrastructure in a charge area even though it may not derive direct benefit from the infrastructure
- there needs to be a strategic justification linking a project to new development and this may be as broad as improved public realm
- suburb wide charge areas are appropriate to establish the principle of nexus
- there is a need to clearly define maintenance and use terminology to describe projects which is both consistent with the Guidelines and makes clear that the project is not maintenance.

The Panel is of the view that, while the principles underpinning these conclusions are broadly complied with, some changes in detailed wording could improve compliance. The Panel understands and accepts however, that the wording derives from background strategic documents and has been used for consistency.

3.4 Impacts on housing affordability

(i) The issue

The issue addressed is whether the proposed DCP levies will have an unacceptable impact on the affordability of housing.

(ii) Evidence and submissions

The HIA submitted that it opposes the application of development contributions on several grounds, including its potential impact on housing affordability. It further submitted that governments should be required to prepare full cost-benefit analysis of the impact of development levies on housing affordability prior to implementation. Council submitted that the HIA had made similar submissions to other recent DCPs, including Moreland, Brimbank and Banyule and quoted from each of the relevant Panel reports. Each of the previous Panels rejected the case put by the HIA, variously citing, no corroborating evidence, that DCP levies could be absorbed in ways other than increases in the price of the housing end product and that the HIA's objection was essentially a broad-based objection to the use of development levies to fund infrastructure.

In his expert witness statement, Mr De Silva provided context, stating that the quantum of charges proposed is modest compared with charges in greenfield locations and in line with those proposed in other recent DCPs in existing areas.

(iii) Discussion

The HIA did not expand on its detailed written submission at the Hearing. The Panel concurs with the findings of other recent Panels. It notes that housing affordability is a complex issue which is being addressed by government in a number of ways. No evidence was produced to convince this Panel to deviate from the conclusions reached by the other recent panels quoted by Council. This Panel notes that the proposed DCP funded infrastructure is justified and that the cost will need to be borne by home owners and taxpayers is some form or other. Alternative approaches to funding such infrastructure would impose a financial 'burden' on some group in society. Until it can be shown that the burden unnecessarily and inappropriately impacts housing affordability, it is appropriate to reject the argument put by the HIA. In drawing this conclusion, the Panel is cognisant of the relatively modest charges proposed, as identified by Mr De Silva.

(iv) Conclusion

The Panel concludes that the proposed development contributions will not impact housing affordability.

4 Content of the DCP

Council submitted that there are four things that a DCP proposal must get right:

- the demographics
- choosing the correct projects
- defining appropriate charge areas
- a proper basis for sharing costs.

The first of these was not contested and is not addressed. The other three are the subject of the first three sections of this chapter followed by the accuracy of the forecast of future commercial floor space as raised by Meydan.

4.1 Choice of projects

(i) The issues

The issues addressed are:

- whether there is appropriate project detail given
- whether the proposed projects are appropriate and whether further projects should be included in the DCP.

(ii) Relevant policies, strategies and studies

Project detail

In cross examining Mr Hrelja, Mr Chiappi put to him that it was not clear what the projects were in any detail. He further put it that the result may be significant change to projects without the developer being able to understand what the changes may be.

Council responded that project detail is in its long-term financial plan which is publicly available.

Appropriate projects

Council submitted that both the *Ministerial Direction on Preparation and Content of Development Contributions Plans* and the *Development Contributions Guidelines* provide guidance to what projects can be included in DCPs. Mr De Silva quoted the relevant part of the Ministerial Guideline which outlines projects which can be included in DCPs:

> 5. The following works, services or facilities may be funded from a development infrastructure levy:
>
> a) Acquisition of land for:
>
> - roads
> - public transport corridors
> - drainage
> - public open space, and
> - community facilities, including, but not limited to, those listed under clause 5(f).
>
> b) Construction of roads, including the construction of bicycle and foot paths, and traffic management and control devices.

c) Construction of public transport infrastructure, including fixed rail infrastructure, railway stations, bus stops and tram stops.

d) Basic improvements to public open space, including earthworks, landscaping, fencing, seating and playground equipment.

e) Drainage works.

f) Buildings and works for or associated with the construction of:
   - a maternal and child health care centre
   - a child care centre
   - a kindergarten, or
   - any centre which provides these facilities in combination.[4]

The Guidelines lists the type of projects which can be included in a DCP:

- a new item of infrastructure
- an upgrade in the standard of provision of an existing infrastructure item
- an extension to an existing facility
- the total replacement of an infrastructure item after it has reached the end of its economic life[5].

The Guidelines state that infrastructure may not be included if it results from poor maintenance.

Mr Hrelja explained the process used to identify the 777 projects included in the DCP. Included projects were refined down from an initial list of over 1,300. He described the iterative process between himself and Council officers to ensure only eligible projects were included. This iterative process included removing maintenance projects required as a condition of authorisation of the Amendment.

Several submitters suggested projects be added. These included open space and green roofs (submissions 1,4, and 9); more emphasis on community facilities (submissions 16, and 25); more emphasis on projects which would supports active transport modes (submissions 6, 15, 16); and inclusion of more innovative projects including a percentage of project costs contributing to public art (submission 2). Submission 24 indicated that Alphington- Fairfield was not receiving its fair share of infrastructure projects and that only 1.2 per cent of the total project budget would be spent in that charge area.

Council explained that open space projects funded through open space levies had been deliberately excluded from the scheme. The Alphington Fairfield Appropriate Development Association suggested projects for Alphington, not all of which fall within the category of permissible DCP projects.

Submitter 12 claimed that some projects involved repair and maintenance, but this was not pursued at the Hearing.

Submitter 15 stated that most projects were from Council's Capital Plan and urged that Council be more ambitious and forward looking in its choice of projects.

---

4 Ministerial Guideline on the Preparation and Content of a Development Contributions Plan 2016, paragraph 5.

5 Development Contributions Guidelines 2003 (revised 2007) p16.

(iii) Discussion

The Panel is satisfied that a suitably rigorous process was followed to reduce the initial list of 1,300 projects by almost half, to the proposed 777 DCP projects. The interaction between Mr Hrelja as expert preparing the DCP and Council officers appears to have been a useful one. DCP guidelines allow facilities to be replaced if beyond their economic life. The Panel notes that much of Yarra's physical infrastructure, most notably laneways, will be more than 100 years old and beyond their economic life so the arguments of lack of maintenance becomes difficult to advance.

The Panel cannot be sure that there are some projects included in the list that might with closer scrutiny include elements of maintenance or works arising from lack of maintenance. However, the Panel is satisfied that the process followed appears likely to have excluded the majority of such projects. This is an issue which has not generally arisen in the context of greenfield DCPs and an issue where process and practice are probably still evolving in areas such as Yarra.

The DCP includes a large number of relatively small projects compared with many greenfield growth area DCPs. Because of this, the Panel agrees with Mr Hrelja that extensive project details don't need to be included in the DCP, provided adequate detail is publicly available to assure developers that the integrity of the DCP is maintained. The Panel notes that technological and other changes over the life of the DCP will necessarily mean that some projects will change.

The Panel is broadly satisfied that the projects chosen are appropriate and as a group appear to comply with the relevant Ministerial Direction and Guidelines. Further projects suggested by some submitters could be included but it is not the Panel's role to recommend adding or deleting projects on the basis of submissions which in general lacked specific detail and which were not supported at the Hearing.

The Panel notes that there will be different types of projects proposed in DCPs in existing areas, many of which will be small scale in nature and broadly aimed at improving the public realm. An upgraded public realm will support both new and existing development.

Council gave no specific reason for the number of projects identified in Alphington-Fairfield other than to refer to the project identification processes. The Panel was presented with no evidence that the project allocation in this charge area is inappropriate and notes that the DCP levies in this charge area are relatively lower.

Council could be more ambitious in its choice of projects, but the Panel notes that projects must be strategically justified, and that Council has made a reasonable judgement on the projects included and their impact on the total charge to be imposed.

(iv) Conclusions

The Panel concludes:

- project detail is sufficient and publicly available to an acceptable level
- the list of projects included is the result of a satisfactorily rigorous process
- that the proposed projects are appropriate.

4.2 Charge areas

(i) The issues

The issues are whether the charge areas are appropriate and whether the proposal to divide the Cremorne and Burnley - Richmond South charge area into two, is appropriate.

(ii) Relevant policies, strategies and studies

DCP Guidelines do not provide specific guidance on charge areas but do say that infrastructure:

- must serve a neighbourhood or larger area
- must be used by a broad cross section of the community[6].

(iii) Evidence and submissions

The exhibited DCP proposed 10 charge areas which broadly align with suburb boundaries. Getting the charge areas right was one of the key issues which Council indicated was a necessary underpinning of a DCP. Council submitted that basing charge area boundaries on existing suburb boundaries was an approach used in the Moreland DCP. Council submitted that the Moreland Panel observed that a larger number of charge areas might serve to reduce cross subsidisation across charge area boundaries but could result in other anomalies and complexities. In his peer review of the DCP, Mr De Silva supported the proposed charge areas.

Three submitters referred to the appropriateness of the charge areas, SZM, Cremorne Properties and Streets Alive Yarra.

As indicated in chapter 1.4, SZM appeared at the commencement of the Hearing to outline an agreement reached with Council to split charge area 10, *Cremorne and Burnley - Richmond South* into two; charge area 10 *Burnley - Richmond South* and charge area 11, *Cremorne*.

Mr Townshend outlined recent development in Cremorne and tabled *Cremorne Remix - Strategic Vision* prepared for SZM and based on consultation with government agencies[7]. It sets out a vision for Cremorne which ties it in with proposed development north to Richmond Station and south to the Forrest Hill precinct of Stonnington. The Panel was informed that the Victorian Planning Authority (VPA) has programmed strategic work in this precinct for the current year.

Streets Alive Yarra, proposed 20 charge areas based on the existing 20 Local Area Place Making districts (LAPMs). As part of their submission they comment on the inappropriateness of including Cremorne and Burnley in the one charge area.

(iv) Discussion

The Panel endorses the agreement between Council and SZM and supported by Cremorne Properties, to divide the Cremorne and Burnley – Richmond South charge area into two. The Panel is cognisant that Burnley, that is the area east of Brighton Street, the proposed border is more residential in nature than Cremorne which is already undergoing significant urban

6 Guidelines for Development Contributions Plans 2003 (revised 2007), p16
7 Document 5.

transformation with a number of high-profile international technology related companies locating in the area. The Panel is further cognisant of the further aspirations for the area supported by the VPA's priority project to undertake strategic work.

What aspects of the *Cremorne Remix - Strategic Vision*, if any, might be implemented through the VPA's strategic work is unknown.

It is not the Panel's role to comment in detail on the strategic planning to be undertaken in Cremorne as its focus must be on the DCP Amendment. However, the Panel accepts the arguments that Cremorne is an area needing further intensive strategic planning to help it reach its potential. The type of development already occurring and further proposed in Cremorne is likely to need more and different infrastructure than that envisaged in the exhibited DCP. It will be in the interests of good planning outcomes for the current DCP to be amended as soon as possible with the required infrastructure projects when identified.

The Panel acknowledges that a case could be made for a series of charge areas based on boundaries other than existing suburbs, including the LAPMs proposed by Streets Alive Yarra. However, no submissions or evidence were presented to the Panel to convince it that an alternative approach would result in a better and more equitable outcome. Consequently, the Panel endorses the 11 charge areas proposed in the amended DCP documentation.

(v) Conclusions

The Panel concludes:

- the division of the exhibited Cremorne and Burnley - Richmond South charge area into two new charge areas, 10 Burnley - Richmond South and charge area 11, Cremorne is appropriate
- the 11 charge areas proposed in the amended DCP documentation is appropriate.

4.3 Sharing of costs

(i) The issue

A significant proportion of project costs in the DCP will be borne by existing residents. The issues addressed are:

- whether the proposed cost allocation both between charge areas and between existing and future residents and business is appropriate
- whether the proposed reallocation of projects between the new Cremorne and Burnley - Richmond South charge areas is appropriate
- whether the proposed allocation of a proportion of costs to external users is appropriate.

(ii) Relevant policies, strategies and studies

With respect to cost sharing, the DCP Guidelines state:

> For the purposes of calculating levies in a DCP, the costs of infrastructure projects are shared amongst all the likely users. The likely users are will include existing and future development. In this way new development will not be charged for the whole cost of an

> infrastructure project that others will use and costs are distributed on a fair and equitable basis[8].

The Guidelines go on to say that included infrastructure must be used by a broad cross section of the community, but importantly don't say that it must be used by all members of the relevant community.

(iii) Evidence and submissions

Cost allocation

The exhibited DCP allocates the cost of projects to a single charge area where the main users are from that charge area. Where the benefits flow to multiple charge areas the costs are allocated equally to those areas. A small number of projects have their cost spread across all charge areas where the benefits are municipality wide. Splitting costs equally across multiple charge areas departs from most greenfield DCPs which split costs on the estimated share of usage.

Council submitted that the cost allocation processes are fit for purpose and broadly consistent with those adopted in other established area DCPs. They are supported by the peer review and evidence of Mr De Silva.

Council submitted that the DCP is intended to collect 31.5 per cent of the total project costs of $177.2 million over the plan life, with the remaining costs being allocated to existing users and borne by Council.

In evidence, Mr De Silva said that the population of Yarra was estimated to grow by 31.8 per cent between 2016 and 2031, which aligns approximately with the proportion of total DCP costs allocated to new users. On this basis, he regarded the cost allocation as appropriate.

As indicated in chapter 3.3, Ms Liddell identified projects in the Abbotsford and Richmond Central charge areas which she submitted would not be used by Meydan developments. In particular, she identified footpath works in Central Richmond as remote from the Meydan site and the provision of public toilets as unlikely to be used by the Meydan developments.

Ms Liddell identified one footpath project apparently abutting a Meydan development as one where Meydan was required by permit condition to carry out restitution works on the completion of development. She submitted that paying a DCP contribution for these works would constitute inappropriate double dipping. Council responded that if this situation arose, the works should be eligible for a 'works in kind' credit.

Allocating projects to new charge areas

The agreement between Council and SZM states that:

> The existing exhibited projects within the Cremorne and Burnley – Richmond South charge area will be split between the two new areas such that there is no additional cost to persons within either the new Cremorne charge area or the new Burnley charge area.[9]

---

8 Guidelines for Development Contributions Plans 2003 (revised 2007) p 13.

9 See Document 1.

Council explained that when the work was undertaken to allocate projects between the two new charge areas the calculated DCP charge was slightly higher than exhibited in Burnley and slightly lower than exhibited in Cremorne. Consistent with the agreement reached it proposed that the charge in Burnley be capped at the exhibited rate with Council picking up the shortfall. However, Council proposed that the rate in Cremorne be retained at the exhibited rate, potentially resulting in an excess of funds being collected.

Norton Rose Fulbright responded on behalf of SZM, stating that:

> If the new Cremorne charge area is to be burdened by DCP rates that are higher than the calculations indicate are owed by Cremorne, then it would be appropriate that additional infrastructure items be included for the Cremorne area.
>
> … significant strategic funding is required to develop a structure plan for Cremorne. We consider that this project should be added as a further item to be funded from contributions from this DCP[10].

Council responded that adding the suggested new project was not possible as section 46k(1)(d) of the Act does not allow planning work other than the preparation of a DCP.

External use

The exhibited DCP proposed to allocate five per cent of the total costs to 'external users', that is users external to the relevant charge area or users receiving benefits outside the life of the DCP. Council's two expert witnesses took different positions on this. Mr Hrelja supported the proposed external allocation on the basis that the DCP Guidelines require that consideration be given to external demand and that the proposed allocation was considered reasonable by Council officers. He further stated that the proposed five percent is consistent with the Brimbank and Banyule DCPs.

In his evidence, Mr De Silva acknowledged that there will be some external usage but that the proposed five per cent figure was not supported by any analysis and he proposed that it be removed. He cited the Moreland DCP as one which does not have any allowance for external demand. Council indicated that it would seek the Panel's view on this difference of opinion between its two witnesses. However, in its submission in reply Council indicated that it preferred Mr De Silva's position on the basis that Council's 70 per cent contribution was already sufficient to allow for external demand.

Mr Chiappi identified the Walmer Street Bridge which connects with the neighbouring municipality of Kew as an instance where it was inappropriate for Yarra users to be allocated the total cost because a significant proportion of users would be external to Yarra.

(iv) Discussion

No evidence was presented to indicate that the proposed cost allocation is inappropriate. The sharing of some costs equally between two or more charge areas may be regarded as a rough approximation when compared with the more nuanced approach taken in some greenfield areas. However, the Panel regards this as a pragmatic and acceptable approach where many small projects are involved.

[10] See Document 18.

The Panel notes Council's response to Ms Liddell's submission about required footpath restitution works and likely works in kind credit.

The Panel endorses the Council decision to not increase the exhibited charge rates[11] in Cremorne and Burnley – Richmond South. Further, the Panel agrees with Council that adding strategic planning for Cremorne as a project does not appear to be allowable under the Act. Even if it was, the Panel would be hesitant to include such a sum in the absence of any knowledge of funding already allocated to strategic planning in Cremorne.

The Panel understands Council's argument for keeping the DCP charge in Cremorne at the exhibited level. It further notes the likelihood that an amended DCP for Cremorne in future will lead to the requirement to reconcile funds collected under this DCP with what is proposed in the amended DCP. One view, to maintain consistency with the Guidelines, is that the charge should be at the calculated level in the Cremorne charge area after its separation from Burnley – Richmond South. The Panel, however, accepts Council's approach to keep the exhibited charges is a pragmatic response in the circumstances when the new or expanded projects are unknown and the charge is likely to increase, not decrease.

With respect to external demand, the Panel understands Mr De Silva's position and the basis of Council's support for it. However, as stated elsewhere while the Guidelines are not always entirely appropriate to inner urban locations such as Yarra, they should be adhered to where possible. Rejecting Guidelines because they do not suit a desired outcome is not a good precedent. On this basis, the Panel believes that there should be an allowance for external usage. This will allow projects such as public toilets which will mainly benefit external users to be more readily justified.

The Panel accepts that there is no clear rationale for the five per cent allowance proposed, but in the absence of evidence to the contrary, accepts that this is reasonable.

The Panel notes that the Walmer Street Bridge which connects to the neighbouring municipality of Kew appears highly likely to attract significant external usage. It appears to be part of the Yarra Main Trail and the Panel is a little surprised that there are not external resources available, at least in part, for these works. Putting this aside, it is inevitable in a DCP such as this there will be 'border' issues arise which present anomalies. This is no doubt a case of 'swings and roundabouts' and the Panel is of the view that there is no case for a different external allowance being made for this single project. To do so would introduce undesirable levels of complexity into the DCP and make them less attractive for Councils to prepare.

(v) Conclusions

The Panel concludes:

- the sharing of costs as proposed in the DCP is equitable and appropriate
- the DCP charge imposed in the new Cremorne (area 11) and Burnley – Richmond South (area 10) charge areas should be capped at the rate exhibited (adjusted for

[11] Any reference to the exhibited charge rate should be interpreted as the rate exhibited but amended for other minor changes made by Council such as including project GO12 as development infrastructure, and not interpreted literally as the dollar amount in the exhibited documents.

other changes to charge rates proposed in the amended DCP and DCPO set out in Documents 14 and 16)
- consistent with the Guidelines, an allowance should be made for external usage
- five per cent of the total project costs in the DCP should be allocated to external usage.

The Panel notes that section 7 of the revised DCP at tabled document 16, retains the section which provides for a five per cent allowance for external demand, so a recommendation to implement the Panel's conclusion on this matter is not required.

4.4 Forecast of future commercial floor space

(i) The issue

The issue addressed is whether the forecasts of future commercial floor space which underpin the charges in the DCP are appropriate.

(ii) Evidence and submissions

Background paper 1, *Demographics*, forecasts the further population in 2036 by charge area. It does not provide forecasts of future commercial, industrial or retail floor space. Consequently, in preparing the DCP, Mr Hrelja prepared forecasts of these uses.

Forecasts of floor space relevant to Ms Liddell's submission are summarised in Table 3.

Table 3: Commercial floor space in DCP (square metres)

Area No.	Area name	2016	2036	Increase
Area 07	Abbotsford	113,268	194,815	81,547
Area 09	Central Richmond	61,373	85,368	23,995
Yarra Total		724,869	1,247,216	522,347

Ms Liddell submitted that the three permits issued to the Meydan allow for 71,159 square metres of commercial floor space in Abbotsford and for 36,196 square metres of floor space in Central Richmond. She submitted that the Meydan permits constitute 87 per cent of the forecast increase in Abbotsford and already exceed the 20-year forecast in Central Richmond. On this basis Ms Liddell submitted that the forecasts in the DCP are 'simply not realistic'.

In reply, Council explained the timing of the preparation of the forecasts and acknowledged that they will need to be reviewed.

(iii) Discussion

The Panel notes that forecasting future demand for and supply of commercial floor space on a small area basis is notoriously difficult as a small number of developments or a single development can make those forecasts appear inappropriate, as has happened in this case. It is also possible that the Meydan developments are of such a scale that potential competing developments don't proceed, resulting in over forecasting.

On another level 'under forecasting' by Council is understandable as in this instance it lessens the risk of development not occurring and resulting in under-funding of the DCP. This said it appears highly likely that the forecast commercial floor space in Abbotsford and certainly Central Richmond for 2036 needs to be revisited. The Panel agrees with Council that this should be done and incorporated into a revised DCP at the time of the first DCP review.

(iv) Conclusions

The Panel concludes:

- it is likely that forecasts of future commercial floor space provision in at least the Abbotsford and Central Richmond charge areas are too low
- forecasts of all industrial, commercial and retail floorspace should be reviewed with each review of the DCP and the DCP revised accordingly.

4.5 Recommendations

The Panel recommends:

- **Setting the infrastructure levies for charge area 10, Burnley – Richmond South, and charge area 11, Cremorne at the exhibited level and updating relevant tables in the Development Contributions Plan and Development Contributions Plan Overlay Schedule 1.**

5 Implementation of the DCP

5.1 Indexation of DCP charges

(i) The issue

The issue addressed is the appropriate index or indices to use to adjust the DCP levies for cost changes over the life of the DCP.

(ii) Evidence and submissions

The exhibited DCP proposed to index the approved levy amount annually using the Consumer Price Index for Melbourne – all groups (CPI). Council submitted that it wished to explore the issue of indexation with the expert witnesses at the Hearing.

In presenting his expert evidence, Mr Hrelja stated that he supported the use of the CPI because it was easy to access and well understood. He made this statement in response to the statement in the peer review by Mr De Silva that consideration be given to using Producer Price Indices (PPI) as follows:

Table 4: Indices

Item	Directions
Community Infrastructure	Australian Bureau of Statistics Producer Price Indexes – Non-residential Building Construction Index, Victoria (catalogue 6427.0, Table 17 Output of the Construction Indices)
Roads, drainage and paths	Australian Bureau of Statistics Producer Price Indexes - Road and Bridge Construction Index, Victoria (catalogue 6427.0, Table 17 Output of the Construction Industries)

Mr Hrelja stated that these indices were more volatile, and this was a further reason to support use of the CPI. Recent volatility in the PPI was confirmed in a document produced by Mr De Silva[12]. Mr Hrelja further stated that the application of the PPI would involve work to determine which was the appropriate PPI to use but acknowledged this would be a one-off exercise.

In closing, Council, submitted that its preferred approach was to use the PPI when it was greater than the CPI, but in other years to use the CPI.

(iii) Discussion

The Panel notes that recent DCPs in other municipalities have varied in their approach to indexation, with Brimbank and Banyule opting for the CPI and Moreland opting for the Building Price Index as published by Rawlinsons.

The Panel is not attracted by the approach submitted by Council in closing; that is using the CPI as a floor, but taking advantage of a higher PPI when it exists; as it is both adds a further degree of complexity and appears to be an attempt to set a higher minimum floor on

[12] Tabled document 9.

indexation. The Panel is concerned about the volatility of the PPI as it could result in perverse outcomes where a development pays lower levies in a particular year but out of context with broadly rising costs over time. The Panel also does not see the CPI as particularly appropriate as it is based on price increases in a 'basket' of consumer items and bears little relationship to cost changes in the civil construction sector. However, in this case it seems the least worst option. The Panel is aware that the index published by Rawlinsons was used in some greenfield DCPs in the past and although its use was not canvassed at the Hearing would not be opposed to its use in Yarra instead of the recommended CPI. The Panel is unsure why this option was not investigated.

On balance, the Panel considers the 'shandy' approach suggested by Council a step too far. The Guidelines state good practice:[13]

- includes an annual adjustment for inflation based on the General Consumer Index for Capital Cities.

The Panel understands that many of the issues relating to underfunding of DCPs go to the issue of project costing rather than indexation. If a change to a more contemporary approach such as suggested by Council is warranted, this should be considered at the policy level rather than through individual DCPs.

(iv) Conclusion

The Panel concludes that infrastructure levies should be indexed using the Consumer Price Index Melbourne (All Groups).

5.2 Timing of payments due under the DCPO

(i) The issue

The issue addressed is whether the timing schedule for payments to be made as set out in section 8 of the DCP and in Clause 3.0 of the DCPO1 is appropriate.

(ii) Evidence and submissions

The exhibited DCP proposed that the Development Infrastructure Levy can be paid at one of three stages:

- *Subdivision stage* - payment made prior to the issue of a Statement of Compliance
- *Planning permit stage* – payment made prior to the commencement of any development or works
- *Building permit stage* – payment made no late than the date of the issue of a building permit.

The Community Infrastructure Levy payment must be made no later than the date of issue of the building permit.

In evidence and in response to submissions, Mr Hrelja stated that these were the legally available payment timing options. Mr De Silva pointed out that the wording appeared to give discretion to Council as to timing of the levy and that this was unfair.

[13] On page 19.

Zero Nine Pty Ltd submitted that the trigger for applying the levies under the DCP should be the issue of a building permit.

Salta submitted that typically, development levies are required to be provided at the end of the building stage, before occupation. It acknowledged that the controls purport to be flexible, allowing Council to choose the stage at which the levy is paid but that Salta's concern that this flexibility may mean that the levy is required at a stage when funds are not available.

Vicinity echoed Salta's concerns, pointing out the additional commercial pressure of the flexibility Council proposed and that it was a departure from the norm.

Council responded in the form of amended documentation, replacing the previous text with references to the timing of payments as set out in 46N and 46O of the Act in the DCPO1 and deleting the reference in the DCP.

(iii) Discussion

The Panel endorses the approach of deleting the detail of the levy payment schedule from both the DCP and the DCPO1 and replacing it in DCPO1 with a reference to the relevant sections of the Act. This is appropriate as it eliminates the possibility of interpretation in the Amendment where that may differ from the provisions in the Act. It is assumed that the concerns of the submitters have been met in that current arrangements will apply including the possibility of agreement on timing levy payments between the collecting agency and the applicant.

(iv) Conclusions

The Panel concludes that replacing specific levy payment timing clauses in the DCP and DCPO1 with reference to relevant provisions in the Act is appropriate.

5.3 Transitional provisions

(i) The issue

No transitional provisions are proposed for developments part way through the planning process. The issue is whether this is appropriate.

(ii) Evidence and submissions

The exhibited DCP makes no provision for transitional arrangements, a position supported by both Council's expert witnesses. Mr De Silva said that he was satisfied that transitional arrangements are not necessary.

Salta submitted that the lack of transitional provisions made it unclear what would happen if an application was made to amend an existing permit. Riverlee expressed concern about the lack of transitional provisions. Ms Liddell expressed concern about the uncertainty for developers if transitional provisions are not provided.

In response, Council submitted that other recent existing area DCPs have not included transitional provisions. It further stated that it would be extremely difficult to draw the line as to where in the process a development would be up to for it to be exempt under transitional

provisions. Council stated that the negotiations on exemptions provisions during the Hearing had in part picked up some concerns that had been raised about the lack of transitional provisions and that Council understood that submitters involved in these discussions were happy with outcomes.

(iii) Discussion

The Panel understands that as a matter of principle, 'rules' should not change during a process and this principle underpins the transitional provisions that often accompany changes in policy. The Panel accepts that in practical terms, 'drawing the line' and drafting clear transitional provisions would be a difficult but probably not impossible exercise. On balance, the Panel accepts the pragmatic position taken by Council to not include transitional provisions. In accepting this position, the Panel notes it is possible that there may be developers not party to these proceedings who may be part way through the process and who may incur charges under this DCP. Similarly, there will be others who are far enough advanced to escape the new charging regime. These appear to be inevitable consequences of the lack of transitional provisions and while not dismissive of these issues, the Panel is reassured by the modest level of the charges as identified by Mr De Silva.

The issue of levies being triggered by a change to a planning permit was not addressed by Council. The Panel is satisfied that the issue can be addressed in the negotiations around the issuing of the new planning permit at the point where the DCP and section 173 agreements may intersect.

(iv) Conclusion

The Panel concludes the proposal to not include transitional provisions is accepted.

5.4 Exemptions

(i) The issues

The DCP and DCPO1 propose that certain uses be exempt from DCP charges. The issues are whether the proposed exemptions are appropriate and whether further exemptions should apply.

(ii) Evidence and submissions

The exhibited DCPO1 proposed a list of exemptions provided for in legislation and Ministerial Directions or covered by a legal agreement with the Council. In his peer review of the DCP, Mr De Silva recommended that construction of and upgrades to existing servicing infrastructure be added as an exemption. Council accepted this.

Council explained that it was working with submitters on wording to be included in the DCPO which would capture the range of agreements which had been entered into by Council to collect contributions from developers and to exempt them from further infrastructure charges. Mr Finanzio indicated that the challenge was to develop appropriate wording to ensure that all existing agreements were captured. This issue was raised by Lend Lease and Riverlee.

Epworth Hospital submitted that large hospitals and medical centres should be exempt from the proposed levies. Lend Lease expressed concern that the while social housing was exempt, that private housing developed by the Department of Health and Human Services and housing associations are not exempt.

Zero Nine Pty Ltd submitted that developments that have a planning permit should be exempt.

The revised DCPO tabled as Document 14 includes revised exemptions provisions. Subsequently further revisions were tabled as Document 19. Council assured the Panel that the tabled wording satisfied the concerns of those consulted during the process, including some who expressed concern about the of lack of transitional provisions.

(iii) Discussion

The Panel accepts that the redrafting set out in Document 19 and included in the Panel recommended version of the DCPO1 at Appendix D meets the concerns of submitters on this issue and who were consulted during the drafting process.

The issue of other exemptions raised by Epworth are broader policy matters and as such are not commented on.

(iv) Conclusion

The Panel concludes the exemptions proposed in Clause 4 of the DCPO, including minor changes proposed in Tabled Document 19 as attached at Appendix D are appropriate.

5.5 Review of the DCP

(i) The issues

As with all DCPs, this DCP is required to be reviewed on a regular basis. The issue addressed here is the nature and timing of reviews.

(ii) Relevant policies, strategies and studies

The Guidelines state that a DCP should be monitored annually and reviewed every three years.

(iii) Evidence and submissions

The DCP states that it should be reviewed every three years. It notes that future conditions will invariably depart from future estimates and that the review should be in full or part as considered necessary by Council.

The peer review of the DCP by Mr De Silva recommended that the review period be four years. Mr Hrelja responded that the timing should be up to Council and that either three or four years was reasonable.

No other submitter raised this as an issue.

(iv) Discussion

Because of the large number of relatively small projects involved and the acknowledgment that future conditions will dictate changes to infrastructure required, the DCP review in this

instance is likely to differ substantially to reviews of greenfield DCPs. It is important that the project list is reviewed regularly so that its meets needs current at the time of the review and not the needs identified at the time of preparation of the DCP. The Panel draws no specific conclusion on the precise timing of the DCP review and agrees with Mr Hrelja that timing should be at Council's discretion but not normally be more than four years apart. The timing of the first review should coincide with the strategic review of the projects in the Cremorne charge area. It is hoped that this will occur by 2022.

In particular, the first review of the DCP should revise the projections of further commercial floor space in all charge areas as discussed in chapter 4.4.

(v) Conclusion

The Panel concludes the DCP should be reviewed regularly with reviews not normally more than four years apart.

5.6 Recommendations

The Panel recommends:

- **Replacing the sentence in Clause 3.0 of the Development Contributions Plan Overlay Schedule 1 commencing "*The amount of the adjustment …*", with the words "*The amount of the adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period*" and making the same wording change to the section headed Indexation of Development Contribution Plan Charges in section 7. of the Development Contributions Plan.**

Replacing the sentence commencing "The amount of the adjustment…"in Clause 3.0 of the Development Contributions Plan Overlay Schedule 1, with the words "The amount of the adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period" and making the same wording change to the section headed Indexation of Development Contribution Plan Charges in section 7. of the Development Contributions Plan.

6 DCP Amendment documentation

6.1 Final form of Development Contributions Plan

Minor amendments were made to the exhibited DCP because of the submissions received upon exhibition. Further changes were made during the Hearing because of:

- agreement between Council and SZM Holdings which resulted in some wording changes and dividing the Cremorne and Burnley - Richmond South into two, namely charge area 10, Burnley - Richmond South and charge area 11, Cremorne.
- changes, including extra tables resulting from recommendations arising from the peer review undertaken by Mr De Silva.
- deletion of reference to the timing of payment of DCP levies.
- minor errors identified post exhibition.

Because of its substantial appendices including details of the 777 projects, the DCP is not appended to this report. The approved version should be the version dated 26 February 2019 and tabled as Document 16 on 27 February 2019, further amended as follows:

- all costings updated to current year dollars as indicated in the response to the Panel's list of questions issued by Council with its part A submission
- include levies for Cremorne (area 11) and Burnley – Richmond South (area 10) charge area levies at the exhibited rate (see chapter 4.3)
- remove reference to using the CPI in years when the PPI is negative (see chapter 5.1).

6.1.1 Final form of the Development Contributions Plan Overlay Schedule 1

The exhibited DCPO1 was amended as a result of:

- changes resulting from the agreement on dividing the Cremorne and Burnley – Richmond South charge area detailed in chapter 6.1
- changing the reference on the levy payments schedule to refer to the relevant sections of the Act (see chapter 5.2)
- redrafting clause 4, on development exempted from levies (see chapter 5.4)
- changes made as a result of the peer review undertaken by Mr De Silva
- other changes to correct minor errors and improve readability.

The Panel recommended version is Appendix D; and should be further amended as follows:

- tables in Clauses 2 and 3 amended to reflect updated project costings (see Council response to Panel questions)
- tables in Clause 2 and 3 updated to reflect changes to the Cremorne and Burnley – Richmond South charge area (see chapter 4.2).

Mr Finanzio for Council submitted there are notes at the end of Section 3.0 in DCPO1 which seek to summarise legislative provisions from the *Planning and Environment Act 1987*[14], which is unnecessary and unhelpful. He submitted they should be removed, and the Panel agrees. Track changes are shown in Appendix D.

[14] Part 3B provides the administrative regime for development contributions.

Attachment 1 - Yarra C238 Panel Report

6.2 Recommendations

The Panel recommends:

- **Updating all costings in the Development Contributions Plan and Development Contributions Plan Overlay Schedule 1 to latest year costings and amending relevant tables accordingly.**

Attachment 1 - Yarra C238 Panel Report

Appendix A Submitters to the Amendment

No.	Submitter
1	Alex Koumoundouros
2	Laila Costa
3	Transport for Victoria
4	Chris and Alan Purton
5	Helen Askew
6	Nathan Moresi
7	Leah McPherson
8	Emily Collins
9	Winehall Pty Ltd
10	Jess Kilby
11	238 Coppin Street Pty Ltd
12	Riverlee
13	Housing Industry Association
14	Cremorne Properties Pty Ltd
15	Streets Alive Yarra
16	Salta Properties Pty Ltd
17	Environment Protection Authority
18	Tract Consultants Pty Ltd for Astrodome Hire Pty Ltd
19	Epworth Health Care
20	Lend Lease Apartments Pty Ltd
21	Meydan Group
22	Collingwood Toy Library
23	Vicinity Centres
24	Alphington Fairfield Appropriate Development Association Inc
25	Fitzroy Residents Association
26	Zero Nine Pty Ltd

Appendix B Parties to the Panel Hearing

Submitter	Represented by
Yarra City Council	Adrian Finanzio SC assisted by Barnaby Chessell of Counsel, instructed by Greg Tobin of Harwood Andrews, Lawyers, calling the following expert evidence: • Development Contributions from Alex Hrelja of HillPDA • Development Contributions from Chris De Silva of Mesh Consultants
SZM Holdings (Winehall Pty Ltd)	Chris Townshend QC instructed by Jess Kaczmarek of Norton Rose Fulbright, Lawyers
Astrodome Hire Pty Ltd	Nick Sutton of Planning and Property Partners
Meydan Group	Natasha Liddell
Lend Lease Apartments Pty Ltd	Tamara Brezzi, of Norton Rose Fulbright, Lawyers
Salta Properties Pty Ltd	Paul Chiappi of Counsel instructed by Planning and Property Partners
Cremorne Properties Pty Ltd	Gus Cooper

Appendix C Document list

Version – Close of Hearing 28/2/2019

No.	Date	Description	Presented by
1	25/2/19	Email including plan from Norton Rose Fulbright to Panel Chair for SZM Holdings regarding agreement reached with Council dated 15 February 2019	Circulated by SZM prior to Hearing
2	25/2/19	Email from Harwood Andrews for Council accompanying documents and confirming agreement with SZM dated 15 February 2019	Circulated by Council prior to Hearing
3	25/2/19	Hearing Document Folder from Council	Mr Finanzio for Council
4	25/2/19	Submission from SZM Holdings	Mr Townshend for SZM
5	25/2/19	Brochure re Cremorne Remix	Mr Townshend for SZM
6	25/2/19	*Arthur Land Pty Ltd v Yarra CC* [2018] VCAT 946	Mr Townshend for SZM
7	25/2/19	Council Part A submission circulated on 15 February 2019	Circulated by Council prior to Hearing
8	25/2/19	Submissions for Council	Mr Finanzio for Council
9	25/2/19	Comparison Table of Indices	Mr De Silva called by Council
10	25/2/19	DCP Figure 11 with Meydan land identified	Ms Liddell for Meydan
11	25/2/19	DCP Figure 11 with just footpath works shown	Ms Liddell for Meydan
12	27/2/19	Table of 2036 Demand Units identified in Evidence of Mr Hrelja	Circulated by Council on 26/2/19
13	27/2/19	Track changes version of DCPO1 dated 26/2/19	Circulated by Council on 26/2/19
14	27/2/19	Changes accepted version of DCPO1 dated 26/2/19	Circulated by Council on 26/2/19
15	27/2/19	Track changes version of DCP dated 26/2/19	Circulated by Council on 26/2/19
16	27/2/19	Changes Accepted version of DCP dated 26/2/19	Circulated by Council on 26/2/19

Attachment 1 - Yarra C238 Panel Report

No.	Date	Description	Presented by
17	27/2/19	Note from Mr Hrelja to explain changes in levies relating to areas 8, 9, new 10 and 11	Mr Finanzio for Council
18	28/2/19	Email from Norton Rose Fulbright to Panel Chair for SZM Holdings regarding proposed 'caps' in Cremorne and Burnley dated 27 February 2019	Circulated on 27/2/19
19	28/2/19	Revised Clause 4.0 to the DCPO1	Mr Finanzio for Council
20	28/2/19	Submission for Meydan Group	Ms Liddell for Meydan
21	28/2/19	Meydan Holdings in Abbotsford	Ms Liddell for Meydan
22	28/2/19	Meydan Holdings in Richmond	Ms Liddell for Meydan
23	28/2/19	DCP Figure 9 maps	Ms Liddell for Meydan
24	28/2/19	DCP Figure 11 maps	Ms Liddell for Meydan
25	28/2/19	Detailed plan of Meydan Abbotsford Holdings	Ms Liddell for Meydan
26	28/2/19	Abbotsford Recommended Local Area Place Making Plan	Ms Liddell for Meydan
27	28/2/19	Extract from Yarra Council Minutes dated 18 December 2018 relating to Abbotsford place making	Ms Liddell for Meydan
28	28/2/19	Submission for Lendlease	Ms Brezzi for Lendlease
29	28/2/19	Note re: detail in project descriptions compared to other approved urban DCPs	Mr Finanzio for Council
30	28/2/19	Information for discussion on Project 162	Mr Finanzio for Council
31	28/2/19	Closing submission for Council	Mr Finanzio for Council

Appendix D Panel preferred version of the Development Contributions Plan Overlay Schedule 1

SCHEDULE 1 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY

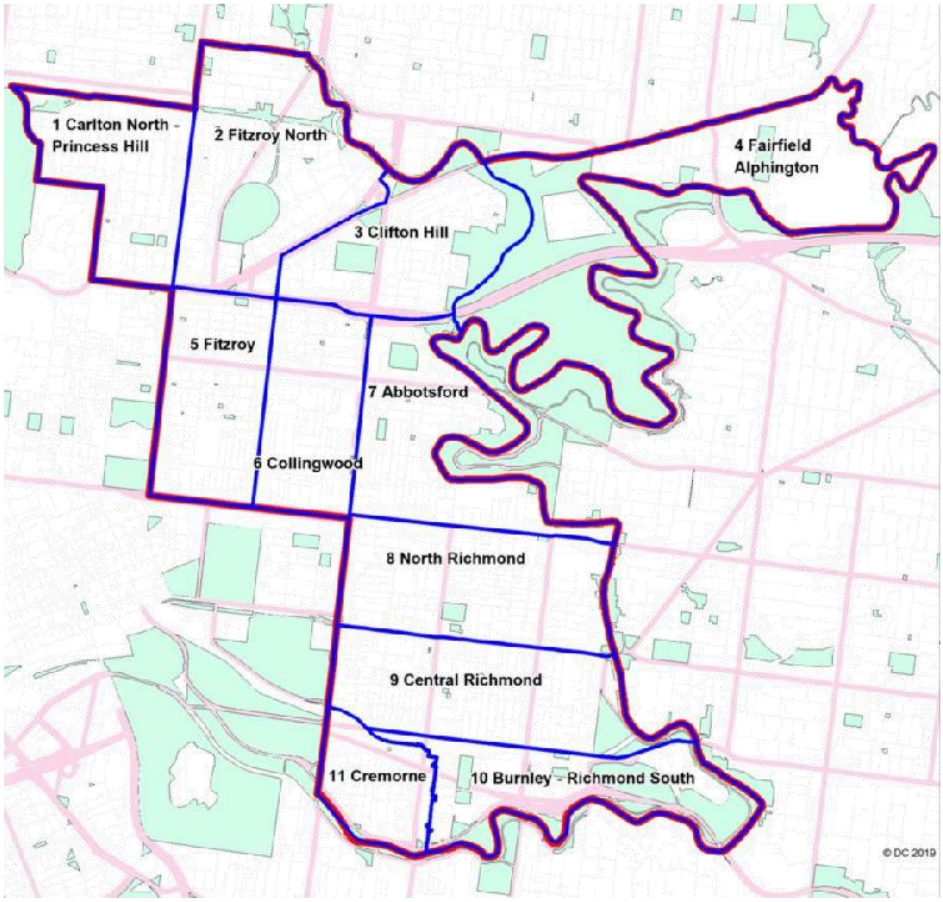
Shown on the planning scheme map as **DCPO1**.

YARRA DEVELOPMENT CONTRIBUTIONS PLAN 2017

1.0 Area covered by this development contributions plan

DD/MM/YYY Y Proposed C238

This Development Contributions Plan (DCP) applies to all new development within the 11 Charge Areas as shown below.



2.0 Summary of costs

—DD/MM/YYYY Proposed C238

Facility Type and Code	Total Cost	Time of Provision	Actual Cost Contribution Attributed to New Development	Proportion of Cost Attributed to New Development
Community Facility CFCI	$72,963,969	2016-2036	$24,426,587	33.48%
Community Facility CFDI	$825,000	2016-2036	$246,299	29.85%
Path PADI	$72,600,362	2016-2036	$22,454,018	30.93%
Road RDDI	$16,349,427	2016-2036	$4,640,648	28.38%
Drainage RDDI	$14,352,825	2016-2036	$4,017,998	27.99%
Development Contributions Plan DCPP	$79,725	2016-2036	$24,382	30.58%
Total	**$177,171,308**		**$55,809,932**	**31.50%**

Notes:

This table sets out a summary of the costs prescribed in the Development Contributions Plan. Refer to the incorporated document (Yarra Development Contributions Plan 2017) for full details.

Yarra City Council commits to delivering the DCP projects by 31 December 2036, but may deliver projects earlier. It is likely that projects will be progressively delivered over the DCP period.

Yarra City Council is Collecting Agency for this DCP and all its projects.

Yarra City Council is Development Agency for this DCP and all its projects.

Should Council not proceed with any of the infrastructure projects listed in this DCP, the funds collected for these items will be either:

- Used for the provision of other infrastructure as approved by the Minister responsible for the Planning and Environment Act, or
- Refunded to owners of land subject to these DCP charges.

3.0 Summary of contributions

-- C— DD/MM/YYYY Proposed C238

AREA		LEVIES PAYABLE BY RESIDENTAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Dwelling	Per Dwelling	Per Dwelling
Area 01	Carlton North - Princes Hill	$1,303.43	$970.94	$2,274.37
Area 02	Fitzroy North	$1,697.82	$970.94	$2,668.76
Area 03	Clifton Hill	$2,682.79	$970.94	$3,653.73
Area 04	Fairfield - Alphington	$202.35	$970.94	$1,173.29
Area 05	Fitzroy	$1,221.98	$1,109.16	$2,331.15
Area 06	Collingwood	$786.44	$1,109.16	$1,895.61
Area 07	Abbotsford	$882.33	$1,109.16	$1,991.50
Area 08	North Richmond	$496.24	$1,087.92	$1,584.17
Area 09	Central Richmond	$679.37	$1,087.92	$1,767.29
Area 10	Cremorne and Burnley - Richmond South	$525.52	$1,150.00	$1,675.52

Attachment 1 - Yarra C238 Panel Report

AREA		LEVIES PAYABLE BY RETAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure Per Square Metre (SQM) of Floorspace	Community infrastructure Per Square Metre (SQM) of Floorspace	All infrastructure Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$30.30	-	$30.30
Area 02	Fitzroy North	$25.56	-	$25.56
Area 03	Clifton Hill	$40.87	-	$40.87
Area 04	Fairfield - Alphington	$3.42	-	$3.42
Area 05	Fitzroy	$17.61	-	$17.61
Area 06	Collingwood	$14.78	-	$14.78
Area 07	Abbotsford	$15.00	-	$15.00
Area 08	North Richmond	$8.08	-	$8.08
Area 09	Central Richmond	$13.39	-	$13.39
Area 10	Cremorne and Burnley - Richmond South	$12.10	-	$12.10

AREA		LEVIES PAYABLE BY COMMERCIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure Per Square Metre (SQM) of Floorspace	Community infrastructure Per Square Metre (SQM) of Floorspace	All infrastructure Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$20.65	-	$20.65
Area 02	Fitzroy North	$28.17	-	$28.17
Area 03	Clifton Hill	$41.03	-	$41.03
Area 04	Fairfield - Alphington	$2.41	-	$2.41
Area 05	Fitzroy	$21.34	-	$21.34
Area 06	Collingwood	$12.56	-	$12.56
Area 07	Abbotsford	$15.77	-	$15.77
Area 08	North Richmond	$9.15	-	$9.15
Area 09	Central Richmond	$11.97	-	$11.97
Area 10	Cremorne and Burnley - Richmond South	$8.38	-	$8.38

AREA		LEVIES PAYABLE BY INDUSTRIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure Per Square Metre (SQM) of Floorspace	Community infrastructure Per Square Metre (SQM) of Floorspace	All infrastructure Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$7.42	-	$7.42
Area 02	Fitzroy North	$6.17	-	$6.17
Area 03	Clifton Hill	$11.16	-	$11.16
Area 04	Fairfield - Alphington	$1.15	-	$1.15
Area 05	Fitzroy	$3.47	-	$3.47
Area 06	Collingwood	$3.58	-	$3.58
Area 07	Abbotsford	$3.15	-	$3.15
Area 08	North Richmond	$1.60	-	$1.60
Area 09	Central Richmond	$2.83	-	$2.83
Area 10	Cremorne and Burnley - Richmond South	$2.93	-	$2.93

Note: Square metres of floorspace (SQM) refers to gross floorspace.

The above listed contribution amounts are current as at 30 June 2017. They will be adjusted annually on July 1 each year to cover the cost of inflation and fluctuations in the cost of construction. ~~The amount of adjustment will be in accordance with the indices specified in respect of Road and Bridge Construction in Victoria and Non-Residential Building Construction in Victoria in Table 17 of ABS PPI 6427.0, provided that the amount of any adjustment will be no lower than the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period~~. The amount of the adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period. A list showing the current contribution amounts will be held at Council's Planning Department.

For land uses not falling within an expressly defined land use term within this Planning Scheme the applicable rate is determined as commercial.

~~Payment of development contributions is to be made in cash.~~

~~The Collecting Agency may accept the provision of land, works, services or facilities by the applicant in part or full satisfaction of the amount of levy payable.~~

~~Each net additional demand unit shall be liable to pay the DCP levy (unless exemptions apply). This includes a new dwelling or building or an extension to an existing non-residential building.~~

~~Payment of the Development Infrastructure Levy must be made in accordance with section 46N of the Act.~~

~~Payment of the Community Infrastructure Levy must be made in accordance with section 46O of the Act.~~

4.0 Land or development excluded from development contributions plan

DD/MM/YYYY Proposed C238

No land or development is exempt from this Development Contributions Plan unless exempt by Legislation or Ministerial Direction or Legal Agreement with Yarra City Council or stated below. The following development is exempt from a development contribution:

- Land developed for a non-government school, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016;
- Land developed for housing by or for the Department of Health and Human Services, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016. This applies to social housing development delivered by and for registered housing associations. This exemption does not apply to

private dwellings developed by the Department of Health and Human Services or registered housing associations;

- Land which has a section 173 Agreement under the Planning and Environment Act 1987 and/or a Deed of Agreement which:
  - requires the payment of a development contributions levy; or
  - requires the ~~construction~~ provision of specified works services or facilities beyond those ~~that the responsible authority considered~~ necessary on or to the land or other land as a result of the grant of any permit; or
  - requires the payment of any development contributions or the provision of specified works services or facilities required to be provided public and/or community infrastructure ~~as a development contribution~~ by any other provision of this scheme.
  - requires the provision of land for works services or facilities (other than land required to be provided as public open space pursuant to clause 53.01or section 18 of the Subdivision Act 1988); or
  - explicitly excludes further development contributions to be made.

  For the avoidance of any doubt, the exemption is limited to the extent of any contribution secured by the section 173 Agreement.
- Construction of a building or carrying out of works or a subdivision that do not generate a net increase in additional demand units, including:
  - Replacement of a building;
  - Renovations or alterations to an existing building;
  - Construction of a fence;
  - Outbuildings normal to an existing dwelling;
- Dwelling units that are replaced within a development. This exemption does not apply to net additional dwelling units created by the development.

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Yarra Development Contributions Plan 2017

Final Report

Prepared for Yarra City Council

April 2019

HillPDA CONSULTING

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

CONTENTS

1 Introduction 5
Background 5
Further Strategic Investigation 5
Purpose of the DCP 5
Acknowledgement 6
2 DCP Areas 7
DCP Area Types 7
Selecting Analysis Areas 7
3 Infrastructure Funding Principles 9
Overarching Principles 9
Infrastructure Subject to DCP Funding 9
Infrastructure Funding Principles 9
4 Strategic Basis for the DCP 11
DCP Legislation and Directions 11
Policies and Strategies 11
Planning Scheme and Municipal Strategic Statement (MSS) 11
Plan Melbourne 12
Urban Design Strategy 2011 12
Economic Development Strategy 2015-2020 13
Water Sensitive Urban Design (WSUD) Policy 2016 13
Yarra Open Space Strategy 2007 13
Municipal Public Health and Wellbeing Plan 2013-2017 (Health Plan) 13
Community Infrastructure Planning Framework (Draft) 14
Strategic Advocacy Framework 14
Social and Affordable Housing Strategy 2016-2018 (Draft) 14
Access and Inclusion Plan 2014 – 2017 14
Night Time Economy Strategy 2014-2018 14
Events in Public Spaces Policy 15
Arts and Cultural Strategy 2016-2020 15
Public Art Policy 2015-2020 (and Guidelines for Public Art in Private Development in Yarra) 15
Early Years Strategy 2015-2018 15

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Middle Years Strategy 2014 – 2017 16
Yarra Youth Policy and Action Plan 2013-16 16
River of Life Positive Ageing Strategy 2007-2016 and Stage Two Action Plan 2014-2017 16
Strategic Transport Statement 17
Bike Strategy 2010-2015 17
Yarra Bike Strategy Refresh 2016 17
Road Management Plan 2013 18
Local Area Traffic Management Policy 18
Parking Management Strategy 2013-2017 18
Asset Management Policy 18
Buildings Asset Management Plan (BAMP) 19
Long Term Financial Strategy (LTFS) 19
Capital Works Plan 19
DCP Background Reports 19
5 Charging Areas and Development Scenario 20
Analysis Area and Charging Area 20
Development Conditions and Projections 20
Common Demand Unit and Equivalence Ratios 22
Total Demand Units 23
6 Infrastructure Projects 24
Overview of Projects Included in the DCP 24
Project Timing and Delivery 26
List of Projects 26
Location of Projects 27
7 Development Contribution Charges 39
Calculation Method 39
Allowance for External Demand 39
DCP Charges 39
Indexation of DCP Charges 42
Summary of DCP Cost and Income Estimates 42
8 Procedural Matters 44
Collecting Agency and Development Agency 44
Liability for Development Contributions 44
Payment of Development Contributions 44

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Charge Areas 44
Exemptions 45
Funds Administration 46
Funding the Gap 46
Impact Mitigation 46
Annual Reporting 46
DCP Review 47
DCP Projects Deemed Not Required 48
9 Appendix 1 - Method for Development Projections 49
10 Appendix 2 - Source of Equivalence Ratios 51
11 Appendix 3 - Infrastructure Project Details and Calculations 53
12 Appendix 4 - Annual Reporting Requirements 125
13 Appendix 5 - Indexed DCP charges for Financial Year 2018/2019127

1 INTRODUCTION

Background

The City of Yarra is an established inner metropolitan municipality. The municipality covers approximately 20 square kilometres and accommodates approximately 94,400 residents (as at 2016).

The municipality is experiencing significant development intensification on urban renewal sites and across established areas. The number of dwellings in the municipality is expected to increase from approximately 41,800 in 2016 to 64,600 in 2036. Retail and commercial floorspace is also expected to increase significantly whereas industrial floorspace is expected to contract over time.

In this context, Council will be required to construct a range of new infrastructure items and upgrade, extend or replace existing infrastructure in order to maintain and improve the functionality and amenity of the area.

To assist this significant task, this document has been prepared to determine a fair and reasonable developer contribution charge for the City of Yarra. The funds collected via the developer contribution charge will be used to help deliver the required infrastructure.

Further Strategic Investigation

Further strategic investigation of infrastructure is currently occurring in respect of the Cremorne charge area. It is anticipated that this further strategic work will result in additional projects or project changes within the Cremorne charge area.

Purpose of the DCP

The purpose of this DCP is to ensure that the cost of providing new infrastructure is shared between developers and the wider community on a fair and reasonable basis.

This DCP has been developed in accordance with relevant legislation, directions and guidelines to:

- Identify the infrastructure and facilities needed within the City of Yarra to meet contemporary standards and community expectations of service delivery;
- Apportion the cost of the required infrastructure over likely users of the infrastructure to the end of the planning horizon, being 2036 in this DCP;

- Determine the charge or levy rate of development contribution for various development types;
- Explain the method of DCP preparation and levy calculation; and
- Document DCP payment and administrative procedures.

The Yarra Development Contributions Plan (DCP) 2017 applies to all land and new development within the City of Yarra, unless specific exemptions apply.

Acknowledgement

This document has been prepared by HillPDA with the assistance of Yarra City Council officers. Council officers provided infrastructure project information and advice regarding project specifications and selection.

2 DCP AREAS

DCP Area Types

There are three area definitions of note in a DCP:

- DCP Area - This is the total area covered by a DCP Overlay in the Planning Scheme.
- Analysis Area - This area is used to define infrastructure project catchments in a DCP, separately for each project. A project catchment can be the whole DCP Area or part of it. An Analysis Area is the smallest possible project catchment. Multiple Analysis Areas can be aggregated to define larger catchments for infrastructure projects that have larger catchments.
- Charge Area - This is an area for which a unique DCP charge is set in the Planning Scheme. It is possible to amalgamate a group of Analysis Areas into one Charge Area to reduce the number of areas shown in the Planning Scheme, if it is deemed desirable to do so for some reason. In this DCP, Charge Areas are exactly the same as Analysis Areas.

Selecting Analysis Areas

The cost apportionment methodology adopted in a DCP relies on the nexus principle, in accordance with DCP Guidelines. The Guidelines state that a use or development is deemed to have a nexus with an infrastructure item if the occupants of, or visitors to, the site in question are deemed to make use of the infrastructure in question. Costs are apportioned according to projected share of infrastructure usage.

The concept of 'make use' is not exact but rather is based on a reasonableness test. Over time, various DCPs have been developed on the basis of planning precincts or suburbs being selected as a reasonable Analysis Area for DCP purposes.

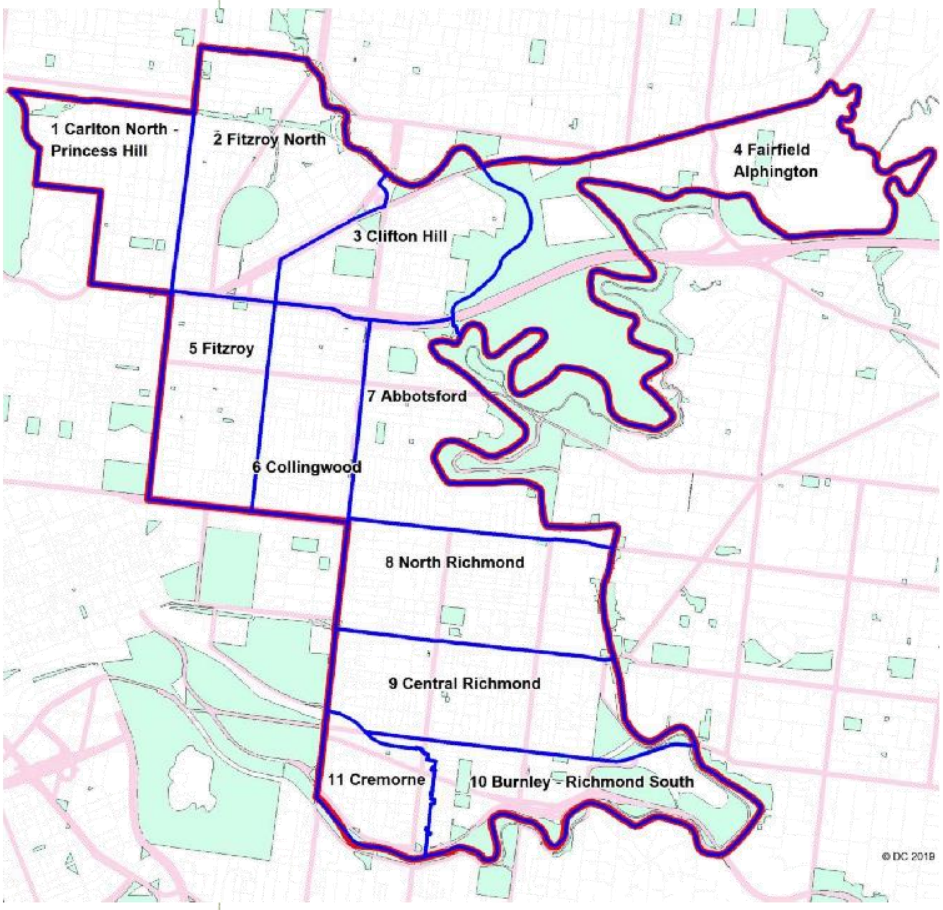
The main issue is to select areas so as to avoid the prospect of building in serious cross-subsidies in DCP design. A serious cross-subsidy is defined as development paying for infrastructure that it will definitely not use (i.e. the catchment is too big and the development is located remotely from the project) or development is asked to pay above its fair share of infrastructure use (i.e. the catchment is too small and charges are set too high for development within the catchment).

The adopted DCP Analysis Areas and Charging Areas are the suburbs / planning precincts used within Yarra City Council for planning purposes and by id Consulting for profiling and projection purposes.

The DCP Area is divided into 11 separate areas for the purpose of this DCP. During the process to introduce this DCP into the Yarra Planning Scheme an area of Cremorne - Burnley - Richmond South was divided as follows: Area 10 Burnley - Richmond South; and Area 11 Cremorne. This division occurred to align the boundaries of Area 11 Cremorne with further strategic work under progress by the Victorian Planning Authority (with Council).

The DCP areas are shown in Figure 1 below.

Figure 1 - DCP Area and DCP Analysis Areas and Charging Areas



3 INFRASTRUCTURE FUNDING PRINCIPLES

Overarching Principles

A Development Contribution Plan (DCP) is a mechanism used to levy new development for contributions towards planned infrastructure needed by the community.

As part of the implementation of Yarra's land use and development planning framework, Council will collect development contributions from new development through an approved DCP, which is contained within the Planning Scheme. The funds collected will be used to help deliver the nominated infrastructure projects in the DCP.

Infrastructure Subject to DCP Funding

In accordance with the Planning and Environment Act 1987, the State Government's Development Contributions Guidelines 2007 and associated Ministerial Directions 2016, the types of projects that are able to be funded through a DCP may include the following:

- A new item of infrastructure;
- An upgrade to the standard of provision of an existing infrastructure asset or facility;
- An extension to an existing asset or facility; and
- The replacement of an infrastructure item after it has reached the end of its economic life.

To determine infrastructure projects that are included in the DCP, the infrastructure must be used by a broad cross section of the community and serve a neighbourhood sized catchment area or larger area.

The types of infrastructure projects that may be included within a DCP must be either:

- Basic to health, safety or well-being of the community, or
- Consistent with the community expectations of what is required to meet its health, safety or well-being.

Infrastructure Funding Principles

The overarching objective of the DCP is to ensure that there is a reasonable nexus between development and infrastructure.

Nexus is defined as occupants of, or visitors to, a development site being likely users of specified infrastructure, as defined by DCP

Guidelines 2007. This is defined having regard to the11 DCP Areas as the basis for identifying the main catchment areas for infrastructure.

The cost of a project is apportioned to all total demand units within its catchment area to the end of the DCP timeframe (2036). An allowance is made for external usage of infrastructure from outside the catchment area and from beyond the time horizon of the DCP. This means that the cost of infrastructure is allocated to:

- Existing development - the share of cost attributed to existing development is paid by Council given there is no means by which to charge such development;
- External demand allowance - the share of cost that is attributed to external demand is paid by Council on behalf of such users of infrastructure; and
- New Development - will pay its share of the cost of infrastructure via the planning and / or building permit process.

As shown later in this document, the estimated share of cost attributed to new development is less than one-third of the cost of infrastructure.

Section 7 of this document explains in more detail how the above principles are applied to generated DCP charges.

The infrastructure projects that are covered in this DCP are roads, paths (i.e. streetscape or urban design works), drainage and community facilities.

4 STRATEGIC BASIS FOR THE DCP

DCP Legislation and Directions

The Planning and Environment Act 1987 Part 3B nominates the purpose of the Development Contributions Plan for 'levying contributions for the provisions of works, services and facilities'.

This DCP follows the provisions of the Act and related DCP Guidelines 2007 and Ministerial Directions 2016.

Policies and Strategies

Planning Scheme and Municipal Strategic Statement (MSS)

Yarra's Municipal Strategic Statement (MSS) nominates the vision for the municipality and documents aims, actions and key strategic directions for the City. The vision for the City to 2020 is nominated as:

"**Land Use**

- The City will accommodate a diverse range of people, including families, the aged, the disabled, and those who are socially or economically disadvantaged
- Yarra will have increased opportunities for employment
- There will be an increased provision of public open space
- The complex land use mix characteristic of the inner City will provide for a range of activities to meet the needs of the community
- Yarra's exciting retail strip shopping centres will provide for the needs of local residents, and attract people from across Melbourne

Built Form

- Yarra's historic fabric which demonstrates the development of metropolitan Melbourne will be internationally recognised
- Yarra will have a distinctive identity as a low-rise urban form, with areas of higher development and highly valued landmarks
- People will safely get together and socialise in public spaces across the City
- All new development will demonstrate design excellence

Transport

- Local streets will be dominated by walkers and cyclists
- Most people will walk, cycle and use public transport for the journey to work

Environmental sustainability

- Buildings throughout the City will adopt state-of the-art environmental design
- Our natural environment will support additional species of flora and fauna
- This vision is pursued by the objectives and strategies set out in the land use, built form, transport, environmental sustainability and neighbourhood sections under Clauses 21.04-21.08."

Plan Melbourne

Plan Melbourne is the metropolitan planning strategy. It identifies areas of state significance and areas of local significance. Planning for areas identified as being of state significance will be led by the Victorian Planning Authority in partnership with local government. Areas of local significance will continue to be managed by local government.

Yarra forms part of the Central Sub-region in Plan Melbourne, and is noted to have activity centres, employment areas, community facilities and transport corridors. Yarra is generally identified as an established area with limited scope for major change.

The focus of growth and change in the Central Sub-region are the expanded central city, Parkville Employment Cluster and major transport projects. These are generally located outside of the City of Yarra.

Urban Design Strategy 2011

Due to its inner-city location, Yarra experiences significant pressure for redevelopment and land use change. The Urban Design Strategy (UDS) was adopted by Council in June 2011 and was designed to act as a guide for planners, designers and decision-makers to help improve Yarra's urban design in a dynamic, ever-changing urban environment. In this context, the purpose of the UDS is to promote good design outcomes that contribute to a coherent and appealing urban environment and encourage continuity, growth and change. The UDS recognises that the need to achieve good design outcomes

at an individual site level should be balanced with a greater focus on collectively improving the quality of urban design across Yarra.

Economic Development Strategy 2015-2020

The Yarra Economic Development Strategy 2015-2020 provides a framework for investment and jobs growth. The focus of the strategy is on developing a smart and sustainable City with vibrant and thriving precincts and a locally engaged business community. The strategy informs and guides investments relating to business, tourism and employment growth and change.

Water Sensitive Urban Design (WSUD) Policy 2016

Council's Water Sensitive Urban Design (WSUD) Policy for Council Infrastructure Assets was adopted on May 2016 and is supported by Water Sensitive Urban Design (WSUD) Guidelines for City of Yarra Works, 2016. The purpose of the policy is to articulate Council's position on WSUD, and also to ensure there is an integration of effort across Council divisions to achieve sustainable and integrated WSUD projects resulting in improved liveability outcomes for the community.

Yarra Open Space Strategy 2007

The Yarra Open Space Strategy guides the future provision, planning, design and management of public land reserved for recreation and nature conservation purposes such as parks, gardens and other reserves that make up Yarra's open space network.

The Strategy provides a review of the current public open space network and a basis for Council's future open space program. The Strategy focuses on all publicly owned land that is set aside and managed exclusively for leisure, recreation and nature conservation.

Municipal Public Health and Wellbeing Plan 2013-2017 (Health Plan)

The Health Plan identifies health and wellbeing priorities for the City of Yarra and nominates actions to be undertaken by Council and other Government and non-Government agencies. The Health Plan informs and guides programs and capital works investments, including investment in parks, street lighting, footpaths, cycling lanes, trails, recreation and community facilities.

Community Infrastructure Planning Framework (Draft)

This document responds to growth and compositional change to Yarra's community profile and demography and the ways in which community services and community infrastructure can be delivered. This document informs facility needs including the need for new facilities and upgrades to existing facilities.

Strategic Advocacy Framework

This document provides a framework for working with the community and stakeholders in the development and implementation of Council policies and activities. This includes direction for engaging with residents, businesses and visitors.

Social and Affordable Housing Strategy 2016-2018 (Draft)

This document identifies the challenges of the increasing demand and cost of housing in Yarra with a view to develop strategies that help deliver social and affordable housing outcomes in the City. The strategy seeks to build on the overarching goal to ensure Yarra remains an inclusive and diverse community.

Access and Inclusion Plan 2014 – 2017

The Access and Inclusion Plan seeks to: provide equitable and accessible opportunities for people with disability to engage in cultural and social activities and events and in civic and community decision making; to create inclusive work cultures by meeting the needs of applicants with disability; to improve accessibility to buildings, spaces and facilities; to create and promote resources, information and communication to meet the needs of people with disability; and to increase staff and community awareness regarding practices inclusive of people with disability.

Night Time Economy Strategy 2014-2018

The Night Time Economy (NTE) Strategy is a four year plan to improve the safety, vibrancy and functionality of night time activities in Yarra. The Strategy aims to develop a program of activities that improve night time entertainment precincts in Yarra. These precincts are principally Collingwood and Fitzroy, (Smith, Gertrude, Brunswick and Johnston Streets), and Richmond (Victoria, Church, and Swan Streets and Bridge Road).

Events in Public Spaces Policy

The Events in Public Spaces Policy provides a framework under which proposals for events to be held in Public Spaces are to be considered and how these events will be managed. The need for the Policy has arisen owing to population growth creating pressure on resources in public areas for quiet enjoyment - balanced against an increasing trend for outdoor spaces to function as temporary venues for commercial and community activities. The Policy applies to outdoor events and activities which are of a size and nature that may impact on residents and businesses and are to be conducted on public spaces and roadways, regardless of whether the events are commercial, community or Council organised events.

Arts and Cultural Strategy 2016-2020

The Strategy is a statement of Yarra Council's values and outlines its priorities for the next five years. Written at a time when public funding for arts and culture in Australia, and internationally, was being increasingly scrutinised, the Strategy is concerned with arts and cultural activities expressed in the known forms of visual arts, music, theatre, performance, literature, public art, design, digital arts, film and craft, as well as the unknown and undefined forms. The Strategy identifies four key priorities for the City, including such directives as to provide support to Aboriginal artists practicing across all art forms and at all stages of their careers, and to facilitate appropriate and affordable venues and spaces that are suitable for arts and cultural activities.

Public Art Policy 2015-2020 (and Guidelines for Public Art in Private Development in Yarra)

The Public Art Policy sets out Council's strategic direction and defines the administration framework for public art in the city. The Policy provides a framework for assessment of works to be commissioned or acquired by purchase, donation or transfer. It sets out guidelines for Council in facilitating privately commissioned works that have public benefit and it articulates the management framework for Council managed public artworks.

Early Years Strategy 2015-2018

The Early Years Strategy 2015-2018 provides direction about how Yarra's services and activities will be planned and delivered to ensure that young children feel safe, welcomed and confident as they move about the municipality. This Strategy was informed by children's

ideas and interests as well as those of their families and the community of Yarra. The Strategy aims to ensure that there is an integrated and coordinated approach to planning and delivering services for children across their key life phases and transition points. The Early Years Strategy has been developed as part of an integrated policy platform and joins with a Middle Years Strategy (8 to 12 years) and the Youth Policy (12 to 25 years). Collectively these plans provide the foundation for Council to build shared understanding and consistent approaches to supporting and working with children, young people and families.

Middle Years Strategy 2014 – 2017

The Middle Years Strategy outlines a three year plan for the planning and delivery of services and programs for 8-12 year olds in Yarra. The Strategy has been developed as part of an integrated policy platform alongside the Early Years Strategy (0-8 years) and the Youth Policy (12-25 years). The Strategy was developed in partnership with children and young people, families, community agencies and services in late 2013, and was adopted by Council in February 2014.

Yarra Youth Policy and Action Plan 2013-16

Yarra's Youth Policy and Action Plan 2013-16 was developed in partnership with young people and outlines a three-year vision for people aged 12 to 25 who live, work, study or visit Yarra. Yarra's Youth Ambassadors worked with Council to plan and lead the policy development and consultation process. Young people shared their ideas, opinions and aspirations for Yarra. Combined with the Early Years Strategy (0-8 years) and Middle Years Strategy (8 to 12 years), Yarra City Council has a policy continuum from birth to early adulthood (0 - 25 years).

River of Life Positive Ageing Strategy 2007-2016 and Stage Two Action Plan 2014-2017

The Strategy was developed by Yarra City Council to respond to both the opportunities and the challenges of an ageing population. The Strategy provides recognition of the contribution older residents make to Yarra's social capital and the Strategy seeks to promote age friendly communities, with access to appropriate activities and services, to support positive ageing, and maintain social connectedness. Six key objectives shape the River of Life Positive Ageing Strategy with related and supporting Actions included to

ensure the Strategy was focussed, responsive to community needs, and implemented.

Strategic Transport Statement

The Strategic Transport Statement is Yarra's transport policy document which addresses the access needs of the community equitably and sustainably. It recognises that Council must integrate transport planning with land use, health, social, economic and environmental planning objectives and all actions of Council.

The Statement recognises that the transport needs of residents, businesses, visitors and commuters must be met while minimising negative impacts of cars on Yarra's community. The Statement is not a comprehensive transport strategy but a broad statement of Council's transport policy intent.

The Strategic Transport Statement incorporates the 'Encouraging and Increasing Walking in Yarra Strategy' (which was replaced by the Statement). The promotion of walking is one of the key directions of increasing sustainable modes of travel and transport.

Bike Strategy 2010-2015

The City is Yarra is reported to have the highest cycle to work mode share in Australia. Council aims to have the share of commuter cycling increase over time (measured as 6.4% in 2009 to a target of 15% by 2015). The Bicycle Strategy was developed and adopted to achieve this aim and establish cycling as a legitimate first choice of transport by people of all ages and cycling abilities. The Strategy identifies cycling networks, facilities and initiatives that will help increase cycling participation. A number of bicycle projects nominated within the Strategy are included in the Capital Works Plan.

Yarra Bike Strategy Refresh 2016

The City of Yarra Bike Strategy 2010 – 2015 establishes a long term vision for cycling. It details the status of bicycle initiatives, lays out future plans for bicycle facilities and lists strategies and actions for getting more people to cycle more often.

The Yarra Bike Strategy Refresh for 2016 reconsiders and prioritises these partially completed and yet to be delivered projects to establish a post 2015 bike project delivery pipeline. The Refresh also identifies a number of new projects or changes to existing projects that respond to specific opportunities or transport needs that have emerged since the 2010 Yarra Bike Strategy was adopted. The City of

Yarra Bike Strategy 2016 Refresh is an addendum to the original 2010 – 2015 strategy and should be read in conjunction with it.

Road Management Plan 2013

The purpose of the Road Management Plan is to document the standards and priorities for inspection, maintenance and repairs of the road network in order to ensure a safe and efficient network of public roads is provided primarily for travel and transport. The Plan also helps Council to meet the statutory requirements of the Road Management Act, the relevant Ministerial Code of Practice, the Road Management Regulations, and achieve an appropriate level of statutory protection against civil liability claims.

Local Area Traffic Management Policy

Council adopted its Local Area Traffic Management Policy in May 2014. The policy outlines Council's process for conducting Local Area Traffic Management (LATM) studies, which aim to reduce traffic volume and speeds on local roads and provide a safer environment for cyclists and pedestrians. The studies consider what traffic treatments should be introduced to help improve local traffic conditions.

Parking Management Strategy 2013-2017

The Parking Management Strategy provides a policy framework to guide officers in the management of the parking resources in City of Yarra. The fundamental aims of the Strategy are to reduce the number of cars parking in Yarra, to promote public transport as an alternative to driving and to ensure visitors contribute to the cost of providing Yarra's parking infrastructure. A key aim underpinning the Strategy is Council's desire to promote sustainable travel, such as cycling, walking and public transport.

Asset Management Policy

The Asset Management Policy provides a framework to guide sustainable management of Council's assets portfolio as a platform for service delivery. The Policy puts in place a comprehensive, accountable and transparent Service/ Asset Management Framework for the City.

Council manages approximately $1,638 million worth of assets. These includes 260 kilometres of road pavement, 491 kilometres of footpaths, 491 kilometres of kerb and channel, 170 kilometres of storm water pipes and 85 kilometres of laneways.

Council's community and recreation services require the management and upkeep of Council's buildings and facilities. These include 3 town halls, 5 libraries, 3 swimming pools & recreation centres, 3 neighbourhood houses, 10 childcare centres, 230 hectares of open space, 35 playgrounds and 15 sporting fields.

Buildings Asset Management Plan (BAMP)

The Buildings Asset Management Plan (BAMP) identifies Council`s service needs and the subsequent funds required to ensure its building facilities are maintained, renewed and fit for purpose to meet the defined service needs. The Plan records the assets, describes the function, maintenance practices and standards, lifecycle costs, levels of service and documents options for service improvement. This allows Council to make informed decisions about the maintenance and renewal of buildings to meet the identified service needs and priorities. Each year the Plan is reviewed and financial data updated including the funding gap analysis.

Long Term Financial Strategy (LTFS)

The LTFS provides a framework for Council to operate in a financially sustainability manner into the future. This covers rate levels and increases, other sources of funding and expenditure levels. The LFTS informs the capacity of Council to commit to a DCP and the extent of financial commitment possible.

Capital Works Plan

The above listed policies and strategies (to varying degrees) inform capital works planning and prioritisation in Yarra.

Council utilises a 10-year and longer term Capital Works Plan for infrastructure management purposes. The 10-year list of projects comprises over 1,000 line items classified into new assets and renewal and upgrade of existing assets. More detail on these projects is shown later in this report. From the Capital Works Plan, a list of projects can be selected for a DCP.

DCP Background Reports

The DCP has been informed by background documents prepared by Yarra City Council, these being:

- Yarra DCP Background Paper No.1 – Demographics (2017);
- Yarra DCP Background Paper No.2 - DCP Projects (2017); and
- Yarra DCP Background Paper No.3 - DCP Charge Areas (2017).

5 CHARGING AREAS AND DEVELOPMENT SCENARIO

Analysis Area and Charging Area

This DCP has 11 analysis areas and charging areas, being the DCP Areas as shown in Figure 1 above.

Development in the DCP Areas will be required to pay a contribution in accordance with estimated share of use of the scheduled infrastructure. The scheduled infrastructure is assessed to service users outside of the DCP Areas to some extent. As such, a nominal allowance for the cost attributable to external use is discounted from the DCP calculations to ensure development within the DCP Area is charged fairly.

Development Conditions and Projections

The level of residential development within the DCP Areas is based on Victorian in Future 2016 (State Government) projections and Yarra City Council's dwelling projections provided by Forecast ID to 2036.

Development data for Retail, Commercial and Industrial land uses was derived for this report based on the method shown in Appendix 1. The adopted development data for the DCP is shown in Table 1 below.

Table 1 - Development Conditions and Projections

Residential Dwellings

	Area No.	2016	2036	Change 2016-2036	
Area 01	Carlton North - Princes Hill	4,096	4,859	763	18.6%
Area 02	Fitzroy North	5,371	8,152	2,781	51.8%
Area 03	Clifton Hill	2,829	3,491	662	23.4%
Area 04	Fairfield - Alphington	1,104	3,266	2,162	195.8%
Area 05	Fitzroy	5,114	7,033	1,919	37.5%
Area 06	Collingwood	3,686	6,794	3,108	84.3%
Area 07	Abbotsford	4,097	7,047	2,950	72.0%
Area 08	North Richmond	6,600	10,354	3,754	56.9%
Area 09	Central Richmond	6,845	9,521	2,676	39.1%
Area 10	Burnley - Richmond South	1,026	2,078	1,053	102.6%
Area 11	Cremorne	972	2,007	1,034	106.4%
Total		**41,740**	**64,602**	**22,862**	**54.8%**

Continued ...

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Retail Floorspace (sqm)

Area No.	Area Name	2016	2036	Change 2016-2036	
Area 01	Carlton North - Princes Hill	23,119	27,423	4,304	18.6%
Area 02	Fitzroy North	40,793	61,917	21,124	51.8%
Area 03	Clifton Hill	17,050	21,039	3,989	23.4%
Area 04	Fairfield - Alphington	16,454	48,674	32,220	195.8%
Area 05	Fitzroy	139,617	192,013	52,396	37.5%
Area 06	Collingwood	91,676	168,985	77,309	84.3%
Area 07	Abbotsford	66,053	113,607	47,554	72.0%
Area 08	North Richmond	158,423	248,532	90,109	56.9%
Area 09	Central Richmond	76,508	106,421	29,913	39.1%
Area 10	Burnley - Richmond South	39,762	81,304	41,542	104.5%
Area 11	Cremorne	39,636	81,046	41,410	104.5%
Total		**709,091**	**1,150,961**	**441,870**	**62.3%**

Commercial Floorspace (sqm)

Area No.	Area Name	2016	2036	Change 2016-2036	
Area 01	Carlton North - Princes Hill	9,097	10,791	1,694	18.6%
Area 02	Fitzroy North	18,985	28,816	9,831	51.8%
Area 03	Clifton Hill	7,065	8,718	1,653	23.4%
Area 04	Fairfield - Alphington	11,726	34,688	22,962	195.8%
Area 05	Fitzroy	103,578	142,449	38,871	37.5%
Area 06	Collingwood	86,820	160,034	73,214	84.3%
Area 07	Abbotsford	113,268	194,815	81,547	72.0%
Area 08	North Richmond	122,667	192,438	69,771	56.9%
Area 09	Central Richmond	61,373	85,368	23,995	39.1%
Area 10	Burnley - Richmond South	42,251	86,393	44,142	104.5%
Area 11	Cremorne	148,038	302,705	154,667	104.5%
Total		**724,869**	**1,247,216**	**522,347**	**72.1%**

Continued ...

Industrial Floorspace (sqm)

Area No.	Area Name	2016	2036	Change 2016-2036	
Area 01	Carlton North - Princes Hill	656	536	-120	-18.3%
Area 02	Fitzroy North	38,816	31,731	-7,085	-18.3%
Area 03	Clifton Hill	47,652	38,954	-8,698	-18.3%
Area 04	Fairfield - Alphington	11,513	9,411	-2,102	-18.3%
Area 05	Fitzroy	71,283	58,272	-13,011	-18.3%
Area 06	Collingwood	239,645	195,902	-43,743	-18.3%
Area 07	Abbotsford	253,242	207,017	-46,225	-18.3%
Area 08	North Richmond	135,058	110,406	-24,652	-18.3%
Area 09	Central Richmond	39,329	32,150	-7,179	-18.3%
Area 10	Burnley - Richmond South	36,641	29,953	-6,688	-18.3%
Area 11	Cremorne	113,405	92,705	-20,700	-18.3%
Total		**987,239**	**807,035**	**-180,204**	**-18.3%**

Source: Victoria in Future 2016; Forecasts, .id Consulting, December 2015; Yarra City Council data 2019; HillPDA

Common Demand Unit and Equivalence Ratios

In accordance with DCP Guidelines 2007, where more than one land use is deemed to make use of an infrastructure category, it is necessary to convert the land use types into a common demand unit before development contribution calculations are made. This is done by using equivalence ratios.

The common demand unit selected for this DCP is one dwelling.

In this DCP, all of the land use types - residential, retail, commercial and industrial - are deemed to make use of path, road and drainage project categories. However, for community facility projects, only residential development is deemed a user of the items, and as such, no ratios are required for those project types.

DCP preparation costs are also included and spread across all land uses on a per square metre basis.

The adopted ratios are shown in Table 2 below. Appendix 2 provides more information on the adopted ratios.

Table 2 - Equivalence Ratios

	Residential	Retail	Commercial	Industrial
	dwelling units	sqm floorspace	sqm floorspace	sqm floorspace
Community Facility CFCI	1.0	-	-	-
Community Facility CFDI	1.0	-	-	-
Path PADI	1.0	75.0	50.0	500.0
Road RDDI	1.0	19.0	121.0	67.0
Drainage DRDI	1.0	100.0	100.0	200.0
Development Contributions Plan DCPP	1.0	120.0	120.0	120.0

For example, this shows that 19 sqm of retail space generates the same demand loading on the road system as does 1 dwelling. Therefore, if a development proposes 190 sqm of retail space it would be assessed to have the same demand loading on the road system as 10 dwellings; that is, 190 sqm / 19 = 10 equivalent dwellings for the purposes of road use.

Total Demand Units

The next step is to determine total demand units for each category of infrastructure. The total demand unit figure is used to calculate the infrastructure or DCP charge (i.e. it is the number to apportion costs over). This is determined by dividing the development data by the equivalence ratios. The total number of demand units for each project is shown in Appendix 3.

The following table shows total demand units by area and project category.

Table 3 - Total Demand Units by Area and Project Category

Area No.	Area Name	Community Facility CFCI	Community Facility CFDI	Path PADI	Road RDDI	Drainage DRDI	Development Contributions Plan FCPP
Area 01	Carlton North - Princes Hill	4,859	4,859	5,442	6,399	5,244	5,182
Area 02	Fitzroy North	8,152	8,152	9,617	12,123	9,218	9,173
Area 03	Clifton Hill	3,491	3,491	4,024	5,252	3,983	4,064
Area 04	Fairfield - Alphington	3,266	3,266	4,628	6,255	4,147	4,039
Area 05	Fitzroy	7,033	7,033	12,559	19,186	10,669	10,306
Area 06	Collingwood	6,794	6,794	12,640	19,934	11,064	11,168
Area 07	Abbotsford	7,047	7,047	12,872	17,726	11,166	11,342
Area 08	North Richmond	10,354	10,354	17,737	26,673	15,316	14,949
Area 09	Central Richmond	9,521	9,521	12,712	16,307	11,600	11,387
Area 10	Burnley - Richmond South	2,078	2,078	4,950	7,518	3,905	3,725
Area 11	Cremorne	2,007	2,007	9,327	10,158	6,308	5,977
Total		**64,602**	**64,602**	**106,507**	**147,532**	**92,619**	**91,312**

6 INFRASTRUCTURE PROJECTS

Overview of Projects Included in the DCP

Numerous strategic studies have been undertaken in relation to a range of capital works infrastructure delivery topics over a number of years. Most of those studies have identified a long list of infrastructure projects that are either needed for basic health and safety or expected to be provided by the community.

In total, this DCP comprises 777 projects with a value of $177.2m. The projects are summarised as follows.

Table 4 - Summary of Projects

NUMBER	CFCI	CFDI	DRDI	PADI	RDDI	DCPP	TOTAL
Bicycle Network	0	0	0	17	0	0	**17**
Bridge Redecking	0	0	0	4	0	0	**4**
Community Facility	31	5	0	2	0	0	**38**
Development Contributions Plan	0	0	0	0	0	1	**1**
Drainage	0	0	6	0	0	0	**6**
Footpath Works	0	0	0	301	1	0	**302**
Lane Drainage Works	0	0	24	0	0	0	**24**
Lane Pavement Works	0	0	0	84	0	0	**84**
Pavement Works	0	0	41	57	132	0	**230**
Pedestrian Provisions	0	0	0	1	0	0	**1**
Public Space	0	0	0	2	0	0	**2**
Public Toilet	0	0	0	12	0	0	**12**
Retail Carparks	0	0	0	0	4	0	**4**
Retail Footpath	0	0	0	40	0	0	**40**
Road Drainage	0	0	0	0	6	0	**6**
Street Bins	0	0	0	1	0	0	**1**
Traffic Management	0	0	0	0	5	0	**5**
TOTAL	**31**	**5**	**71**	**521**	**148**	**1**	**777**

Continued ...

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

COST	CFCI	CFDI	DRDI	PADI	RDDI	DCPP	TOTAL
Bicycle Network	$0	$0	$0	$8,475,000	$0	$0	**$8,475,000**
Bridge Redecking	$0	$0	$0	$477,693	$0	$0	**$477,693**
Community Facility	$72,963,969	$825,000	$0	$235,000	$0	$0	**$74,023,969**
Development Contributions Plan	$0	$0	$0	$0	$0	$79,725	**$79,725**
Drainage	$0	$0	$5,010,000	$0	$0	$0	**$5,010,000**
Footpath Works	$0	$0	$0	$23,340,994	$6,829	$0	**$23,347,823**
Lane Drainage Works	$0	$0	$1,642,639	$0	$0	$0	**$1,642,639**
Lane Pavement Works	$0	$0	$0	$8,177,244	$0	$0	**$8,177,244**
Pavement Works	$0	$0	$7,700,186	$9,825,431	$14,772,298	$0	**$32,297,915**
Pedestrian Provisions	$0	$0	$0	$2,204,000	$0	$0	**$2,204,000**
Public Space	$0	$0	$0	$630,000	$0	$0	**$630,000**
Public Toilet	$0	$0	$0	$5,320,000	$0	$0	**$5,320,000**
Retail Carparks	$0	$0	$0	$0	$204,000	$0	**$204,000**
Retail Footpath	$0	$0	$0	$13,285,000	$0	$0	**$13,285,000**
Road Drainage	$0	$0	$0	$0	$240,000	$0	**$240,000**
Street Bins	$0	$0	$0	$630,000	$0	$0	**$630,000**
Traffic Management	$0	$0	$0	$0	$1,126,300	$0	**$1,126,300**
TOTAL	**$72,963,969**	**$825,000**	**$14,352,825**	**$72,600,362**	**$16,349,427**	**$79,725**	**$177,171,308**

It should be noted that the projects shown in this DCP do not overlap with Council's Open Space Levy.

Projects are coded DI or CI in this DCP. The Planning and Environment Act 1987 requires that infrastructure be classified under two categories:

- Development infrastructure (DI); or
- Community infrastructure (CI).

Development infrastructure is defined as infrastructure which is required for basic community health, safety or wellbeing, and this may involve roads, paths, drainage and basic community infrastructure items.

Community infrastructure includes construction of all other buildings or facilities that will be used for community or social purposes. Some community facilities have been defined by Ministerial Direction as Development Infrastructure for DCP purposes, these being kindergartens, child care centres and maternal and child health care facilities.

Project Timing and Delivery

The infrastructure projects listed in this DCP have been selected to ensure that facilities are provided when demand thresholds are achieved and / or at the time existing assets have passed their effective operating life.

Council commits to delivering the projects in the timeline between 2016 and 2036.

List of Projects

The list of DCP projects is shown in Appendix 3.

Project Scope and Costs

The scope of works for each project is defined by Yarra City Council capital works data. The total cost of each project in today's dollars is shown below.

Project Catchments

A unique project catchment was identified for each project in this DCP - see below for details. The catchment identification process was undertaken in collaboration with Council officers.

The 11 DCP Areas provide the geographic basis for defining catchments. A catchment was defined based on the project location and its service area. The service area was defined by using one or more DCP Areas.

Most projects are defined to service the area in which they are located (single area catchment).

Community Facility (Community Infrastructure Levy) items are generally deemed to service sub-regions of the municipality, either:

- North - Area 01 Carlton North - Princes Hill, Area 02 Fitzroy North, Area 03 Clifton Hill and Area 04 Fairfield – Alphington;
- Central - Area 05 Fitzroy, Area 06 Collingwood and Area 07 Abbotsford;
- South - Area 08 North Richmond, Area 09 Central Richmond, Area 10 Burnley - Richmond South and Area 11 Cremorne.

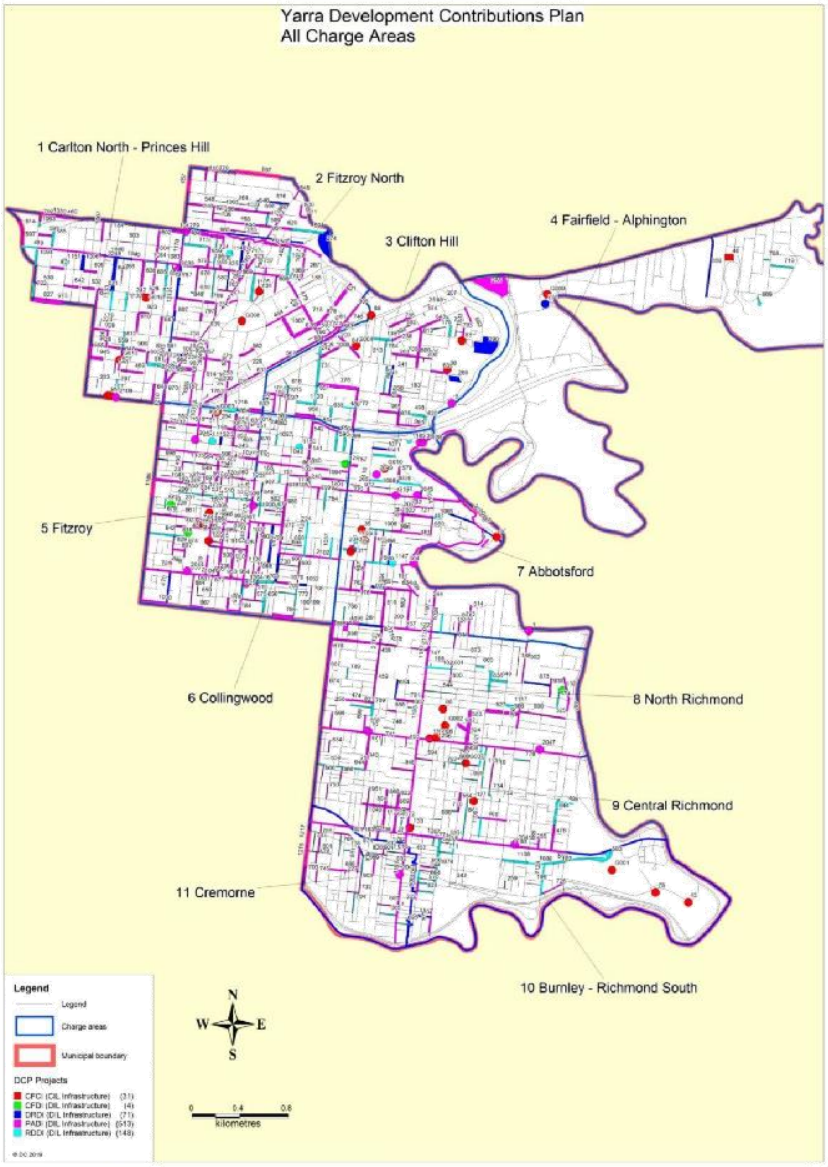
Some projects are deemed to service multiple areas but in a different configuration to the sub-regions noted above. This usually applies to situations where a project is located on the boundary of two or more areas.

Some projects are deemed to service the whole municipality.

Location of Projects

Project locations are shown in the following figures.

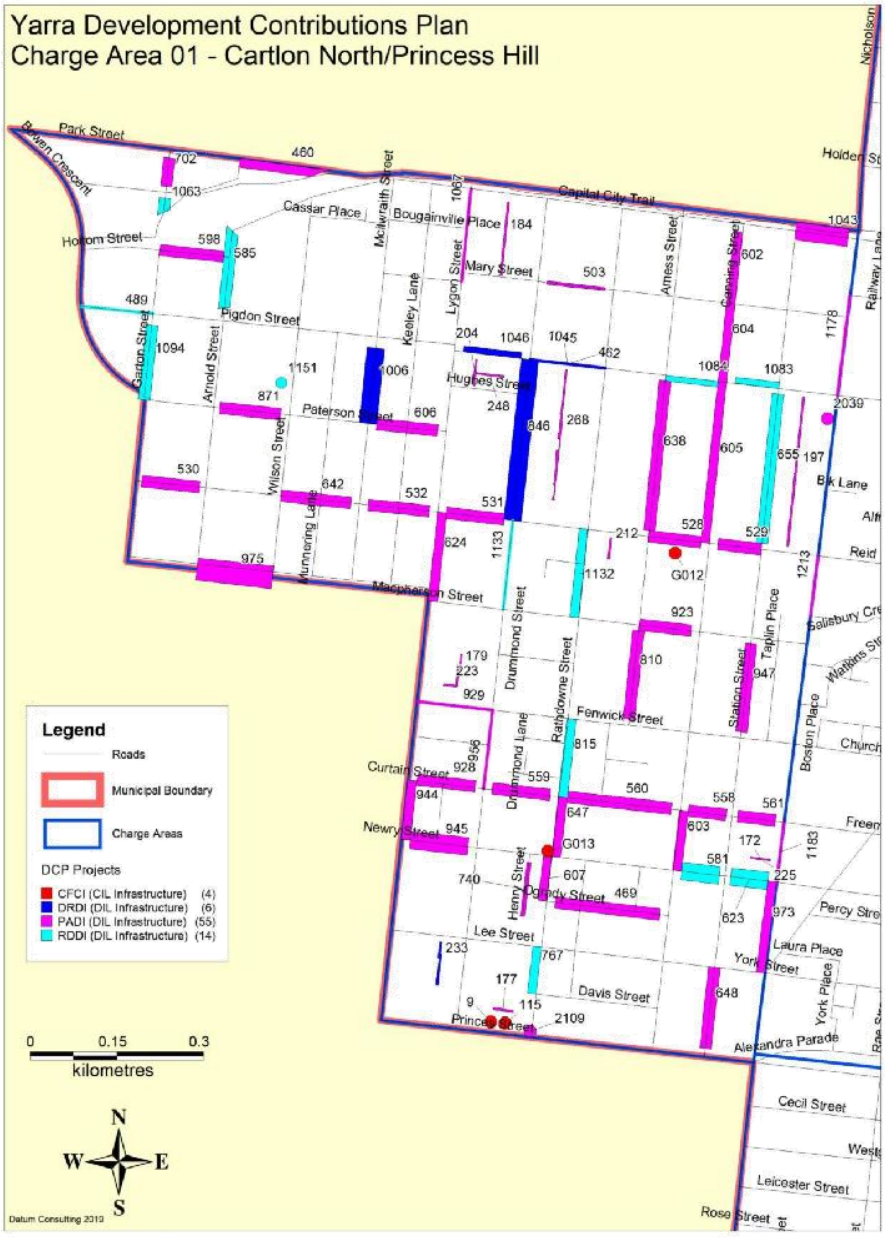
Figure 2 - Map of Project Locations, City of Yarra



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

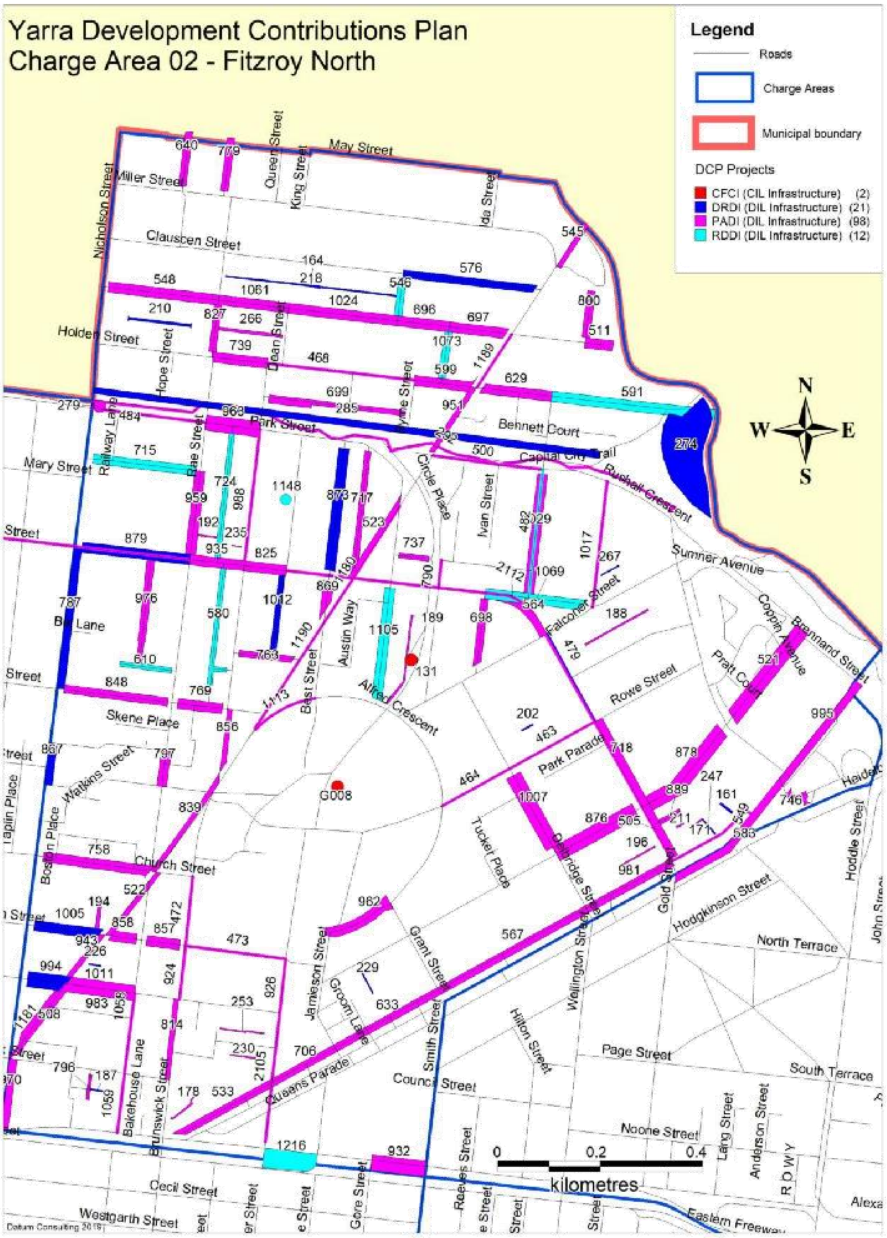
Figure 3 - Map of Project Locations, Area 1 Carlton North - Princes Hill



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

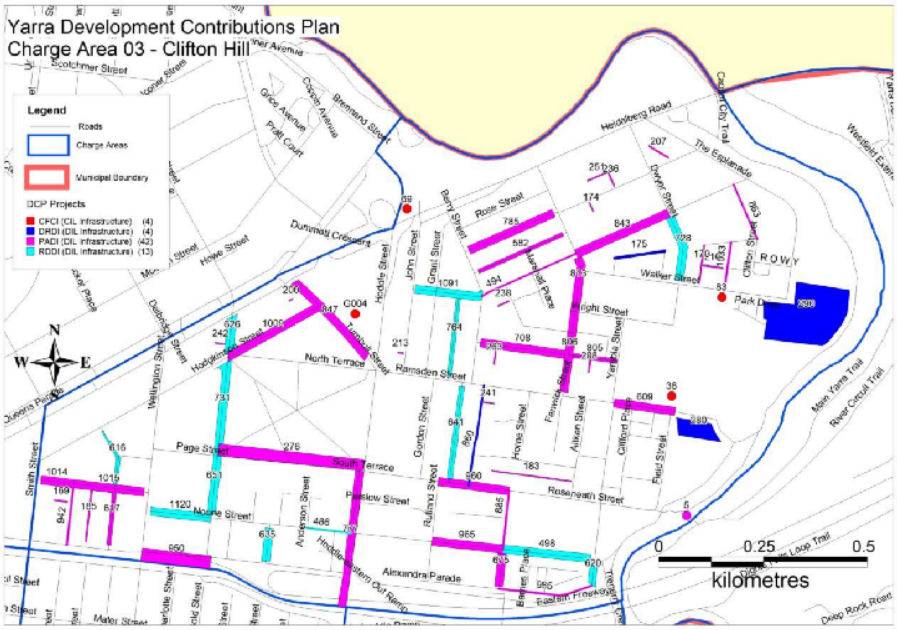
Figure 4 - Map of Project Locations, Area 2 Fitzroy North



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

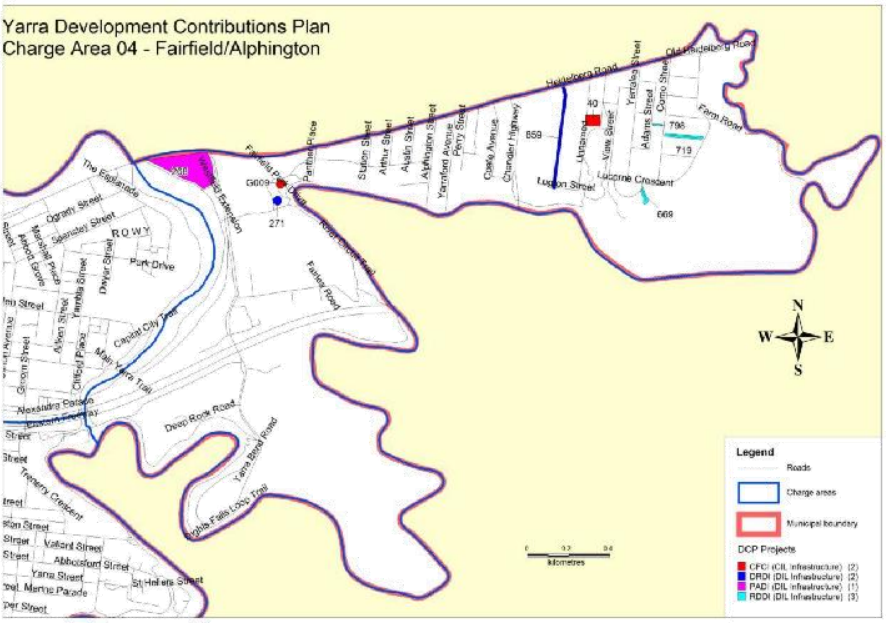
Figure 5 - Map of Project Locations, Area 3 Clifton Hill



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

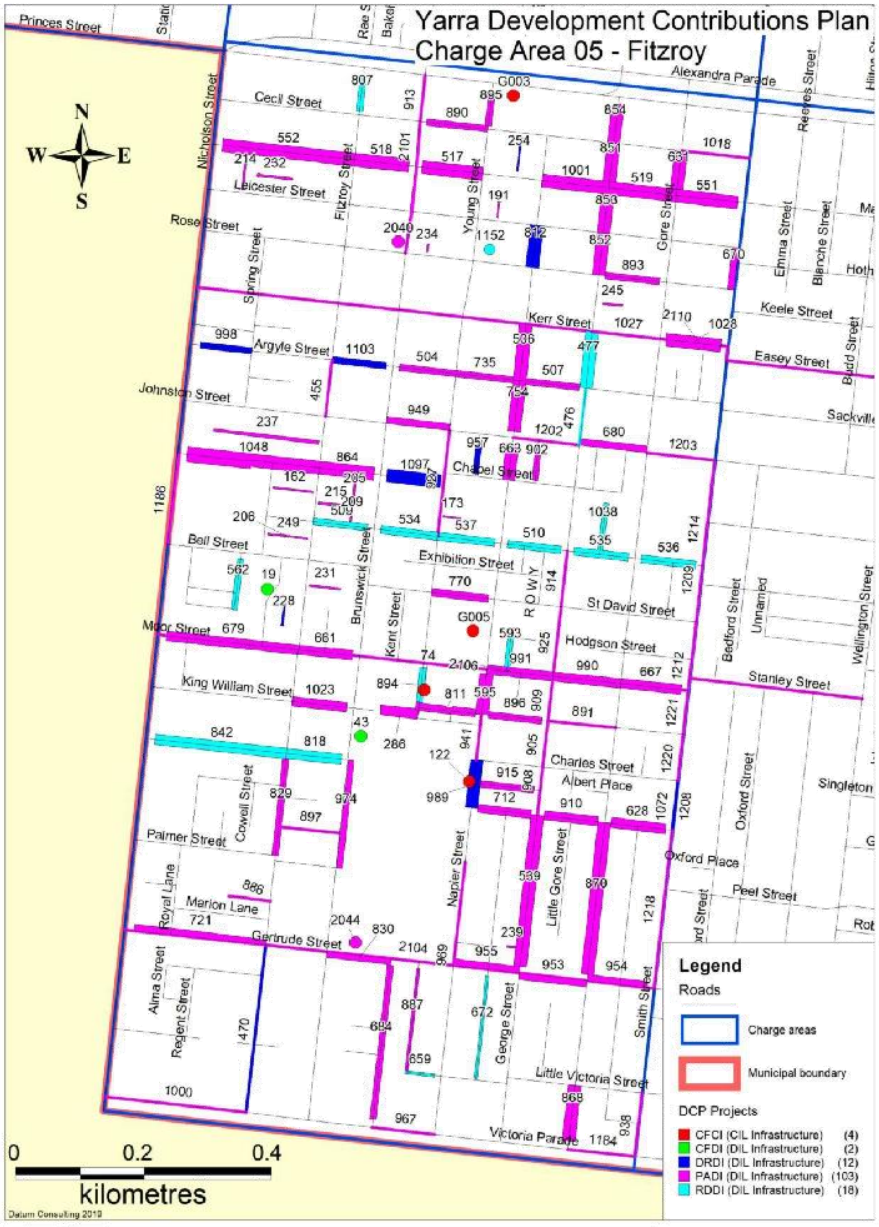
Figure 6 - Map of Project Locations, Area 4 Fairfield – Alphington



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

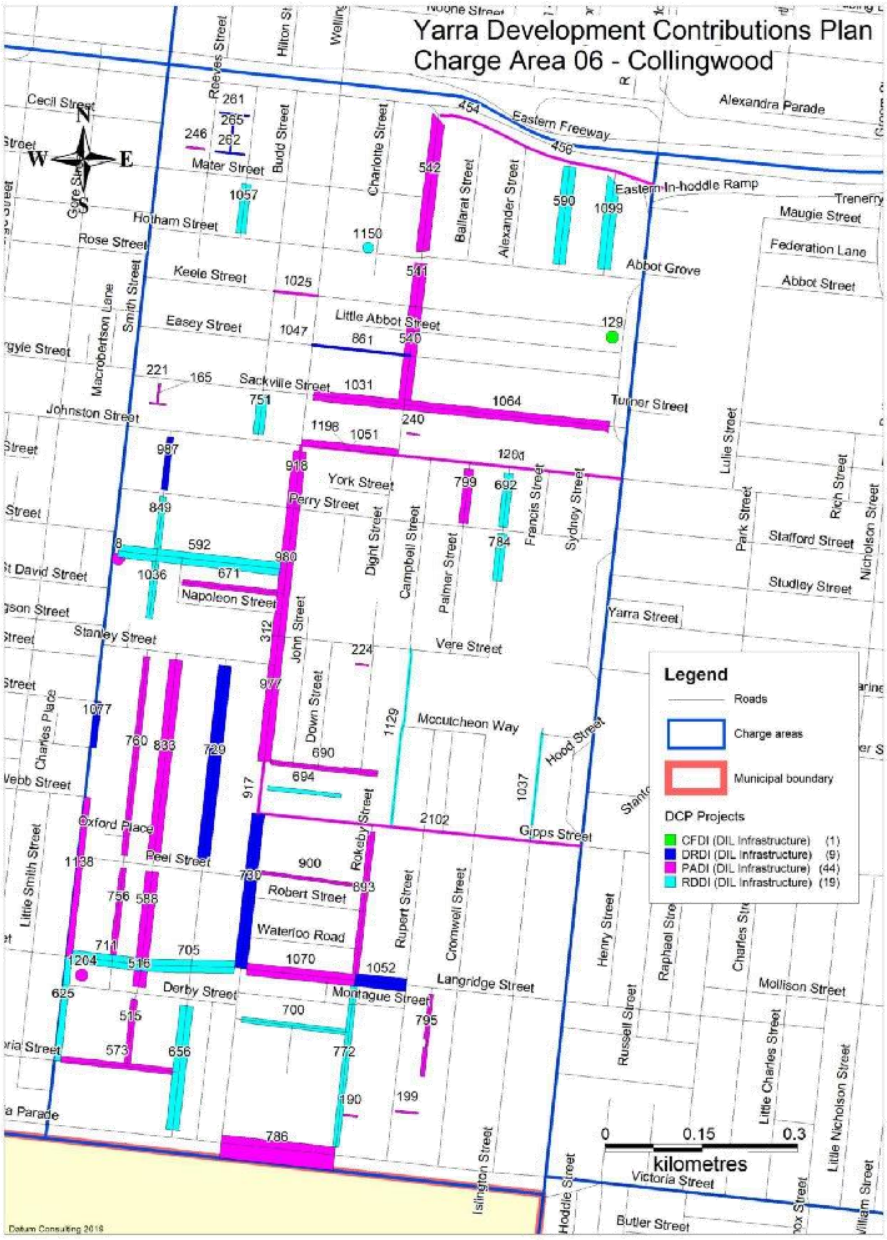
Figure 7 - Map of Project Locations, Area 5 Fitzroy



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

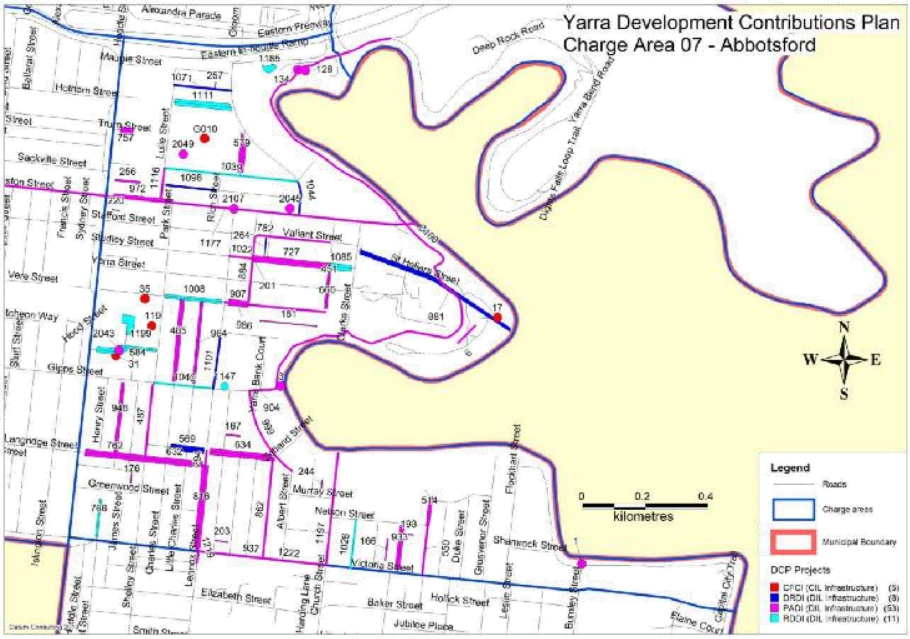
Figure 8 - Map of Project Locations, Area 6 Collingwood



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

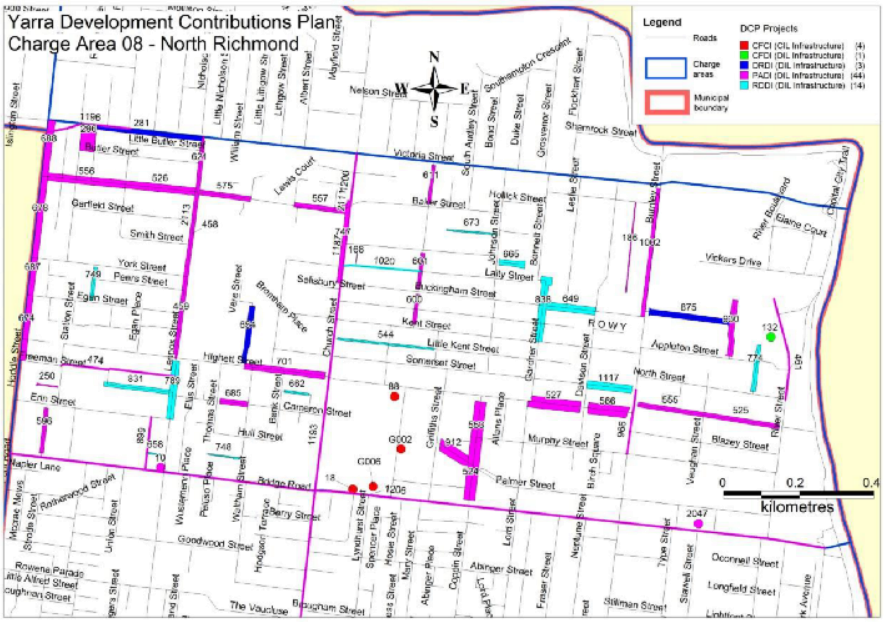
Figure 9 - Map of Project Locations, Area 7 Abbotsford



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

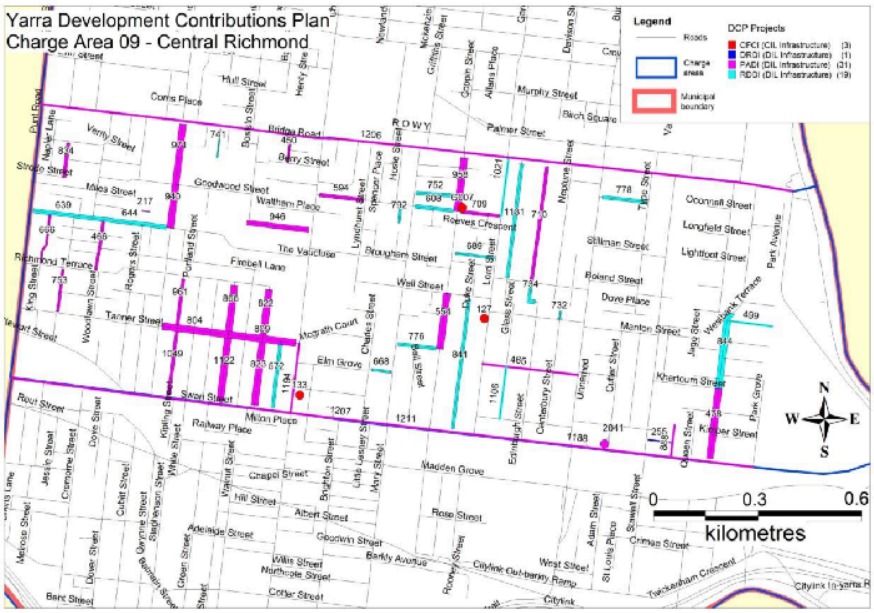
Figure 10 - Map of Project Locations, Area 8 North Richmond



Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Figure 11 - Map of Project Locations, Area 9 Central Richmond



Source: Yarra City Council

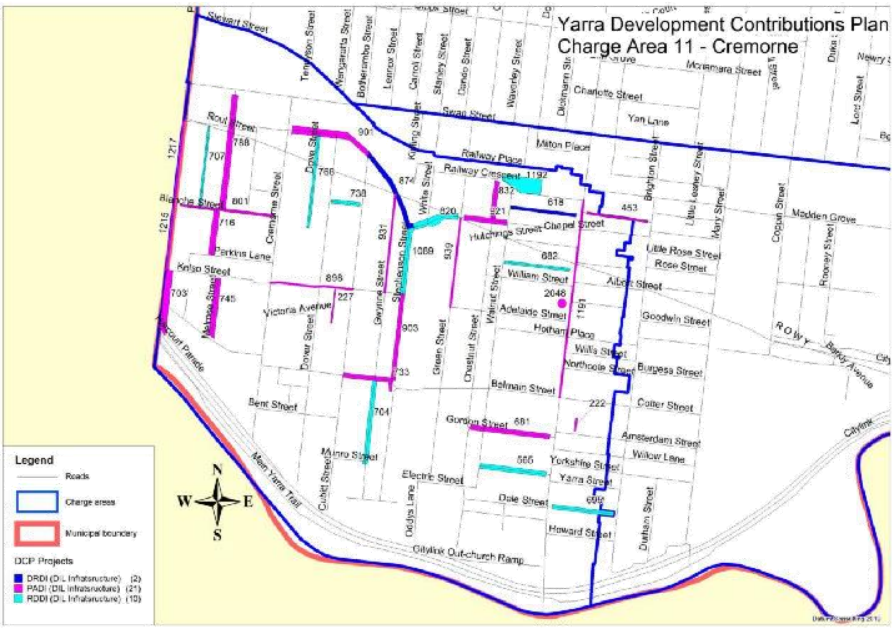
Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Figure 12 - Map of Project Locations, Area 10 Burnley - Richmond South

Source: Yarra City Council

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Figure 13 - Map of Project Locations, Area 11 Cremorne



Source: Yarra City Council

7 DEVELOPMENT CONTRIBUTION CHARGES

Calculation Method

In accordance with DCP Guidelines 2007, the method to calculate DCP levies is as follows:

- List the infrastructure projects and costs included in the DCP;
- Identify the main catchment area for each infrastructure project;
- Quantify development in each main catchment area;
- Convert the development into common demand units to quantify the total demand for infrastructure;
- Calculate the infrastructure levy payable for each infrastructure project by dividing the cost of the project by the total number of demand units in the main catchment area; and
- Calculate the total infrastructure levies in each area by community infrastructure projects and development infrastructure projects.

Appendix 3 (Table 7) shows the calculation data and results for each project.

Allowance for External Demand

This DCP has made a 5% allowance for external demand across all DCP projects. This allowance is provided to account for use of projects from outside the nominated catchment - given Yarra's location in inner Melbourne - and beyond the life of the DCP.

The cost of this allowance is discounted from development contribution charges and will be borne by Council.

Consideration was made for a detailed analysis of projected future external demand for each project but the benefit of such a process is deemed disproportionate to the utility of the results of such a study within the context of a DCP.

DCP Charges

The DCP charges are shown in Table 5 below. This shows the charges summed for each project to levy categories and areas to generate a total DCP figure per development unit for each of the 11 DCP Areas in the municipality.

The charges shown below are as calculated in this DCP and in some cases capped to the Exhibited DCP values (dated 30 July 2018).

In the table 'SQM' refers to square metres of gross floorspace and 'DI' refers to Development Infrastructure Levy and 'CI' refers to Community Infrastructure Levy.

The exception is the Cremorne Area. The rate applied in Cremorne and Richmond South -Burnley reflects the publicly exhibited rate of the DCP prior to the division of these areas. In the case of Richmond South – Burnley this means that the charge rate is slightly lower than the calculated rate. In Cremorne this means that the charge rate is higher than the calculated rate and this has been adopted in recognition that the currently occurring strategic work is more likely to realise additional projects in that area.

Appendix 3 (Table 8) shows the charges for the infrastructure categories in more detail.

Appendix 5 shows the charges indexed at 30 June 2018.

Table 5 - DCP Charges (30 June 2017$)

Residential Dwellings

AREA		LEVIES PAYABLE BY RESIDENTAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Dwelling	Per Dwelling	Per Dwelling
Area 01	Carlton North - Princes Hill	$1,479.19	$794.04	$2,273.23
Area 02	Fitzroy North	$1,873.58	$794.04	$2,667.61
Area 03	Clifton Hill	$2,858.55	$794.04	$3,652.58
Area 04	Fairfield - Alphington	$378.11	$794.04	$1,172.15
Area 05	Fitzroy	$1,220.84	$1,109.16	$2,330.00
Area 06	Collingwood	$785.30	$1,109.16	$1,894.46
Area 07	Abbotsford	$881.19	$1,109.16	$1,990.35
Area 08	North Richmond	$496.24	$1,087.92	$1,584.17
Area 09	Central Richmond	$679.37	$1,087.92	$1,767.29
Area 10	Burnley - Richmond South	$525.52	$1,150.00	$1,675.52
Area 11	Cremorne	$525.52	$1,150.00	$1,675.52

Continued ...

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Retail Floorspace (sqm)

AREA		LEVIES PAYABLE BY RETAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$30.30	-	$30.30
Area 02	Fitzroy North	$25.56	-	$25.56
Area 03	Clifton Hill	$40.87	-	$40.87
Area 04	Fairfield - Alphington	$3.42	-	$3.42
Area 05	Fitzroy	$17.61	-	$17.61
Area 06	Collingwood	$14.78	-	$14.78
Area 07	Abbotsford	$15.00	-	$15.00
Area 08	North Richmond	$8.08	-	$8.08
Area 09	Central Richmond	$13.39	-	$13.39
Area 10	Burnley - Richmond South	$12.10	-	$12.10
Area 11	Cremorne	$12.10	-	$12.10

Commercial Floorspace (sqm)

AREA		LEVIES PAYABLE BY COMMERCIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$20.65	-	$20.65
Area 02	Fitzroy North	$28.17	-	$28.17
Area 03	Clifton Hill	$41.03	-	$41.03
Area 04	Fairfield - Alphington	$2.41	-	$2.41
Area 05	Fitzroy	$21.34	-	$21.34
Area 06	Collingwood	$12.56	-	$12.56
Area 07	Abbotsford	$15.77	-	$15.77
Area 08	North Richmond	$9.15	-	$9.15
Area 09	Central Richmond	$11.97	-	$11.97
Area 10	Burnley - Richmond South	$8.38	-	$8.38
Area 11	Cremorne	$8.38	-	$8.38

Continued ...

Industrial Floorspace (sqm)

AREA		LEVIES PAYABLE BY INDUSTRIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$7.42	-	$7.42
Area 02	Fitzroy North	$6.17	-	$6.17
Area 03	Clifton Hill	$11.16	-	$11.16
Area 04	Fairfield - Alphington	$1.15	-	$1.15
Area 05	Fitzroy	$3.47	-	$3.47
Area 06	Collingwood	$3.58	-	$3.58
Area 07	Abbotsford	$3.15	-	$3.15
Area 08	North Richmond	$1.60	-	$1.60
Area 09	Central Richmond	$2.83	-	$2.83
Area 10	Burnley - Richmond South	$2.93	-	$2.93
Area 11	Cremorne	$2.93	-	$2.93

Indexation of DCP Charges

The above listed contribution amounts are current as at 30 June 2017. They will be adjusted annually on July 1 each year to cover the cost of inflation and fluctuations in the cost of construction. The amount of the adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period . A list showing the current contribution amounts will be held at Council's Planning Department.

Summary of DCP Cost and Income Estimates

A high-level summary of the DCP is shown in the table below. This table is known as 'Summary of Costs' in the DCP Overlay in the Planning Scheme.

The DCP is expected to recover approximately $55.6m from development over the life of the DCP, with Council's work program delivering $177.2m of works. This represents an estimated 31.4% collection rate.

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Table 6 - Summary of DCP Cost and Income Estimates

Facility Type and Code	Total Cost	Time of Provision	Actual Cost Contribution Attributed to New Development	Proportion of Cost Attributed to New Development
Community Facility CFCI	$69,282,969	2016-2036	$23,235,558	33.5%
Community Facility CFDI	$4,506,000	2016-2036	$1,370,501	30.4%
Path PADI	$72,600,362	2016-2036	$22,284,519	30.7%
Road RDDI	$16,349,427	2016-2036	$4,679,962	28.6%
Drainage RDDI	$14,352,825	2016-2036	$4,018,713	28.0%
Development Contributions Plan DCPP	$79,725	2016-2036	$24,382	30.6%
Total	**$177,171,308**		**$55,613,635**	**31.4%**

8 PROCEDURAL MATTERS

Collecting Agency and Development Agency

Yarra City Council is Collecting Agency for this DCP and all its projects.

Yarra City Council is Development Agency for this DCP.

Liability for Development Contributions

The main land use types identified in the DCP are Residential, Retail, Commercial and Industrial land use developments. Commercial refers to Office or Commercial Office uses.

For land uses not included within the Planning Scheme definition of the above uses, the development contribution that is required for 'Commercial' will be applied unless the Collecting Agency agrees to vary that rate based on a submission by a permit applicant that can, to the satisfaction of the Collecting Agency, justify the application of an alternative rate.

Payment of Development Contributions

Method of Payment

Payment of development contributions is to be made in cash.

The Collecting Agency may accept the provision of land, works, services or facilities by the applicant in part or full satisfaction of the amount of levy payable.

Basis for Payment

Each net additional demand unit shall be liable to pay the DCP levy (unless exemptions apply). This includes a new dwelling or building or an extension to an existing non-residential building.

Payment of the Development Infrastructure Levy

- Payment must be made in accordance with Section 46N of the Planning and Environment Act 1987.

Payment of the Community Infrastructure Levy

- Payment must be made in accordance with Section 46O of the Planning and Environment Act 1987.

Charge Areas

The Charge Areas for this DCP are the 11 areas of the municipality as shown in Figure 1 of this document.

Exemptions

No land or development is exempt from this Development Contributions Plan unless exempt by Legislation or Ministerial Direction or Legal Agreement with Yarra City Council or stated below.

The following development is exempt from a development contribution:

- Land developed for a non-government school, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016;
- Land developed for housing by or for the Department of Health and Human Services, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016. This applies to social housing development delivered by and for registered housing associations. This exemption does not apply to private dwellings developed by the Department of Health and Human Services or registered housing associations;
- Land which has a section 173 Agreement under the Planning and Environment Act 1987 and/or a Deed of Agreement which:
  - Requires the payment of a development contributions levy; or
  - Requires the construction of specified works services or facilities beyond those that the responsible authority considered necessary on or to the land or other land as a result of the grant of any permit; or
  - Requires the payment of any development contributions or the provision of specified works services or facilities required to be provided as a development contribution by any other provision of this scheme; or
  - Requires the provision of land for works services or facilities (other than land required to be provided as public open space); or
  - Explicitly excludes further development contributions to be made.

  For the avoidance of any doubt, the exemption is limited to the extent of any contribution secured by the section 173 Agreement.

- Construction of a building or carrying out of works or a subdivision that do not generate a net increase in additional demand units, including:
  - Replacement of a building;
  - Renovations or alterations to an existing building;
  - Construction of a fence; and
  - Outbuildings normal to an existing dwelling.
- Dwelling units that are replaced within a development. This exemption does not apply to net additional dwelling units created by the development.

Funds Administration

Funds collected through development contributions will be held in a specific interest-bearing reserve account in accordance with the provisions of the Local Government Act 1989 (Part 3b section 46Q(1)(a)). All monies held in this account will be used solely for the provision of infrastructure as itemised in this DCP.

Funding the Gap

Of the $177.2m cost of projects allocated to this DCP, it is estimated that $55.6m will be collated from new development to 2036. This represents a collection estimate of 31.4% and a funding gap of 68.6%.

The funds received from contributions will fund part of the infrastructure projects identified in the DCP. Council will source funds to cover the balance of the costs required to construct the items of infrastructure through other mechanisms such as Council rates.

Impact Mitigation

Impact mitigation conditions are development approvals for the recovery of any other costs incurred by the community, Council or other infrastructure providers as a result of the specific nature of development or from development departing from the planned sequence, density or usage pattern anticipated by the DCP. The impact mitigation conditions will be applied on a case by case basis to specific development projects in addition to relevant DCP charges.

Annual Reporting

Yarra City Council will provide for regular monitoring and reporting of the DCP in accordance with Ministerial Direction on the Reporting Requirements for Development Contributions Plans of 11 October 2016.

Appendix 4 shows the template reporting tables in relation to the following directions:

- "A report must be prepared each financial year and given to the Minister for Planning within 3 months after the end of the financial year reported on.
- If the collecting agency or development agency is a municipal council, the report must be included in the report of operations contained in the council's annual report prepared under the Local Government Act 1989.
- A collecting agency must report on: a) any infrastructure levy paid to it under Part 3B of the Act in a financial year in accordance with Table 1 in the Annexure; b) any land, works, services or facilities accepted by it in a financial year in accordance with Table 2 in the Annexure.
- If a development contributions plan is approved on or after 1 June 2016, a collecting agency must report on the total amount of infrastructure levies paid to it, the total amount of land, works, services or facilities accepted by it, and the total amount of infrastructure levies expended by it under Part 3B of the Act in accordance with Table 3 in the Annexure.
- A development agency must report on: a) its use of any land, works, services or facilities accepted as works-in-kind under section 46P of the Act; and b) the expenditure of any infrastructure levy paid to it under Part 3B of the Act; in accordance with Table 4 in the Annexure."

DCP Review

This development contributions plan as it applies to the Cremorne charge area represents an interim development contributions plan. At the time of preparing this DCP, the Cremorne charge area is the subject of both State and local ongoing strategic investigation.

The Council anticipates that the further strategic investigations will result in additional projects or project changes within the Cremorne charge area. This will require amendment to the contributions regime for this area whether implemented via a revision to this DCP or a supplementary/replacement mechanism.

In addition to the specific commentary regarding Cremorne above, this DCP will be reviewed on a three-year basis to ensure the general nature of the document is reasonably consistent with estimates of future development and project needs and costs, but accepting that

future conditions will invariably depart from the future estimates generated for the DCP to some extent. Should the DCP significantly depart from the future estimates shown in this document, as defined by Yarra City Council, Council will consider options to revise the DCP in full or part as deemed necessary.

DCP Projects Deemed Not Required

Should Council resolve not to proceed with any of the infrastructure projects listed in this DCP, the funds collected for these items will be used for the provision of additional works, services and facilities as approved by the Minister responsible for the Planning and Environment Act, or will be refunded to owners of land subject to these infrastructure charges.

9 APPENDIX 1 - METHOD FOR DEVELOPMENT PROJECTIONS

2016 Development Data

A 2016 stocktake of existing development was estimated using Council property and geo-coded mapping data for the 11 areas or planning areas of the municipality. The data is assembled for major land use groups, being Residential, Retail, Commercial and Industrial land uses.

Residential

Residential development projections are based on Victoria in Future (VIF) data 2016 (projection to 2031) and id Consulting data for the City of Yarra (projection to 2036).

The overall VIF projection is used for this DCP to 2031. A growth rate is applied to the 2031 data to obtain a 2036 projection.

The apportionment of residential development within the 11 area is made using id Consulting apportionments / growth forecasts by area. The distribution of growth takes into account major sites and structure plans.

The dwelling projections shown in Table 1 show that an additional 22,862 new dwellings are forecast for the City over a 20 year period to 2036.

Retail

Council's rates database for 2016 was used to provide an audit of all retail floorspace located in each of the 11 Analysis Areas in the City. The retail floorspace audit includes such uses as shops, cafes, restaurants, supermarkets, shopping complexes, convenience stores and other similar activities. The retail audit excluded industrial and commercial uses.

The total retail floorspace was compared with population in order to develop a ratio of retail floorspace per resident. The growth rate was used to inform potential future retail demand and development by location.

Overall, retail floorspace is estimated at approximately 709,091 sqm and is projected to increase to 1,150,961 sqm over 20 years.

Commercial

Council's rates database for 2016 was used to provide an audit of all commercial floorspace located in each of the 11 DCP Analysis Areas in the City. The commercial floorspace audit excluded retail and industrial uses but included such commercial uses as office, health, education, civic, places of worship, commercial accommodation, and banks.

The total stock figure was compared to retail floorspace in order to develop a ratio of commercial floorspace per square metre of retail floorspace.

Overall, commercial floorspace is estimated at approximately 724,869 sqm and is projected to increase to 1,247,216 sqm over 20 years.

Industrial

Council's rates database for 2016 was used to provide an audit of all building floorspace located in industrial zones. The audit included industrial uses such as factories, warehouses, workshops, maintenance depots and other similar activities.

Trends in industrial land use activities as provided by change in industrial sector jobs were used to identify possible future conditions. The trends were applied to floorspace to derive estimates of potential future floorspace conditions.

Overall, industrial floorspace is estimated at approximately 987,239 sqm and is projected to decrease to 807,035 sqm over 20 years.

2019 Adjustment to Cremorne - Burnley - Richmond South

The Cremorne - Burnley - Richmond South area was split into two areas in February 2019 as:

- Area 10 Burnley - Richmond South; and
- Area 11 Cremorne.

The data that was calculated for these two areas overall as at 30 July 2018 was retained in the revision of development data for the split areas. The development within the two new areas was divided based on a review of rates data for 2016 conditions and based on residential development projections to 2036 provided for the two areas by the City of Yarra in 2019.

10 APPENDIX 2 - SOURCE OF EQUIVALENCE RATIOS

The following sources of information were used for the equivalence ratios shown in this DCP.

Common Demand Unit

- The common demand unit selected for the DCP is one dwelling. A dwelling unit is used in most if not all DCPs prepared in respect of established-areas.

Community Facilities

- No ratios are used for community facility projects because only residential development is deemed a user of such facilities, and as such, only dwelling units are used in the cost apportionment process. This is consistent with the direction provided by the DCP Guidelines (2007, p45).

Paths

- The ratios adopted for path use in this DCP is measured by residents in dwellings and workers in non-residential floorspace. These people are deemed to user paths in their area. The adopted ratios are as follows.
- One dwelling has on average 2.5 residents
- Retail: 30 sqm of floorspace per one retail worker; therefore 75 sqm of retail floorspace achieves 2.5 workers
- Office: 20 sqm of floorspace per one office worker; therefore 50 sqm of office floorspace achieves 2.5 workers
- Industry: 200 sqm of floorspace per one industrial worker; therefore 500 sqm of industrial floorspace achieves 2.5 workers

Roads

- The ratios adopted for road use in this DCP correspond with the standard equivalence ratios specified in the DCP Guidelines (2007, p45):
  - Residential 1 dwelling
  - Retail premises 19 sqm floorspace
  - Office / service industry 121 sqm floorspace
  - Industry (other than service industry) 67 sqm floorspace

Drainage

- The ratios adopted for drainage use in this DCP is based on the standard equivalence ratios specified in the DCP Guidelines (2007, p45) for site area, with an additional conversion used to express the ratios in terms of floorspace:
  - Residential 1 dwelling
  - Retail premises 300 sqm of site area in DCP Guidelines; it is assumed that the average floorspace ratio is 35% and therefore floorspace is 105 sqm: rounded to 100 sqm
  - Office premises – assumes the same built form and drainage characteristics as retail in this DCP
  - Industry (other than service industry) 540 sqm of site area in DCP Guidelines; it is assumed that the average floorspace ratio for an industrial site is 35% and therefore floorspace is 189 sqm: rounded to 200 sqm

Development Contributions Plan Preparation

The ratios for planning are based on each square metre of floorspace (irrespective of land use type) sharing DCP preparation cost equally. The ratios assume that the average dwelling size within Yarra is 120 sqm.

11 APPENDIX 3 - INFRASTRUCTURE PROJECT DETAILS AND CALCULATIONS

Project Details

See table overleaf for a list of projects and relevant details and calculations.

The information shown in the table is as follows:

- Project Number;
- Project Category;
- Project Name;
- Reference Document;
- Delivery Horizon;
- Estimated Cost;
- Project Type;
- Main Catchment Area (MCA);
- Demand Units;
- External Demand or Use Allowance;
- Share of Use to MCA;
- Cost Apportioned to MCA; and
- Cost Per Demand Unit.

The cost per demand unit for each project is summed for each project category (i.e. CFCI, CFDI, PADI, RDDI and DRDI) to derive a total charge by category as shown in the body of this DCP document.

Standard of Construction

The standard of construction of projects is outlined in:

- Council's Road Asset Management Plan 2017;
- Yarra City Council Asset Management Policy 2017;
- Buildings Asset Management Plan 2013;
- Open Space Asset Management Plan 2005; and
- Other strategy documents (such as the bike strategy and toilet strategy).

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Table 7 - Project Details and Calculations

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1	Bridge Redecking	Renew - Bridge Program Bridge Redecking Walmer Street Abbotsford	Asset Management Policy	2016-2036	$103,428	PADI	Area 07	12,872	5.0%	95.0%	$98,257	**$7.63**
3	Bridge Redecking	Renew - Bridge Program Bridge Redecking Gipps Street (Collins Bridge) Abbotsford	Asset Management Policy	2016-2036	$194,132	PADI	Area 07	12,872	5.0%	95.0%	$184,425	**$14.33**
5	Bridge Redecking	Renew - Bridge Program Bridge Redecking Roseneath Street Clifton Hill	Asset Management Policy	2016-2036	$85,821	PADI	Area 03	4,024	5.0%	95.0%	$81,530	**$20.26**
6	Bridge Redecking	Repair of deck, fencing, structure Yarra Bike Path Collingwood Children's Farm	Asset Management Policy	2016-2036	$94,312	PADI	Area 07	12,872	5.0%	95.0%	$89,596	**$6.96**
8	Public Toilet	Renew - Amenities Otter St public Toilets (Exeloo) Otter St Cnr Smith St- Exeloo public toilet	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$250,000	PADI	Area 06	12,640	5.0%	95.0%	$237,500	**$18.79**
9	Community Facility	Upgrade - Theatre Dancehouse 150-154 Princes St- Mechanical Component (Lift installation for DDA)	Arts and Cultural Strategy 2016-2020	2016-2036	$250,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$237,500	**$12.01**
10	Public Toilet	Renew - Amenities Bridge Road Public Toilets (Exeloo) Bridge Rd corner Lennox St	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$300,000	PADI	Area 08 Area 09	30,449	5.0%	95.0%	$285,000	**$9.36**
17	Community Facility	Renew - Toilet Amenities Children's Farm - Capital City Trail St Helliers St	Building Asset Management Plan	2016-2036	$300,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$285,000	**$13.65**
18	Community Facility	Upgrade - Former Police Station 317 bridge Road- develop into community arts centre	Building Asset Management Plan	2016-2036	$4,380,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$4,161,000	**$173.66**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
19	Community Facility	Upgrade building works - Child Care Centre - John Street Community Early Childhood Co-operative 23 John St Fitzroy	Building Asset Management Plan	2016-2036	$240,000	CFDI	Area 05	7,033	5.0%	95.0%	$228,000	**$32.42**
31	Community Facility	Upgrade building works including mechanical ventilation- Collingwood Library 7-11 Stanton St	Building Asset Management Plan	2016-2036	$80,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$76,000	**$3.64**
35	Community Facility	Upgrade - Factory Brick Factory 119-123 Vere St- improvements to artists' studio including DDA and BCA compliance. Renew building and facilities including toilets and access.	Building Asset Management Plan	2016-2036	$250,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$237,500	**$11.38**
38	Community Facility	Upgrade - Pavilions, Clubrooms and Changerooms Quarries Park - Yambla St Pavilion & Public Toilet Yambla St	Building Asset Management Plan	2016-2036	$2,250,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$2,137,500	**$108.13**
40	Community Facility	Upgrade building - Alphington Bowling Club Parkview Rd	Building Asset Management Plan	2016-2036	$1,100,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$1,045,000	**$52.86**
43	Community Facility	Upgrade - building works to upgrade facilities Connie Benn Centre 160 Brunswick Street	Building Asset Management Plan	2016-2036	$200,000	CFDI	Area 05	7,033	5.0%	95.0%	$190,000	**$27.01**
45	Community Facility	Upgrade - Pavilions, Clubrooms and Changerooms Malcolm Graham Pavilion - Kevin Bartlett Reserve FR Smith Drive off Yarra Blvd (Construct 2 additional change rooms and disability access.)	Building Asset Management Plan	2016-2036	$1,055,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$1,002,250	**$41.83**
69	Community Facility	Upgrade - Pavilions, Clubrooms and Changerooms Coulson Reserve Pavilion 1 Heidelberg Road	Building Asset Management Plan	2016-2036	$335,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$318,250	**$16.10**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
74	Community Facility	Upgrade - building works Florence Peel Community Hall 190 Young St	Building Asset Management Plan	2016-2036	$50,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$47,500	**$2.28**
75	Community Facility	Upgrade Gillon Pavilion - Kevin Bartlett Reserve FR Smith Drive Construct 2 additional change rooms and disability access - 3 - renovate existing pavilion changed rooms, kitchen, first aid room	Building Asset Management Plan	2016-2036	$950,000	CFCI	Area 10	2,078	5.0%	95.0%	$902,500	**$434.26**
83	Community Facility	Upgrade - building works - Community Halls Clifton Hill Scout Hall 95 Walker street	Building Asset Management Plan	2016-2036	$249,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$236,550	**$11.97**
88	Community Facility	Upgrade building works - Pavilions, Clubrooms and Changerooms Air Raid / Jack Dyer Pavilion - Citizens Park Gleadell St corner Highett St.	Building Asset Management Plan	2016-2036	$1,050,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$997,500	**$41.63**
104	Community Facility	Upgrade Buildings - Signage program - Improving asset signage including compliance with DDA requirements and new policy	Building Asset Management Plan	2016-2036	$175,000	CFDI	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area 11	64,602	5.0%	95.0%	$166,250	**$2.57**
115	Community Facility	Upgrade - Theatre Dancehouse 150-154 Princes St- Roof replacement of 200sq m. (based on 2016 quote from Lewton Plumbers)	Building Asset Management Plan	2016-2036	$40,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$38,000	**$1.92**
119	Community Facility	Upgrade - Senior Citizens Centres / Adult Day Care Abbotsford Senior Citizens/Willowview Centre Eddy Court	Building Asset Management Plan	2016-2036	$50,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$47,500	**$2.28**
122	Community Facility	Upgrade - building works Yarra Community Youth Centre 156 Napier St,	Building Asset Management Plan	2016-2036	$1,754,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$1,666,300	**$79.83**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		corner Lt Charles.										
127	Community Facility	Upgrade - building works Lord Street Neighbourhood House 92-94 Lord Street.	Building Asset Management Plan	2016-2036	$1,580,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$1,501,000	**$62.65**
128	Community Facility	Upgrade - Amenities Dight Falls - Public Toilets Trenerry Cres- Mechanical Component	Building Asset Management Plan	2016-2036	$85,000	PADI	Area 03	4,024	5.0%	95.0%	$80,750	**$20.07**
129	Community Facility	Upgrade - Building works Keele Street Child Care Centre 177 Keele St- Refurbish kitchen.	Building Asset Management Plan	2016-2036	$90,000	CFDI	Area 06	6,794	5.0%	95.0%	$85,500	**$12.58**
131	Community Facility	Upgrade - building works Mark Street Community Hall (Inner Circle Linear Park) 11 Mark St-	Building Asset Management Plan	2016-2036	$101,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$95,950	**$4.85**
132	Community Facility	Upgrade - building works Yarraberg Child Care Centre 4 River St	Building Asset Management Plan	2016-2036	$120,000	CFDI	Area 09	9,521	5.0%	95.0%	$114,000	**$11.97**
133	Community Facility	Upgrade - building works and reconfiguration Richmond Library (incl MCH, Historical Society) 415-417 Church St.	Building Asset Management Plan	2016-2036	$150,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$142,500	**$5.95**
134	Community Facility	Upgrade - Amenities Dight Falls - Public Toilets Trenerry Cres- Plumbing Component	Building Asset Management Plan	2016-2036	$150,000	PADI	Area 07	12,872	5.0%	95.0%	$142,500	**$11.07**
161	Lane Drainage Works	Renew - RoW 2187 Queens Pde RoW 2186- Lane Drainage Works	Road Management Plan 2013	2016-2036	$92,083	DRDI	Area 02	9,218	5.0%	95.0%	$87,479	**$9.49**
162	Lane Pavement Works	Renew - RoW 1736 Mahoney St Fitzroy St- Lane Pavement Works	Road Management Plan 2013	2016-2036	$101,692	PADI	Area 05	12,559	5.0%	95.0%	$96,607	**$7.69**
163	Lane Drainage Works	Renew - RoW 3013 Kipling St End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$149,736	DRDI	Area 10 Area 11	10,213	5.0%	95.0%	$142,249	**$13.93**
164	Lane Drainage Works	Renew - RoW 2222 Rae St Melville St- Lane Drainage Works	Road Management Plan 2013	2016-2036	$283,457	DRDI	Area 02	9,218	5.0%	95.0%	$269,284	**$29.21**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
165	Lane Pavement Works	Renew - RoW 172.1 Sackville St RoW 172.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$12,311	PADI	Area 06	12,640	5.0%	95.0%	$11,695	**$0.93**
166	Lane Pavement Works	Renew - RoW 382.3 RoW 382.4 RoW 382.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$16,414	PADI	Area 07	12,872	5.0%	95.0%	$15,593	**$1.21**
167	Lane Pavement Works	Renew - RoW 354.2 Little Nicholson St RoW 354.3- Lane Pavement Works	Road Management Plan 2013	2016-2036	$18,056	PADI	Area 07	12,872	5.0%	95.0%	$17,153	**$1.33**
168	Lane Pavement Works	Renew - RoW 561 Laity St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$19,697	PADI	Area 08	17,737	5.0%	95.0%	$18,712	**$1.05**
169	Lane Pavement Works	Renew - RoW 47.2 Reeves St RoW 47.1- Lane Pavement Works	Road Management Plan 2013	2016-2036	$28,726	PADI	Area 03	4,024	5.0%	95.0%	$27,290	**$6.78**
170	Lane Pavement Works	Renew - RoW 70.2 Walker St RoW 70.4- Lane Pavement Works	Road Management Plan 2013	2016-2036	$28,726	PADI	Area 03	4,024	5.0%	95.0%	$27,290	**$6.78**
171	Lane Pavement Works	Renew - RoW 2184.1 RoW 2184 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$32,829	PADI	Area 05	12,559	5.0%	95.0%	$31,188	**$2.48**
172	Lane Pavement Works	Renew - RoW 1507 Nicholson St RoW 1505- Lane Pavement Works	Road Management Plan 2013	2016-2036	$37,754	PADI	Area 01	5,441	5.0%	95.0%	$35,866	**$6.59**
173	Lane Pavement Works	Renew - RoW 3045 Young St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$42,678	PADI	Area 05	12,559	5.0%	95.0%	$40,544	**$3.23**
174	Lane Pavement Works	Renew - RoW 62 O'Grady St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$45,961	PADI	Area 03	4,024	5.0%	95.0%	$43,663	**$10.85**
175	Lane Drainage Works	Renew - RoW 72.4 RoW 72.3 RoW 72.5- Lane Drainage Works	Road Management Plan 2013	2016-2036	$50,886	DRDI	Area 03	3,983	5.0%	95.0%	$48,342	**$12.14**
176	Lane Pavement Works	Renew - RoW 359.1 Bloomburg St RoW 359.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$57,452	PADI	Area 07	12,872	5.0%	95.0%	$54,579	**$4.24**
177	Lane Pavement Works	Renew - RoW 1573 RoW 1574 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$96,027	PADI	Area 01	5,441	5.0%	95.0%	$91,226	**$16.77**
178	Lane Pavement Works	Renew - RoW 1906 Brunswick St RoW 1907- Lane Pavement Works	Road Management Plan 2013	2016-2036	$110,800	PADI	Area 05	12,559	5.0%	95.0%	$105,260	**$8.38**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
179	Lane Pavement Works	Renew - RoW 1434 RoW 1435.0 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$123,111	PADI	Area 01	5,441	5.0%	95.0%	$116,955	**$21.49**
180	Lane Pavement Works	Renew - RoW 377.4 RoW 377.3 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$131,319	PADI	Area 07	12,872	5.0%	95.0%	$124,753	**$9.69**
181	Lane Pavement Works	Renew - RoW 337.2 RoW 337.1 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$201,082	PADI	Area 07	12,872	5.0%	95.0%	$191,028	**$14.84**
182	Lane Pavement Works	Renew - RoW 1192 RoW 1191 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$50,475	PADI	Area 10	4,950	5.0%	95.0%	$47,951	**$9.69**
183	Lane Pavement Works	Renew - RoW 102.1 Kiewa St RoW 102.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$159,840	PADI	Area 03	4,024	5.0%	95.0%	$151,848	**$37.74**
184	Lane Pavement Works	Renew - RoW 1364 Park St Pigdon St- Lane Pavement Works	Road Management Plan 2013	2016-2036	$210,316	PADI	Area 01	5,441	5.0%	95.0%	$199,800	**$36.72**
185	Lane Pavement Works	Renew - RoW 49.1 Council St Alexandra Pde - Lane Pavement Works	Road Management Plan 2013	2016-2036	$235,554	PADI	Area 03	4,024	5.0%	95.0%	$223,776	**$55.62**
186	Lane Pavement Works	Renew - RoW 541 RoW 540 RoW 580- Lane Pavement Works	Road Management Plan 2013	2016-2036	$386,982	PADI	Area 08	17,737	5.0%	95.0%	$367,633	**$20.73**
187	Lane Drainage Works	Renew - RoW 1912 Curtain Pl RoW 1911- Lane Drainage Works	Road Management Plan 2013	2016-2036	$29,318	DRDI	Area 02	9,218	5.0%	95.0%	$27,852	**$3.02**
188	Lane Pavement Works	Renew - RoW 2162 RoW 2161 RoW 2163.1- Lane Pavement Works	Road Management Plan 2013	2016-2036	$474,263	PADI	Area 02	9,618	5.0%	95.0%	$450,550	**$46.85**
189	Lane Pavement Works	Renew - RoW 2094 Alfred Cr RoW 2093- Lane Pavement Works	Road Management Plan 2013	2016-2036	$517,378	PADI	Area 02	9,618	5.0%	95.0%	$491,509	**$51.11**
190	Lane Pavement Works	Renew - RoW 268.1 Rokeby St RoW 268.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$22,096	PADI	Area 06	12,640	5.0%	95.0%	$20,991	**$1.66**
191	Lane Pavement Works	Renew - RoW 1874 Leicester St RoW 1875- Lane Pavement Works	Road Management Plan 2013	2016-2036	$29,167	PADI	Area 05	12,559	5.0%	95.0%	$27,709	**$2.21**
192	Lane Pavement Works	Renew - RoW 2111 Moss St Rae St- Lane Pavement Works	Road Management Plan 2013	2016-2036	$30,934	PADI	Area 02	9,618	5.0%	95.0%	$29,387	**$3.06**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
193	Lane Pavement Works	Renew - RoW 383.3 Thompson St RoW 383.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$35,354	PADI	Area 07	12,872	5.0%	95.0%	$33,586	**$2.61**
194	Lane Pavement Works	Renew - RoW 2026 Freeman St RoW 2025- Lane Pavement Works	Road Management Plan 2013	2016-2036	$39,773	PADI	Area 02	9,618	5.0%	95.0%	$37,784	**$3.93**
195	Lane Pavement Works	Renew - RoW 687.1 Murphy St Highett St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$83,966	PADI	Area 08	17,737	5.0%	95.0%	$79,768	**$4.50**
196	Lane Pavement Works	Renew - RoW 1968 Michael St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$119,320	PADI	Area 02	9,618	5.0%	95.0%	$113,354	**$11.79**
197	Lane Pavement Works	Renew - RoW 1401 Pigdon St Richardson St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$176,770	PADI	Area 01	5,441	5.0%	95.0%	$167,932	**$30.86**
198	Lane Pavement Works	Renew - RoW 1187 Stawell St Gibdon St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$364,942	PADI	Area 10	4,950	5.0%	95.0%	$346,695	**$70.04**
199	Lane Pavement Works	Renew - RoW 275.1 Rupert St RoW 275.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$293,439	PADI	Area 06	12,640	5.0%	95.0%	$278,767	**$22.05**
200	Lane Pavement Works	Renew - RoW 6.2 RoW 6.1 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$9,059	PADI	Area 03	4,024	5.0%	95.0%	$8,606	**$2.14**
201	Lane Pavement Works	Renew - RoW 324 Hunter St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$10,871	PADI	Area 07	12,872	5.0%	95.0%	$10,327	**$0.80**
202	Lane Drainage Works	Renew - RoW 1980 RoW 1981 End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$22,648	DRDI	Area 02	9,218	5.0%	95.0%	$21,516	**$2.33**
203	Lane Pavement Works	Renew - RoW 369 Little Nicholson St William St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$30,802	PADI	Area 07	12,872	5.0%	95.0%	$29,262	**$2.27**
204	Lane Pavement Works	Renew - RoW 1379 Pigdon St Hughes St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$36,238	PADI	Area 01	5,441	5.0%	95.0%	$34,426	**$6.33**
205	Lane Pavement Works	Renew - RoW 1741 Victoria St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$90,687	PADI	Area 05	12,559	5.0%	95.0%	$86,153	**$6.86**
206	Lane Pavement Works	Renew - RoW 1734 Mahoney St Fitzroy St- Lane Pavement Works	Road Management Plan 2013	2016-2036	$48,015	PADI	Area 05	12,559	5.0%	95.0%	$45,614	**$3.63**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
207	Lane Pavement Works	Renew - RoW 56.1 O'Grady St RoW 56.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$53,451	PADI	Area 03	4,024	5.0%	95.0%	$50,778	**$12.62**
208	Lane Pavement Works	Renew - RoW 76.2 Caroline St RoW 76.1- Lane Pavement Works	Road Management Plan 2013	2016-2036	$58,886	PADI	Area 03	4,024	5.0%	95.0%	$55,942	**$13.90**
209	Lane Pavement Works	Renew - RoW 1740 Greeves St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$255,704	PADI	Area 05	12,559	5.0%	95.0%	$242,919	**$19.34**
210	Lane Drainage Works	Renew - RoW 2217 RoW 2218 RoW 2216- Lane Drainage Works	Road Management Plan 2013	2016-2036	$163,071	DRDI	Area 02	9,218	5.0%	95.0%	$154,917	**$16.81**
211	Lane Pavement Works	Renew - RoW 2182 RoW 2181 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$208,368	PADI	Area 02	9,618	5.0%	95.0%	$197,950	**$20.58**
212	Lane Pavement Works	Renew - RoW 1415 Richardson St RoW 1416- Lane Pavement Works	Road Management Plan 2013	2016-2036	$49,215	PADI	Area 01	5,441	5.0%	95.0%	$46,754	**$8.59**
213	Lane Pavement Works	Renew - RoW 89 John St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$74,287	PADI	Area 03	4,024	5.0%	95.0%	$70,573	**$17.54**
214	Lane Pavement Works	Renew - RoW 1866 Leicester St Westgarth St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$96,574	PADI	Area 05	12,559	5.0%	95.0%	$91,745	**$7.31**
215	Lane Pavement Works	Renew - RoW 1738 Fitzroy St RoW 1740- Lane Pavement Works	Road Management Plan 2013	2016-2036	$109,574	PADI	Area 05	12,559	5.0%	95.0%	$104,095	**$8.29**
216	Lane Pavement Works	Renew - RoW 70.3 Edmund St RoW 70.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$125,360	PADI	Area 03	4,024	5.0%	95.0%	$119,092	**$29.60**
217	Lane Pavement Works	Renew - RoW 3023 RoW 3021 End of street- Lane Pavement Works	Road Management Plan 2013	2016-2036	$232,149	PADI	Area 09	12,712	5.0%	95.0%	$220,542	**$17.35**
218	Lane Pavement Works	Renew - RoW 2222 Rae St Melville St- Lane Pavement Works	Road Management Plan 2013	2016-2036	$287,865	PADI	Area 02	9,618	5.0%	95.0%	$273,472	**$28.43**
219	Lane Pavement Works	Renew - RoW 955 Lord St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$3,077	PADI	Area 09	12,712	5.0%	95.0%	$2,923	**$0.23**
220	Lane Drainage Works	Renew - RoW 301 Hoddle St End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$9,070	DRDI	Area 07	11,166	5.0%	95.0%	$8,617	**$0.77**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
221	Lane Pavement Works	Renew - RoW 172.2 RoW 172.1 RoW 172.3- Lane Pavement Works	Road Management Plan 2013	2016-2036	$11,190	PADI	Area 06	12,640	5.0%	95.0%	$10,631	**$0.84**
222	Lane Pavement Works	Renew - RoW 1149 Amsterdam St RoW - Lane Pavement Works	Road Management Plan 2013	2016-2036	$13,850	PADI	Area 11	9,327	5.0%	95.0%	$13,158	**$1.41**
223	Lane Pavement Works	Renew - RoW 1435 RoW 1435.1 RoW 1434- Lane Pavement Works	Road Management Plan 2013	2016-2036	$18,654	PADI	Area 01	5,441	5.0%	95.0%	$17,721	**$3.26**
224	Lane Pavement Works	Renew - RoW 244.2 Dight St RoW 244.1- Lane Pavement Works	Road Management Plan 2013	2016-2036	$19,036	PADI	Area 06	12,640	5.0%	95.0%	$18,084	**$1.43**
225	Lane Drainage Works	Renew - RoW 1507 Nicholson St RoW 1505- Lane Drainage Works	Road Management Plan 2013	2016-2036	$19,080	DRDI	Area 01	5,243	5.0%	95.0%	$18,126	**$3.46**
226	Lane Drainage Works	Renew - RoW 2015 St Georges Rd RoW 2014- Lane Drainage Works	Road Management Plan 2013	2016-2036	$26,557	DRDI	Area 02	9,218	5.0%	95.0%	$25,229	**$2.74**
227	Lane Pavement Works	Renew - RoW 1081 Kelso St RoW 1083- Lane Pavement Works	Road Management Plan 2013	2016-2036	$28,720	PADI	Area 11	9,327	5.0%	95.0%	$27,284	**$2.93**
228	Lane Drainage Works	Renew - RoW 1725 RoW 1724 End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$29,035	DRDI	Area 05	10,669	5.0%	95.0%	$27,583	**$2.59**
229	Lane Drainage Works	Renew - RoW 1942 McKean St End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$36,478	DRDI	Area 02	9,218	5.0%	95.0%	$34,654	**$3.76**
230	Lane Pavement Works	Renew - RoW 1934 RoW 1935 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$37,707	PADI	Area 02	9,618	5.0%	95.0%	$35,822	**$3.72**
231	Lane Pavement Works	Renew - RoW 1721 Fitzroy St RoW 1720- Lane Pavement Works	Road Management Plan 2013	2016-2036	$59,012	PADI	Area 05	12,559	5.0%	95.0%	$56,061	**$4.46**
232	Lane Pavement Works	Renew - RoW 1867 RoW 1869 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$62,985	PADI	Area 05	12,559	5.0%	95.0%	$59,836	**$4.76**
233	Lane Drainage Works	Renew - RoW 1575 Lee St RoW 1575.1- Lane Drainage Works	Road Management Plan 2013	2016-2036	$66,099	DRDI	Area 01	5,243	5.0%	95.0%	$62,794	**$11.98**
234	Lane Pavement Works	Renew - RoW 1859 Rose St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$85,663	PADI	Area 05	12,559	5.0%	95.0%	$81,380	**$6.48**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
235	Lane Pavement Works	Renew - RoW 2113 Brunswick St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$85,663	PADI	Area 02	9,618	5.0%	95.0%	$81,380	**$8.46**
236	Lane Pavement Works	Renew - RoW 61.1 O'Grady St RoW 61.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$142,772	PADI	Area 03	4,024	5.0%	95.0%	$135,633	**$33.71**
237	Lane Pavement Works	Renew - RoW 1787 Fitzroy St RoW 1788- Lane Pavement Works	Road Management Plan 2013	2016-2036	$210,112	PADI	Area 05	12,559	5.0%	95.0%	$199,606	**$15.89**
238	Lane Pavement Works	Renew - RoW 80 Abbott Gve End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$15,609	PADI	Area 03	4,024	5.0%	95.0%	$14,829	**$3.69**
239	Lane Pavement Works	Renew - RoW 1643 George St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$39,861	PADI	Area 05	12,559	5.0%	95.0%	$37,868	**$3.02**
240	Lane Pavement Works	Renew - RoW 186.1 Gold St RoW 186.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$42,718	PADI	Area 06	12,640	5.0%	95.0%	$40,582	**$3.21**
241	Lane Pavement Works	Renew - RoW 98 Clifton Ave End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$35,121	PADI	Area 03	4,024	5.0%	95.0%	$33,365	**$8.29**
242	Lane Pavement Works	Renew - RoW 17.1 Gold St RoW 17.2- Lane Pavement Works	Road Management Plan 2013	2016-2036	$36,097	PADI	Area 03	4,024	5.0%	95.0%	$34,292	**$8.52**
243	Lane Pavement Works	Renew - RoW 3042 Coppin St RoW 1173- Lane Pavement Works	Road Management Plan 2013	2016-2036	$40,000	PADI	Area 10	4,950	5.0%	95.0%	$38,000	**$7.68**
244	Lane Pavement Works	Renew - RoW 378.3 RoW 378.2 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$40,975	PADI	Area 07	12,872	5.0%	95.0%	$38,926	**$3.02**
245	Lane Pavement Works	Renew - RoW 1847 George St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$41,951	PADI	Area 05	12,559	5.0%	95.0%	$39,853	**$3.17**
246	Lane Pavement Works	Renew - RoW 122.8 Emma St RoW 122.7- Lane Pavement Works	Road Management Plan 2013	2016-2036	$67,387	PADI	Area 06	12,640	5.0%	95.0%	$64,018	**$5.06**
247	Lane Drainage Works	Renew - RoW 2184 Queens Pde RoW 2184.1- Lane Drainage Works	Road Management Plan 2013	2016-2036	$49,756	DRDI	Area 02	9,218	5.0%	95.0%	$47,268	**$5.13**
248	Lane Pavement Works	Renew - RoW 1380 RoW RoW 1381- Lane Pavement Works	Road Management Plan 2013	2016-2036	$116,726	PADI	Area 01	5,441	5.0%	95.0%	$110,890	**$20.38**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
249	Lane Drainage Works	Renew - RoW 1734 Mahoney St Fitzroy St- Lane Drainage Works	Road Management Plan 2013	2016-2036	$81,951	DRDI	Area 05	10,669	5.0%	95.0%	$77,853	**$7.30**
250	Lane Pavement Works	Renew - RoW 615 Muir St RoW 614- Lane Pavement Works	Road Management Plan 2013	2016-2036	$89,756	PADI	Area 08	17,737	5.0%	95.0%	$85,268	**$4.81**
251	Lane Pavement Works	Renew - RoW 61.2 RoW 61.1 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$93,658	PADI	Area 03	4,024	5.0%	95.0%	$88,975	**$22.11**
252	Lane Drainage Works	Renew - RoW 1867 RoW 1869 End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$103,414	DRDI	Area 05	10,669	5.0%	95.0%	$98,243	**$9.21**
253	Lane Pavement Works	Renew - RoW 1937 RoW 1936 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$171,709	PADI	Area 02	9,618	5.0%	95.0%	$163,124	**$16.96**
254	Lane Drainage Works	Renew - RoW 1889 Cecil St Westgarth St - Lane Drainage Works	Road Management Plan 2013	2016-2036	$15,000	DRDI	Area 05	10,669	5.0%	95.0%	$14,250	**$1.34**
255	Lane Drainage Works	Renew - RoW 1008 Stawell St Belgravia St - Lane Drainage Works	Road Management Plan 2013	2016-2036	$25,000	DRDI	Area 09	11,600	5.0%	95.0%	$23,750	**$2.05**
256	Lane Pavement Works	Renew - RoW 298 Hoddle St End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$25,000	PADI	Area 07	12,872	5.0%	95.0%	$23,750	**$1.85**
257	Lane Pavement Works	Renew - RoW 3071 Federation La End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$25,000	PADI	Area 07	12,872	5.0%	95.0%	$23,750	**$1.85**
258	Lane Pavement Works	Renew - RoW 1168 RoW 1167 End of lane- Lane Pavement Works	Road Management Plan 2013	2016-2036	$27,000	PADI	Area 10	4,950	5.0%	95.0%	$25,650	**$5.18**
259	Lane Drainage Works	Renew - RoW 1181 West St RoW 1180- Lane Drainage Works	Road Management Plan 2013	2016-2036	$30,000	DRDI	Area 10	3,905	5.0%	95.0%	$28,500	**$7.30**
260	Lane Pavement Works	Renew - RoW 1167 Mary St RoW 1168- Lane Pavement Works	Road Management Plan 2013	2016-2036	$45,000	PADI	Area 10	4,950	5.0%	95.0%	$42,750	**$8.64**
261	Lane Drainage Works	Renew - RoW 123.1 Emma St Blanche St - Lane Drainage Works	Road Management Plan 2013	2016-2036	$50,000	DRDI	Area 06	11,064	5.0%	95.0%	$47,500	**$4.29**
262	Lane Drainage Works	Renew - RoW 123.3 Emma St Blanche St - Lane Drainage Works	Road Management Plan 2013	2016-2036	$50,000	DRDI	Area 06	11,064	5.0%	95.0%	$47,500	**$4.29**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
263	Lane Pavement Works	Renew - RoW 77.1 Caroline St RoW 77- Lane Pavement Works	Road Management Plan 2013	2016-2036	$92,926	PADI	Area 03	4,024	5.0%	95.0%	$88,280	**$21.94**
264	Lane Drainage Works	Renew - RoW 325 Valiant St Abbotsford St - Lane Drainage Works	Road Management Plan 2013	2016-2036	$60,000	DRDI	Area 07	11,166	5.0%	95.0%	$57,000	**$5.10**
265	Lane Drainage Works	Renew - RoW 123.2 RoW 123.1 RoW 123.3- Lane Drainage Works	Road Management Plan 2013	2016-2036	$80,000	DRDI	Area 06	11,064	5.0%	95.0%	$76,000	**$6.87**
266	Lane Pavement Works	Renew - RoW 2214 Rae St Dean St - Lane Pavement Works	Road Management Plan 2013	2016-2036	$100,000	PADI	Area 02	9,618	5.0%	95.0%	$95,000	**$9.88**
267	Lane Drainage Works	Renew - RoW 2156 Kneen St End of lane- Lane Drainage Works	Road Management Plan 2013	2016-2036	$120,000	DRDI	Area 02	9,218	5.0%	95.0%	$114,000	**$12.37**
268	Lane Pavement Works	Renew - RoW 1386 Pigdon St RoW 1387- Lane Pavement Works	Road Management Plan 2013	2016-2036	$140,000	PADI	Area 01	5,441	5.0%	95.0%	$133,000	**$24.44**
271	Drainage	New - This project taps into a 79ha catchment coming out of the City of Darebin and into Parks Victoria land at Westfield Reserve. The works include construction of a wetland and storage pond to permit irrigation of Fairfield Park and to pipe water to other uses	Water Sensitive Urban Design Policy 2016	2016-2036	$2,100,000	DRDI	Area 03	3,983	5.0%	95.0%	$1,995,000	**$500.86**
274	Drainage	New construction of a stormwater treatment wetlands at Rushall Reserve and within the Merri Creek Reserve (upstream of High St) for the McKean St.	Water Sensitive Urban Design Policy 2016	2016-2036	$800,000	DRDI	Area 02	9,218	5.0%	95.0%	$760,000	**$82.45**
276	Footpath Works	New construction of a footpath along the southern boundary of Darling Gardens as per the recommendations of the endorsed Darling Gardens Masterplan (2015).	Yarra Open Space Strategy 2007	2016-2036	$90,000	PADI	Area 03	4,024	5.0%	95.0%	$85,500	**$21.25**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
279	Public Toilet	New construction of new Public toilets in Nicholson Street Carlton between Scotchmer and Park Streets.	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$450,000	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$427,500	**$28.39**
280	Drainage	New project - tapping into stormwater from local catchments in East Clifton Hill and taking it to a storage wetland adjacent to Ramsden St. Oval for later re-use in irrigating Ramsden St Oval and Yambla Reserve. This project comes from the City West Water report.	Water Sensitive Urban Design Policy 2016	2016-2036	$850,000	DRDI	Area 03	3,983	5.0%	95.0%	$807,500	**$202.73**
281	Drainage	New installation of a physical pollutant removal structure, such as an oil interceptor, in the Victoria Street drainage area. Victoria Street is a vibrant length of mainly cafes and restaurants	Water Sensitive Urban Design Policy 2016	2016-2036	$90,000	DRDI	Area 07 Area 08	26,482	5.0%	95.0%	$85,500	**$3.23**
285	Drainage	New project - takes stormwater from various drains that enter the linear park reserve, Fitzroy North from the north and currently connect within the reserve to Melbourne Water's Park St. Main Drain that then flows east to Merri Creek at Rushall.	Water Sensitive Urban Design Policy 2016	2016-2036	$440,000	DRDI	Area 02	9,218	5.0%	95.0%	$418,000	**$45.34**
286	Footpath Works	New improvements to the shared zone in King William Street, Fitzroy between Atherton Hub and Sacred Heart School for pedestrian amenity and children's play.	Yarra Open Space Strategy 2007	2016-2036	$500,000	PADI	Area 05	12,559	5.0%	95.0%	$475,000	**$37.82**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
290	Drainage	New construction of a stormwater treatment wetlands at Hall Reserve. Project design as per project PN100009.	Water Sensitive Urban Design Policy 2016	2016-2036	$730,000	DRDI	Area 03	3,983	5.0%	95.0%	$693,500	**$174.11**
292	Bicycle Network	New install new priority crossings and upgrade existing pedestrian/bike signals on the Capital City Trail as per the Bike Strategy Refresh	Bike Strategy 2010 - 2015	2016-2036	$260,000	PADI	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area 11	106,506	5.0%	95.0%	$247,000	**$2.32**
294	Public Space	New and upgraded improvements to the streetscape, transport environment and provision of public space within the road reserve on Nicholson Street (between Langridge Street and Mollison Street) in Abbotsford.	Nicholson Street Place Making Initiative	2016-2036	$180,000	PADI	Area 07	12,872	5.0%	95.0%	$171,000	**$13.28**
296	Public Space	New construction of a new public space and integrated transport node at the intersection of Jonas Street and Victoria Street. The new space would provide a safe gathering space, a potentially vibrant hub of activity for the community and passers-by.	Victoria Street Masterplan	2016-2036	$450,000	PADI	Area 08	17,737	5.0%	95.0%	$427,500	**$24.10**
307	Development Contributions Plan	Preparation and Implementation of Developer Contribution Plan	Long Term Financial Strategy	2016-2036	$79,725	DCPP	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area 11	91,312	5.0%	95.0%	$75,739	**$0.83**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
312	Bicycle Network	New construction on separated Copenhagen bicycle lanes on Wellington Street between Gipps and Johnston Street. The works will include: the removal of parking on the western side of the street; installation of new kerb separators, green paint and upgrade	No strategy	2016-2036	$1,200,000	PADI	Area 06	12,640	5.0%	95.0%	$1,140,000	**$90.19**
450	Footpath Works	Renew-footpath works on Eucalyptus St from Bridge Rd to Berry St	Road Management Plan 2013	2016-2036	$15,213	PADI	Area 09	12,712	5.0%	95.0%	$14,452	**$1.14**
451	Footpath Works	Renew-footpath works on Paterson St from Yarra St to Abbotsford St (Left footpath)	Road Management Plan 2013	2016-2036	$28,826	PADI	Area 07	12,872	5.0%	95.0%	$27,385	**$2.13**
453	Pavement Works	Renew-pavement works on Shamrock St from Church St to Brighton St	Road Management Plan 2013	2016-2036	$81,549	PADI	Area 10 Area 11	14,277	5.0%	95.0%	$77,472	**$5.43**
454	Footpath Works	Renew-footpath works on Alexandra Pde from Gold St to Alexander St	Road Management Plan 2013	2016-2036	$44,040	PADI	Area 03 Area 06	16,664	5.0%	95.0%	$41,838	**$2.51**
455	Footpath Works	Renew-footpath works on Fitzroy St from Argyle St to Johnston St (Left footpath)	Road Management Plan 2013	2016-2036	$48,043	PADI	Area 05	12,559	5.0%	95.0%	$45,641	**$3.63**
456	Footpath Works	Renew-footpath works on Alexandra Pde from Alexander St to Hoddle St	Road Management Plan 2013	2016-2036	$48,043	PADI	Area 03 Area 06	16,664	5.0%	95.0%	$45,641	**$2.74**
457	Footpath Works	Renew-footpath works on Nicholson St from Miller St to Clausen St (Left footpath)	Road Management Plan 2013	2016-2036	$48,043	PADI	Area 02	9,618	5.0%	95.0%	$45,641	**$4.75**
458	Pavement Works	Renew-pavement works on Lennox St from Elizabeth St to York St	Road Management Plan 2013	2016-2036	$211,392	PADI	Area 08	17,737	5.0%	95.0%	$200,822	**$11.32**
459	Pavement Works	Renew-pavement works on Lennox St from York St to Highett St	Road Management Plan 2013	2016-2036	$211,392	PADI	Area 08	17,737	5.0%	95.0%	$200,822	**$11.32**
460	Footpath Works	Renew-footpath works on Park St from Lang St to Wilson St (Right footpath)	Road Management Plan 2013	2016-2036	$53,648	PADI	Area 01	5,441	5.0%	95.0%	$50,966	**$9.37**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
461	Footpath Works	Renew-footpath works on River St from North St to End of street (Left footpath)	Road Management Plan 2013	2016-2036	$57,652	PADI	Area 08	17,737	5.0%	95.0%	$54,769	**$3.09**
462	Footpath Works	Renew-footpath works on Pigdon St from McIlwraith St to Lygon St (Left footpath)	Road Management Plan 2013	2016-2036	$57,652	PADI	Area 01	5,441	5.0%	95.0%	$54,769	**$10.07**
463	Footpath Works	Renew-footpath works on Rowe St from Delbidge St to Michael St (Sections of both footpaths)	Road Management Plan 2013	2016-2036	$67,261	PADI	Area 02	9,618	5.0%	95.0%	$63,898	**$6.64**
464	Footpath Works	Renew-footpath works on Rowe St from Michael St to Rushall Cres (Sections of both footpaths)	Road Management Plan 2013	2016-2036	$67,261	PADI	Area 02	9,618	5.0%	95.0%	$63,898	**$6.64**
465	Footpath Works	Renew-footpath works on Newry St from Burnley St to Lord St (Left footpath kerb and channel)	Road Management Plan 2013	2016-2036	$67,261	PADI	Area 09	12,712	5.0%	95.0%	$63,898	**$5.03**
466	Footpath Works	Renew-footpath works on Alfred St from Rowena Pde to Richmond Tce (Both footpaths)	Road Management Plan 2013	2016-2036	$72,866	PADI	Area 09	12,712	5.0%	95.0%	$69,223	**$5.45**
468	Footpath Works	Renew-footpath works on Holden St from Brunswick St to Byrne St (Left footpath Right footpath)	Road Management Plan 2013	2016-2036	$74,467	PADI	Area 02	9,618	5.0%	95.0%	$70,744	**$7.36**
469	Footpath Works	Renew-footpath works on O'Grady St from Rathdowne St to Canning St	Road Management Plan 2013	2016-2036	$76,869	PADI	Area 01	5,441	5.0%	95.0%	$73,026	**$13.42**
470	Pavement Works	Renew-pavement works on Fitzroy St from Gertrude St to Victoria Pde	Road Management Plan 2013	2016-2036	$240,218	DRDI	Area 05	10,669	5.0%	95.0%	$228,207	**$21.39**
472	Footpath Works	Renew-footpath works on Brunswick St from Church St to Freeman St	Road Management Plan 2013	2016-2036	$76,869	PADI	Area 05	12,559	5.0%	95.0%	$73,026	**$5.81**
473	Footpath Works	Renew-footpath works on Freeman St from Brunswick St to Napier St	Road Management Plan 2013	2016-2036	$76,869	PADI	Area 02	9,618	5.0%	95.0%	$73,026	**$7.59**
474	Footpath Works	Renew-footpath works on Freeman St from Muir St to	Road Management	2016-2036	$76,869	PADI	Area 08	17,737	5.0%	95.0%	$73,026	**$4.12**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Lennox St	Plan 2013									
476	Pavement Works	Renew-pavement works on George St from Argyle St to Johnston St	Road Management Plan 2013	2016-2036	$86,478	RDDI	Area 05	19,186	5.0%	95.0%	$82,154	**$4.28**
477	Pavement Works	Renew-pavement works on George St from Kerr St to Argyle St	Road Management Plan 2013	2016-2036	$127,515	RDDI	Area 05	19,186	5.0%	95.0%	$121,139	**$6.31**
478	Pavement Works	Renew-pavement works on Bendigo St from Swan St to Khartoum St	Road Management Plan 2013	2016-2036	$240,218	PADI	Area 09	12,712	5.0%	95.0%	$228,207	**$17.95**
479	Pavement Works	Renew-pavement worksworks on Michael St from Falconer St to Rowe St	Road Management Plan 2013	2016-2036	$96,087	DRDI	Area 02	9,218	5.0%	95.0%	$91,283	**$9.90**
482	Pavement Works	Renew-pavement works on Bennett St from Holden St to Park St (Road re sheet)	Road Management Plan 2013	2016-2036	$111,301	RDDI	Area 02	12,123	5.0%	95.0%	$105,736	**$8.72**
483	Pavement Works	Renew-pavement works on Coppin St from Swan St to Madden Gr	Road Management Plan 2013	2016-2036	$115,304	RDDI	Area 10	7,518	5.0%	95.0%	$109,539	**$14.57**
484	Footpath Works	Renew-footpath works on Park St from Nicholson St to Rae St (Right footpath)	Road Management Plan 2013	2016-2036	$124,913	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$118,667	**$7.88**
485	Footpath Works	Renew-footpath works on Charles St from Vere St to Gipps St (Left footpath)	Road Management Plan 2013	2016-2036	$130,518	PADI	Area 07	12,872	5.0%	95.0%	$123,992	**$9.63**
486	Pavement Works	Renew-pavement works on Noone St from Anderson St to Hoddle St	Road Management Plan 2013	2016-2036	$151,632	RDDI	Area 03	5,252	5.0%	95.0%	$144,050	**$27.43**
487	Footpath Works	Renew-footpath works on Park St from Gipps St to Langridge St (Both footpaths)	Road Management Plan 2013	2016-2036	$134,522	PADI	Area 07	12,872	5.0%	95.0%	$127,796	**$9.93**
489	Pavement Works	Renew-pavement works on Pigdon St from Bowen Cr to Garton St (Road re-sheet)	Road Management Plan 2013	2016-2036	$134,522	RDDI	Area 01	6,399	5.0%	95.0%	$127,796	**$19.97**
494	Footpath Works	Renew-footpath works on Spensley St from Berry St to Fenwick St (Both sides foopath (left side footpath work to extend until laneway 79.4))	Road Management Plan 2013	2016-2036	$153,739	PADI	Area 03	4,024	5.0%	95.0%	$146,052	**$36.30**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
498	Pavement Works	Renew-pavement works on Noone St from Groom St to Gray St	Road Management Plan 2013	2016-2036	$274,263	RDDI	Area 03	5,252	5.0%	95.0%	$260,550	**$49.61**
499	Pavement Works	Renew-pavement works on Park Ave from Westbank Tce to End of street	Road Management Plan 2013	2016-2036	$182,566	RDDI	Area 09	16,308	5.0%	95.0%	$173,438	**$10.64**
500	Footpath Works	Renew-footpath works on Park St from St Georges Rd to Bennett St (Right footpath and kerb and channel)	Road Management Plan 2013	2016-2036	$226,606	PADI	Area 02	9,618	5.0%	95.0%	$215,276	**$22.38**
501	Footpath Works	Renew-footpath works on Turner St from Bath St to Lulie St (Footpath rehabilitation (from western kerb in Lulie St to chainage 20 in Turner St))	Road Management Plan 2013	2016-2036	$257,033	PADI	Area 07	12,872	5.0%	95.0%	$244,181	**$18.97**
503	Footpath Works	Renew-footpath works on Mary St from Drummond St to Rathdowne St	Road Management Plan 2013	2016-2036	$16,414	PADI	Area 01	5,441	5.0%	95.0%	$15,593	**$2.87**
504	Footpath Works	Renew-footpath works on Argyle St from Brunswick St to Young St	Road Management Plan 2013	2016-2036	$24,622	PADI	Area 05	12,559	5.0%	95.0%	$23,391	**$1.86**
505	Footpath Works	Renew-footpath works on Michael St from McKean St to Queens Pde (Left footpath)	Road Management Plan 2013	2016-2036	$24,622	PADI	Area 02	9,618	5.0%	95.0%	$23,391	**$2.43**
506	Pavement Works	Renew-pavement works on Napier St from Kerr St to Argyle St	Road Management Plan 2013	2016-2036	$109,781	PADI	Area 05	12,559	5.0%	95.0%	$104,292	**$8.30**
507	Footpath Works	Renew-footpath works on Argyle St from Napier St to George St	Road Management Plan 2013	2016-2036	$32,829	PADI	Area 05	12,559	5.0%	95.0%	$31,188	**$2.48**
508	Pavement Works	Renew-pavement works on St Georges Rd from Newry St to Nicholson St	Road Management Plan 2013	2016-2036	$162,629	PADI	Area 02	9,618	5.0%	95.0%	$154,498	**$16.06**
509	Pavement Works	Renew-pavement works on Greeves St from Fitzroy St to Brunswick St (Road re-sheet)	Road Management Plan 2013	2016-2036	$32,829	RDDI	Area 05	19,186	5.0%	95.0%	$31,188	**$1.63**
510	Pavement Works	Renew-pavement works on Greeves St from Napier St	Road Management	2016-2036	$32,829	RDDI	Area 05	19,186	5.0%	95.0%	$31,188	**$1.63**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		to George St (Road re-sheet)	Plan 2013									
511	Footpath Works	Renew-footpath works on Barkly St from Bundara St to End of street	Road Management Plan 2013	2016-2036	$32,829	PADI	Area 02	9,618	5.0%	95.0%	$31,188	**$3.24**
514	Footpath Works	Renew-footpath works on South Audley St from Nelson St to Southampton Cres	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 07	12,872	5.0%	95.0%	$38,985	**$3.03**
515	Footpath Works	Renew-footpath works on Oxford St from Derby St to Mason St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 06	12,640	5.0%	95.0%	$38,985	**$3.08**
516	Footpath Works	Renew-footpath works on Oxford St from Langridge St to Derby St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 06	12,640	5.0%	95.0%	$38,985	**$3.08**
517	Footpath Works	Renew-footpath works on Westgarth St from Brunswick St to Young St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 05	12,559	5.0%	95.0%	$38,985	**$3.10**
518	Pavement Works	Renew-pavement works on Westgarth St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$179,037	PADI	Area 05	12,559	5.0%	95.0%	$170,085	**$13.54**
519	Pavement Works	Renew-pavement works on Westgarth St from George St to Gore St	Road Management Plan 2013	2016-2036	$155,865	PADI	Area 05	12,559	5.0%	95.0%	$148,072	**$11.79**
521	Pavement Works	Renew-pavement works on McKean St from Rushall Cres to Brennand St	Road Management Plan 2013	2016-2036	$176,417	PADI	Area 02	9,618	5.0%	95.0%	$167,596	**$17.43**
522	Footpath Works	Renew-footpath works on St Georges Rd from Church St to Freeman St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 02	9,618	5.0%	95.0%	$38,985	**$4.05**
523	Footpath Works	Renew-footpath works on St Georges Rd from Fergie St to Scotchmer St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 02	9,618	5.0%	95.0%	$38,985	**$4.05**
524	Footpath Works	Renew-footpath works on Coppin St from Palmer St to Bridge Rd	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 08	17,737	5.0%	95.0%	$38,985	**$2.20**
525	Footpath Works	Renew-footpath works on Crown St from Vaughn St to River St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 08	17,737	5.0%	95.0%	$38,985	**$2.20**
526	Footpath Works	Renew-footpath works on Elizabeth St from Lennox St to Shelly St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 08	17,737	5.0%	95.0%	$38,985	**$2.20**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
527	Footpath Works	Renew-footpath works on Highett St from Davison St to Gardner St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 08	17,737	5.0%	95.0%	$38,985	**$2.20**
528	Footpath Works	Renew-footpath works on Richardson St from Amess St to Canning St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 01	5,441	5.0%	95.0%	$38,985	**$7.16**
529	Pavement Works	Renew-pavement works on Richardson St from Canning St to Station St	Road Management Plan 2013	2016-2036	$110,021	PADI	Area 01	5,441	5.0%	95.0%	$104,520	**$19.21**
530	Footpath Works	Renew-footpath works on Richardson St from Garton St to Arnold St (Footpath resheet, both sides.)	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 01	5,441	5.0%	95.0%	$38,985	**$7.16**
531	Footpath Works	Renew-footpath works on Richardson St from Lygon St to Drummond St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 01	5,441	5.0%	95.0%	$38,985	**$7.16**
532	Footpath Works	Renew-footpath works on Richardson St from McIlwraith St to Lygon St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 01	5,441	5.0%	95.0%	$38,985	**$7.16**
533	Pavement Works	Renew-pavement works on Queens Pde from Alexandra Pde to Napier St	Road Management Plan 2013	2016-2036	$198,672	PADI	Area 02	9,618	5.0%	95.0%	$188,738	**$19.62**
534	Pavement Works	Renew-pavement works on Greeves St from Brunswick St to Young St (Road re-sheet)	Road Management Plan 2013	2016-2036	$41,037	RDDI	Area 05	19,186	5.0%	95.0%	$38,985	**$2.03**
535	Pavement Works	Renew-pavement works on Greeves St from George St to Gore St (Road re-sheet)	Road Management Plan 2013	2016-2036	$41,037	RDDI	Area 05	19,186	5.0%	95.0%	$38,985	**$2.03**
536	Pavement Works	Renew-pavement works on Greeves St from Gore St to Smith St (Road re-sheet)	Road Management Plan 2013	2016-2036	$41,037	RDDI	Area 05	19,186	5.0%	95.0%	$38,985	**$2.03**
537	Pavement Works	Renew-pavement works on Greeves St from Young St to Napier St	Road Management Plan 2013	2016-2036	$47,866	RDDI	Area 05	19,186	5.0%	95.0%	$45,473	**$2.37**
539	Footpath Works	Renew-footpath works on George St from Webb St to Gertrude St	Road Management Plan 2013	2016-2036	$41,037	PADI	Area 05	12,559	5.0%	95.0%	$38,985	**$3.10**
540	Footpath Works	Renew-footpath works on Gold St from Sackville St to Keele St	Road Management Plan 2013	2016-2036	$65,859	PADI	Area 06	12,640	5.0%	95.0%	$62,566	**$4.95**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
541	Footpath Works	Renew-footpath works on Gold St from Keele St to Hotham St	Road Management Plan 2013	2016-2036	$68,262	PADI	Area 06	12,640	5.0%	95.0%	$64,849	**$5.13**
542	Pavement Works	Renew-pavement works on Gold St from Hotham St to Alexandra Pde	Road Management Plan 2013	2016-2036	$245,711	PADI	Area 06	12,640	5.0%	95.0%	$233,425	**$18.47**
544	Pavement Works	Renew-pavement works on Little Kent St from Church St to McKenzie St	Road Management Plan 2013	2016-2036	$45,141	RDDI	Area 08	26,673	5.0%	95.0%	$42,884	**$1.61**
545	Footpath Works	Renew-footpath works on St Georges Rd from Boundary to Miller St	Road Management Plan 2013	2016-2036	$49,244	PADI	Area 02	9,618	5.0%	95.0%	$46,782	**$4.86**
546	Pavement Works	Renew-pavement works on Melville St from Barkly St to Clausen St	Road Management Plan 2013	2016-2036	$49,244	RDDI	Area 02	12,123	5.0%	95.0%	$46,782	**$3.86**
548	Footpath Works	Renew-footpath works on Barkly St from Nicholson St to Rae St	Road Management Plan 2013	2016-2036	$49,244	PADI	Area 02	9,618	5.0%	95.0%	$46,782	**$4.86**
549	Footpath Works	Renew-footpath works on Queens Pde from Michael St to Heidelberg Rd	Road Management Plan 2013	2016-2036	$57,452	PADI	Area 02	9,618	5.0%	95.0%	$54,579	**$5.67**
550	Footpath Works	Renew-footpath works on South Audley St from Victoria St to Southampton Cres	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 07	12,872	5.0%	95.0%	$58,477	**$4.54**
551	Footpath Works	Renew-footpath works on Westgarth St from Gore St to Smith St (Right footpath)	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 05	12,559	5.0%	95.0%	$58,477	**$4.66**
552	Pavement Works	Renew-pavement works on Westgarth St from Nicholson St to Fitzroy St	Road Management Plan 2013	2016-2036	$305,580	PADI	Area 05	12,559	5.0%	95.0%	$290,301	**$23.12**
553	Footpath Works	Renew-footpath works on Coppin St from Highett St to Palmer St	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 08	17,737	5.0%	95.0%	$58,477	**$3.30**
554	Footpath Works	Renew-footpath works on Coppin St from Wall St to Benson St	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 09	12,712	5.0%	95.0%	$58,477	**$4.60**
555	Footpath Works	Renew-footpath works on Crown St from Burnley St to Vaughn St	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 08	17,737	5.0%	95.0%	$58,477	**$3.30**
556	Footpath Works	Renew-footpath works on Elizabeth St from Shelly St	Road Management	2016-2036	$61,555	PADI	Area 08	17,737	5.0%	95.0%	$58,477	**$3.30**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		to Hoddle St	Plan 2013									
557	Footpath Works	Renew-footpath works on Elizabeth St from Church St to Lewis Crt	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 08	17,737	5.0%	95.0%	$58,477	**$3.30**
558	Footpath Works	Renew-footpath works on Curtain St from Canning St to Station St	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 01	5,441	5.0%	95.0%	$58,477	**$10.75**
559	Footpath Works	Renew-footpath works on Curtain St from Drummond St to Rathdowne St	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 01	5,441	5.0%	95.0%	$58,477	**$10.75**
560	Footpath Works	Renew-footpath works on Curtain St from Rathdowne St to Canning St	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 01	5,441	5.0%	95.0%	$58,477	**$10.75**
561	Footpath Works	Renew-footpath works on Curtain St from Station St to Nicholson St (Right footpath)	Road Management Plan 2013	2016-2036	$61,555	PADI	Area 01	5,441	5.0%	95.0%	$58,477	**$10.75**
562	Pavement Works	Renew-pavement works on Cremorne St from Bell St to Cremorne Pl (Resheet pavement as road in poor condition.)	Road Management Plan 2013	2016-2036	$61,555	RDDI	Area 05	19,186	5.0%	95.0%	$58,477	**$3.05**
563	Pavement Works	Renew-pavement works on Madden Gr from Loyola Gr to Swan St	Road Management Plan 2013	2016-2036	$61,555	RDDI	Area 10	7,518	5.0%	95.0%	$58,477	**$7.78**
564	Footpath Works	Renew-footpath works on Michael St from Scotchmer St to Falconer St (Right footpath year Left footpath)	Road Management Plan 2013	2016-2036	$148,034	PADI	Area 02	9,618	5.0%	95.0%	$140,632	**$14.62**
565	Pavement Works	Renew-pavement works on Newton St from Church St to Walnut St	Road Management Plan 2013	2016-2036	$62,376	RDDI	Area 11	10,158	5.0%	95.0%	$59,257	**$5.83**
566	Footpath Works	Renew-footpath works on Highett St from Burnley St to Davison St	Road Management Plan 2013	2016-2036	$65,659	PADI	Area 08	17,737	5.0%	95.0%	$62,376	**$3.52**
567	Pavement Works	Renew-pavement works on Queens Pde from Grant St to Delbridge St	Road Management Plan 2013	2016-2036	$283,953	PADI	Area 02 Area 03	13,641	5.0%	95.0%	$269,755	**$19.78**
569	Pavement Works	Renew-pavement worksworks on Mollison St	Road Management	2016-2036	$69,763	DRDI	Area 07	11,166	5.0%	95.0%	$66,275	**$5.94**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		from Nicholson St to Charles St	Plan 2013									
570	Pavement Works	Renew-pavement works on Barkly Ave from Brighton St to Mary St (Road Resheet also replace paving at school crossing.)	Road Management Plan 2013	2016-2036	$545,670	RDDI	Area 10	7,518	5.0%	95.0%	$518,387	**$68.95**
572	Pavement Works	Renew-pavement works on Dickmann St from Gipps St to Swan St	Road Management Plan 2013	2016-2036	$91,629	RDDI	Area 09	16,308	5.0%	95.0%	$87,048	**$5.34**
573	Footpath Works	Renew-footpath works on Mason St from Smith St to Cambridge St (left footpath Right footpath)	Road Management Plan 2013	2016-2036	$82,074	PADI	Area 06	12,640	5.0%	95.0%	$77,970	**$6.17**
575	Footpath Works	Renew-footpath works on Elizabeth St from Williams Ct to Lennox St	Road Management Plan 2013	2016-2036	$82,074	PADI	Area 08	17,737	5.0%	95.0%	$77,970	**$4.40**
576	Pavement Works	Renew-pavement worksworks on Clausen St from Melville St to St Georges Rd	Road Management Plan 2013	2016-2036	$82,074	DRDI	Area 02	9,218	5.0%	95.0%	$77,970	**$8.46**
579	Footpath Works	Renew-footpath works on Bath St from Turner St to Trenerry Cres (Footpath relating to Victoria Park works)	Road Management Plan 2013	2016-2036	$193,375	PADI	Area 07	12,872	5.0%	95.0%	$183,706	**$14.27**
580	Pavement Works	Renew-pavement works on Seacombe St from Reid St to Scotchmer St (Road Resheet)	Road Management Plan 2013	2016-2036	$86,178	RDDI	Area 02	12,123	5.0%	95.0%	$81,869	**$6.75**
581	Pavement Works	Renew-pavement works on Newry St from Station St to Canning St (Road resheet)	Road Management Plan 2013	2016-2036	$86,178	RDDI	Area 01	6,399	5.0%	95.0%	$81,869	**$12.79**
582	Footpath Works	Renew-footpath works on George St from Berry St to Fenwick St (Resheet footpath, both sides)	Road Management Plan 2013	2016-2036	$98,489	PADI	Area 03	4,024	5.0%	95.0%	$93,565	**$23.25**
583	Footpath Works	Renew-footpath works on Queens Pde from Michael St to Rushall Cres	Road Management Plan 2013	2016-2036	$98,489	PADI	Area 02 Area 03	13,641	5.0%	95.0%	$93,565	**$6.86**
584	Pavement Works	Renew-pavement works on Stanton St from Hoddle St	Road Management	2016-2036	$98,489	RDDI	Area 07	17,726	5.0%	95.0%	$93,565	**$5.28**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		to Park St	Plan 2013									
585	Pavement Works	Renew-pavement works on Arnold St from Solly Ave to Pigdon St	Road Management Plan 2013	2016-2036	$98,489	RDDI	Area 01	6,399	5.0%	95.0%	$93,565	**$14.62**
586	Pavement Works	Renew-pavement works on Mary St from Swan St to Madden Gr (Road resheet)	Road Management Plan 2013	2016-2036	$102,593	RDDI	Area 10	7,518	5.0%	95.0%	$97,463	**$12.96**
588	Footpath Works	Renew-footpath works on Oxford St from Peel St to Langridge St (Left footpath right footpath)	Road Management Plan 2013	2016-2036	$123,111	PADI	Area 06	12,640	5.0%	95.0%	$116,955	**$9.25**
590	Pavement Works	Renew-pavement works on Forest St from Hotham St to Alexandra Pde (Road Resheet)	Road Management Plan 2013	2016-2036	$285,059	RDDI	Area 06	19,935	5.0%	95.0%	$270,806	**$13.58**
591	Pavement Works	Renew-pavement works on Holden St from Bennett St to End of street	Road Management Plan 2013	2016-2036	$147,734	RDDI	Area 02	12,123	5.0%	95.0%	$140,347	**$11.58**
592	Pavement Works	Renew-pavement works on Otter St from Smith St to Wellington St (Resheet road)	Road Management Plan 2013	2016-2036	$205,186	RDDI	Area 06	19,935	5.0%	95.0%	$194,927	**$9.78**
593	Pavement Works	Renew-pavement works on Napier Pl from Moor St to End of street	Road Management Plan 2013	2016-2036	$21,872	RDDI	Area 05	19,186	5.0%	95.0%	$20,778	**$1.08**
594	Pavement Works	Renew-pavement works on Abinger St from Church St to Lyndhurst St	Road Management Plan 2013	2016-2036	$93,252	PADI	Area 09	12,712	5.0%	95.0%	$88,589	**$6.97**
595	Footpath Works	Renew-footpath works on Napier St from Moor St to Condell St (Left footpath)	Road Management Plan 2013	2016-2036	$28,603	PADI	Area 05	12,559	5.0%	95.0%	$27,173	**$2.16**
596	Footpath Works	Renew-footpath works on Moorhouse St from Bridge Rd to Erin St (Resheet footpath, both sides)	Road Management Plan 2013	2016-2036	$31,126	PADI	Area 08	17,737	5.0%	95.0%	$29,570	**$1.67**
597	Footpath Works	Renew-footpath works on Bowen Cr from Pigdon St to Holtham St West (Right footpath)	Road Management Plan 2013	2016-2036	$33,650	PADI	Area 01	5,441	5.0%	95.0%	$31,968	**$5.88**
598	Footpath Works	Renew-footpath works on Holtham St West from	Road Management	2016-2036	$40,380	PADI	Area 01	5,441	5.0%	95.0%	$38,361	**$7.05**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Garton St to Arnold St (Left footpath)	Plan 2013									
599	Footpath Works	Renew-footpath works on Holden St from Byrne St to St Georges Rd	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 02	9,618	5.0%	95.0%	$39,960	**$4.15**
600	Footpath Works	Renew-footpath works on Lambert St from Buckingham St to Kent St	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 08	17,737	5.0%	95.0%	$39,960	**$2.25**
601	Footpath Works	Renew-footpath works on Lambert St from Lincoln St to Buckingham St	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 08	17,737	5.0%	95.0%	$39,960	**$2.25**
602	Footpath Works	Renew-footpath works on Canning St from Mary St to Park St	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 01	5,441	5.0%	95.0%	$39,960	**$7.34**
603	Footpath Works	Renew-footpath works on Canning St from Newry St to Curtain St	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 01	5,441	5.0%	95.0%	$39,960	**$7.34**
604	Footpath Works	Renew-footpath works on Canning St from Pigdon St to Mary St	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 01	5,441	5.0%	95.0%	$39,960	**$7.34**
605	Pavement Works	Renew-pavement works on Canning St from Richardson St to Pigdon St	Road Management Plan 2013	2016-2036	$189,284	PADI	Area 01	5,441	5.0%	95.0%	$179,820	**$33.05**
606	Footpath Works	Renew-footpath works on Paterson St from McIlwraith St to Lygon St (Left footpath)	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 01	5,441	5.0%	95.0%	$39,960	**$7.34**
607	Footpath Works	Renew-footpath works on Rathdowne St from Newry St to O'Grady St (Resheet left (east) footpath)	Road Management Plan 2013	2016-2036	$42,063	PADI	Area 01	5,441	5.0%	95.0%	$39,960	**$7.34**
608	Pavement Works	Renew-pavement works on Abinger St from Mary St to Coppin St	Road Management Plan 2013	2016-2036	$42,904	RDDI	Area 09	16,308	5.0%	95.0%	$40,759	**$2.50**
609	Footpath Works	Renew-footpath works on Ramsden St from Yambla St to Field St (Right footpath)	Road Management Plan 2013	2016-2036	$45,428	PADI	Area 03	4,024	5.0%	95.0%	$43,157	**$10.73**
610	Pavement Works	Renew-pavement works on Alfred St from Rae St to End of street	Road Management Plan 2013	2016-2036	$51,317	RDDI	Area 02	12,123	5.0%	95.0%	$48,751	**$4.02**
611	Footpath Works	Renew-footpath works on Lambert St from Victoria St	Road Management	2016-2036	$54,682	PADI	Area 08	17,737	5.0%	95.0%	$51,948	**$2.93**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		to Baker St	Plan 2013									
614	Footpath Works	Renew-footpath works on Bowen Cr from Holtham St West to Lang St (Right footpath)	Road Management Plan 2013	2016-2036	$58,888	PADI	Area 01	5,441	5.0%	95.0%	$55,944	**$10.28**
616	Pavement Works	Renew-pavement works on Hilton St from Council St to Hodgkinson St	Road Management Plan 2013	2016-2036	$58,888	RDDI	Area 03	5,252	5.0%	95.0%	$55,944	**$10.65**
617	Footpath Works	Renew-footpath works on Hilton St from Alexandra Pde to Council St (Both footpaths)	Road Management Plan 2013	2016-2036	$63,936	PADI	Area 03	4,024	5.0%	95.0%	$60,739	**$15.10**
618	Pavement Works	Renew-pavement worksworks on Pearson St from Church St to Walnut St	Road Management Plan 2013	2016-2036	$66,459	DRDI	Area 11	6,308	5.0%	95.0%	$63,136	**$10.01**
620	Pavement Works	Renew-pavement works on Gray St from Noone St to Alexandra Pde	Road Management Plan 2013	2016-2036	$70,666	RDDI	Area 03	5,252	5.0%	95.0%	$67,133	**$12.78**
621	Footpath Works	Renew-footpath works on Lennox St from Victoria St to Elizabeth St (Rehabilitate shared area, near Victoria St)	Road Management Plan 2013	2016-2036	$75,713	PADI	Area 08	17,737	5.0%	95.0%	$71,927	**$4.06**
623	Pavement Works	Renew-pavement works on Newry St from Nicholson St to Station St (Road resheet)	Road Management Plan 2013	2016-2036	$75,713	RDDI	Area 01	6,399	5.0%	95.0%	$71,927	**$11.24**
624	Footpath Works	Renew-footpath works on Lygon St from Richardson St to MacPherson St (Left footpath)	Road Management Plan 2013	2016-2036	$77,396	PADI	Area 01	5,441	5.0%	95.0%	$73,526	**$13.51**
625	Pavement Works	Renew-pavement works on Smith St from Gertrude St to Little Victoria St	Road Management Plan 2013	2016-2036	$77,396	RDDI	Area 05 Area 06	39,121	5.0%	95.0%	$73,526	**$1.88**
626	Pavement Works	Renew-pavement works on Gold St from Hodgkinson St to Queens Pde	Road Management Plan 2013	2016-2036	$79,920	RDDI	Area 06	19,935	5.0%	95.0%	$75,924	**$3.81**
627	Footpath Works	Renew-footpath works on MacPherson St from Garton St to Arnold St (Left footpath)	Road Management Plan 2013	2016-2036	$81,602	PADI	Area 01	5,441	5.0%	95.0%	$77,522	**$14.25**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
628	Footpath Works	Renew-footpath works on Webb St from Gore St to Smith St	Road Management Plan 2013	2016-2036	$84,126	PADI	Area 05	12,559	5.0%	95.0%	$79,920	**$6.36**
629	Pavement Works	Renew-pavement works on Holden St from St Georges Rd to Bennett St	Road Management Plan 2013	2016-2036	$190,823	PADI	Area 02	9,618	5.0%	95.0%	$181,282	**$18.85**
631	Footpath Works	Renew-footpath works on Gore St from Cecil St to Westgarth St	Road Management Plan 2013	2016-2036	$84,126	PADI	Area 05	12,559	5.0%	95.0%	$79,920	**$6.36**
632	Footpath Works	Renew-footpath works on Langridge St from Park St to Nicholson St	Road Management Plan 2013	2016-2036	$84,967	PADI	Area 07	12,872	5.0%	95.0%	$80,719	**$6.27**
633	Footpath Works	Renew-footpath works on Queens Pde from Jamieson St to Grant St (Right footpath)	Road Management Plan 2013	2016-2036	$86,650	PADI	Area 02 Area 03	13,641	5.0%	95.0%	$82,318	**$6.03**
634	Footpath Works	Renew-footpath works on Mollison St from Victoria Cres to Nicholson St (Right footpath)	Road Management Plan 2013	2016-2036	$87,491	PADI	Area 07	12,872	5.0%	95.0%	$83,116	**$6.46**
635	Pavement Works	Renew-pavement works on Alexander St from Noone St to Alexandra Pde	Road Management Plan 2013	2016-2036	$90,856	RDDI	Area 03	5,252	5.0%	95.0%	$86,313	**$16.44**
638	Footpath Works	Renew-footpath works on Amess St from Pigdon St to Richardson St (Left footpath)	Road Management Plan 2013	2016-2036	$101,793	PADI	Area 01	5,441	5.0%	95.0%	$96,703	**$17.77**
639	Pavement Works	Renew-pavement works on Rowena Pde from Punt Rd to Rotherwood St	Road Management Plan 2013	2016-2036	$169,364	RDDI	Area 09	16,308	5.0%	95.0%	$160,896	**$9.87**
640	Footpath Works	Renew-footpath works on Taylor St from Boundary to Miller St (Right footpath)	Road Management Plan 2013	2016-2036	$121,983	PADI	Area 02	9,618	5.0%	95.0%	$115,884	**$12.05**
641	Pavement Works	Renew-pavement works on Myrtle St from Ramsden St to Roseneath St	Road Management Plan 2013	2016-2036	$122,824	RDDI	Area 03	5,252	5.0%	95.0%	$116,683	**$22.22**
642	Footpath Works	Renew-footpath works on Richardson St from Wilson St to McIlwraith St (Right footpath)	Road Management Plan 2013	2016-2036	$129,554	PADI	Area 01	5,441	5.0%	95.0%	$123,076	**$22.62**
644	Pavement Works	Renew-pavement works on Rowena Pde from	Road Management	2016-2036	$132,919	RDDI	Area 09	16,308	5.0%	95.0%	$126,273	**$7.74**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Rotherwood St to Lennox St	Plan 2013									
645	Footpath Works	Renew-footpath works on Swan St from Mary St to Coppin St (Right footpath)	Road Management Plan 2013	2016-2036	$133,761	PADI	Area 09 Area 10	17,662	5.0%	95.0%	$127,073	**$7.19**
647	Pavement Works	Renew-pavement works on Rathdowne St from Curtain St to Newry St	Road Management Plan 2013	2016-2036	$252,953	PADI	Area 01	5,441	5.0%	95.0%	$240,305	**$44.16**
648	Footpath Works	Renew-footpath works on Station St from Lee St to Princes St (Right footpath)	Road Management Plan 2013	2016-2036	$136,284	PADI	Area 01	5,441	5.0%	95.0%	$129,470	**$23.79**
649	Pavement Works	Renew-pavement works on Buckingham St from Davison St to Bennett St	Road Management Plan 2013	2016-2036	$142,173	RDDI	Area 08	26,673	5.0%	95.0%	$135,064	**$5.06**
651	Pavement Works	Renew-pavement works on Gold St from Noone St to Page St	Road Management Plan 2013	2016-2036	$146,380	RDDI	Area 06	19,935	5.0%	95.0%	$139,061	**$6.98**
654	Pavement Works	Renew-pavement worksworks on Belgium Ave from Highett St to Vere St	Road Management Plan 2013	2016-2036	$167,411	DRDI	Area 08	15,316	5.0%	95.0%	$159,040	**$10.38**
655	Pavement Works	Renew-pavement works on Station St from Pigdon St to Richardson St	Road Management Plan 2013	2016-2036	$183,395	RDDI	Area 01	6,399	5.0%	95.0%	$174,225	**$27.23**
656	Pavement Works	Renew-pavement works on Cambridge St from Derby St to Victoria Pde	Road Management Plan 2013	2016-2036	$216,205	RDDI	Area 06	19,935	5.0%	95.0%	$205,395	**$10.30**
658	Pavement Works	Renew-pavement works on Corns Pl from Lennox St to Leigh PL	Road Management Plan 2013	2016-2036	$8,622	RDDI	Area 08	26,673	5.0%	95.0%	$8,191	**$0.31**
659	Pavement Works	Renew-pavement works on Little Victoria St from Little Napier St to Napier St	Road Management Plan 2013	2016-2036	$9,485	RDDI	Area 05	19,186	5.0%	95.0%	$9,011	**$0.47**
660	Footpath Works	Renew-footpath works on Paterson St from Marine Pde to Yarra St (Left footpath Year 9)	Road Management Plan 2013	2016-2036	$12,934	PADI	Area 07	12,872	5.0%	95.0%	$12,287	**$0.95**
661	Pavement Works	Renew-pavement works on Moor St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$133,377	PADI	Area 05	12,559	5.0%	95.0%	$126,708	**$10.09**
662	Pavement Works	Renew-pavement works on Kenny St from Bank St to	Road Management	2016-2036	$19,832	RDDI	Area 08	26,673	5.0%	95.0%	$18,840	**$0.71**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		End of street	Plan 2013									
663	Footpath Works	Renew-footpath works on Napier St from Johnston St to Chapel St (Right footpath)	Road Management Plan 2013	2016-2036	$22,419	PADI	Area 05	12,559	5.0%	95.0%	$21,298	**$1.70**
664	Pavement Works	Renew-pavement works on Goodwin St from Brighton St to Mary St	Road Management Plan 2013	2016-2036	$24,144	RDDI	Area 10	7,518	5.0%	95.0%	$22,937	**$3.05**
665	Pavement Works	Renew-pavement works on Kennedy St from Johnson St to End of street	Road Management Plan 2013	2016-2036	$27,593	RDDI	Area 08	26,673	5.0%	95.0%	$26,213	**$0.98**
666	Footpath Works	Renew-footpath works on Grattan Pl from Rowena Pde to Richmond Tce (Both footpaths)	Road Management Plan 2013	2016-2036	$28,455	PADI	Area 09	12,712	5.0%	95.0%	$27,032	**$2.13**
667	Footpath Works	Renew-footpath works on Moor St from Gore St to Smith St (Right footpath)	Road Management Plan 2013	2016-2036	$31,042	PADI	Area 05	12,559	5.0%	95.0%	$29,490	**$2.35**
668	Pavement Works	Renew-pavement works on McNamara St from Charles St to Mary St	Road Management Plan 2013	2016-2036	$31,042	RDDI	Area 09	16,308	5.0%	95.0%	$29,490	**$1.81**
669	Pavement Works	Renew-pavement works on Riverbrae Crt from End of street to Roemer Cres	Road Management Plan 2013	2016-2036	$31,904	RDDI	Area 04	6,255	5.0%	95.0%	$30,309	**$4.85**
670	Footpath Works	Renew-footpath works on Smith St from Leicester St to Rose St (Right footpath)	Road Management Plan 2013	2016-2036	$32,767	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$31,129	**$1.24**
671	Footpath Works	Renew-footpath works on Little Wellington St from Wellington St to Napoleon St (Right footpath)	Road Management Plan 2013	2016-2036	$33,629	PADI	Area 06	12,640	5.0%	95.0%	$31,948	**$2.53**
672	Pavement Works	Renew-pavement works on Little George St from Gertrude St to Little Victoria St (Pavement resheet)	Road Management Plan 2013	2016-2036	$33,629	RDDI	Area 05	19,186	5.0%	95.0%	$31,948	**$1.67**
673	Pavement Works	Renew-pavement works on Jubilee Pl from Johnson St to End of street	Road Management Plan 2013	2016-2036	$33,629	RDDI	Area 08	26,673	5.0%	95.0%	$31,948	**$1.20**
674	Footpath Works	Renew-footpath works on Hoddle St from Egan St to	Road Management	2016-2036	$37,078	PADI	Area 08	17,737	5.0%	95.0%	$35,224	**$1.99**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Freeman St	Plan 2013									
675	Footpath Works	Renew-footpath works on Groom St from Noone St to Alexandra Pde (Right footpath)	Road Management Plan 2013	2016-2036	$38,803	PADI	Area 03	4,024	5.0%	95.0%	$36,863	**$9.16**
677	Pavement Works	Renew-pavement works on Harvey St from Swan St to Lesney St	Road Management Plan 2013	2016-2036	$39,665	RDDI	Area 10	7,518	5.0%	95.0%	$37,682	**$5.01**
678	Footpath Works	Renew-footpath works on Hoddle St from Elizabeth St to York St	Road Management Plan 2013	2016-2036	$39,665	PADI	Area 08	17,737	5.0%	95.0%	$37,682	**$2.12**
679	Pavement Works	Renew-pavement works on Moor St from Nicholson St to Fitzroy St	Road Management Plan 2013	2016-2036	$199,841	PADI	Area 05	12,559	5.0%	95.0%	$189,849	**$15.12**
680	Footpath Works	Renew-footpath works on Johnston St from George St to Gore St (Right footpath)	Road Management Plan 2013	2016-2036	$40,527	PADI	Area 05	12,559	5.0%	95.0%	$38,501	**$3.07**
681	Pavement Works	Renew-pavement works on Gordon St from Church St to Chestnut St	Road Management Plan 2013	2016-2036	$109,336	PADI	Area 11	9,327	5.0%	95.0%	$103,869	**$11.14**
682	Pavement Works	Renew-pavement works on HILL St from Church St to Walnut St	Road Management Plan 2013	2016-2036	$41,390	RDDI	Area 11	10,158	5.0%	95.0%	$39,321	**$3.87**
684	Footpath Works	Renew-footpath works on Young St from Gertrude St to Victoria Pde (Rehabilitate left (east side) footpath)	Road Management Plan 2013	2016-2036	$43,114	PADI	Area 05	12,559	5.0%	95.0%	$40,958	**$3.26**
685	Footpath Works	Renew-footpath works on Cameron St from Bank St to Thomas St (Resheet south footpath sections)	Road Management Plan 2013	2016-2036	$43,114	PADI	Area 08	17,737	5.0%	95.0%	$40,958	**$2.31**
687	Footpath Works	Renew-footpath works on Hoddle St from York St to Egan St	Road Management Plan 2013	2016-2036	$45,701	PADI	Area 08	17,737	5.0%	95.0%	$43,416	**$2.45**
688	Footpath Works	Renew-footpath works on Hoddle St from Victoria St to Elizabeth St	Road Management Plan 2013	2016-2036	$45,701	PADI	Area 08	17,737	5.0%	95.0%	$43,416	**$2.45**
689	Pavement Works	Renew-pavement works on Murray St from Coppin St to Lord St	Road Management Plan 2013	2016-2036	$48,288	RDDI	Area 09	16,308	5.0%	95.0%	$45,874	**$2.81**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
690	Pavement Works	Renew-pavement works on Singleton St from Wellington St to Dight St	Road Management Plan 2013	2016-2036	$154,682	PADI	Area 06	12,640	5.0%	95.0%	$146,948	**$11.63**
692	Pavement Works	Renew-pavement works on Harmsworth St from Johnston St to Perry St	Road Management Plan 2013	2016-2036	$86,035	RDDI	Area 06	19,935	5.0%	95.0%	$81,733	**$4.10**
693	Footpath Works	Renew-footpath works on Rokeby St from Gipps St to Langridge St (Left footpath)	Road Management Plan 2013	2016-2036	$60,360	PADI	Area 06	12,640	5.0%	95.0%	$57,342	**$4.54**
694	Pavement Works	Renew-pavement works on Dorset St from Wellington St to End of street	Road Management Plan 2013	2016-2036	$60,360	RDDI	Area 06	19,935	5.0%	95.0%	$57,342	**$2.88**
695	Pavement Works	Renew-pavement works on Prince Patrick St from Church St to Brighton St	Road Management Plan 2013	2016-2036	$60,360	RDDI	Area 10 Area 11	17,676	5.0%	95.0%	$57,342	**$3.24**
696	Footpath Works	Renew-footpath works on Barkly St from Melville St to Pilkington St	Road Management Plan 2013	2016-2036	$61,223	PADI	Area 02	9,618	5.0%	95.0%	$58,162	**$6.05**
697	Footpath Works	Renew-footpath works on Barkly St from Pilkington St to St Georges Rd	Road Management Plan 2013	2016-2036	$61,223	PADI	Area 02	9,618	5.0%	95.0%	$58,162	**$6.05**
698	Footpath Works	Renew-footpath works on Woodhead St from Falconer St to Scotchmer St	Road Management Plan 2013	2016-2036	$61,223	PADI	Area 02	9,618	5.0%	95.0%	$58,162	**$6.05**
699	Footpath Works	Renew-footpath works on RAILWAY St from Brunswick St to Byrne St (Left footpath)	Road Management Plan 2013	2016-2036	$62,947	PADI	Area 02	9,618	5.0%	95.0%	$59,800	**$6.22**
700	Pavement Works	Renew-pavement works on Northunberland St from Wellington St to Rokeby St	Road Management Plan 2013	2016-2036	$105,200	RDDI	Area 06	19,935	5.0%	95.0%	$99,940	**$5.01**
701	Footpath Works	Renew-footpath works on Highett St from Church St to Belgium Ave (Rehabilitate footpath sections, both sides)	Road Management Plan 2013	2016-2036	$143,793	PADI	Area 08	17,737	5.0%	95.0%	$136,603	**$7.70**
702	Pavement Works	Renew-pavement works on Garton St from Park St to Lang St	Road Management Plan 2013	2016-2036	$124,170	PADI	Area 01	5,441	5.0%	95.0%	$117,962	**$21.68**
703	Footpath Works	Renew-footpath works on Punt Rd from MONASH FWY to Kelso St (Right	Road Management Plan 2013	2016-2036	$67,259	PADI	Area 11	9,327	5.0%	95.0%	$63,896	**$6.85**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		footpath)										
704	Pavement Works	Renew-pavement works on Gwynne St from MUNRO St to Balmain St	Road Management Plan 2013	2016-2036	$68,121	RDDI	Area 11	10,158	5.0%	95.0%	$64,715	**$6.37**
705	Pavement Works	Renew-pavement works on Langridge St from Oxford St to Wellington St	Road Management Plan 2013	2016-2036	$229,129	RDDI	Area 07	17,726	5.0%	95.0%	$217,673	**$12.28**
706	Footpath Works	Renew-footpath works on Queens Pde from Napier St to Jamieson St (Right footpath)	Road Management Plan 2013	2016-2036	$72,432	PADI	Area 02	9,618	5.0%	95.0%	$68,810	**$7.15**
707	Pavement Works	Renew-pavement works on Huckerby St from ROUT St to Blanche St	Road Management Plan 2013	2016-2036	$75,019	RDDI	Area 11	10,158	5.0%	95.0%	$71,268	**$7.02**
708	Footpath Works	Renew-footpath works on Caroline St from Berry St to Fenwick St (Rehabilitate footpath sections, both sides)	Road Management Plan 2013	2016-2036	$86,229	PADI	Area 03	4,024	5.0%	95.0%	$81,918	**$20.36**
709	Footpath Works	Renew-footpath works on Abinger St from Coppin St to Lord St	Road Management Plan 2013	2016-2036	$86,229	PADI	Area 09	12,712	5.0%	95.0%	$81,918	**$6.44**
710	Pavement Works	Renew-pavement works on Fraser St from Bridge Rd to Corsair St	Road Management Plan 2013	2016-2036	$251,112	PADI	Area 09	12,712	5.0%	95.0%	$238,556	**$18.77**
711	Pavement Works	Renew-pavement works on Langridge St from Smith St to Oxford St	Road Management Plan 2013	2016-2036	$213,545	RDDI	Area 07	17,726	5.0%	95.0%	$202,868	**$11.44**
712	Footpath Works	Renew-footpath works on Webb St from Napier St to George St	Road Management Plan 2013	2016-2036	$102,613	PADI	Area 05	12,559	5.0%	95.0%	$97,482	**$7.76**
715	Pavement Works	Renew-pavement works on Liverpool St from Nicholson St to Rae St (Road re sheet)	Road Management Plan 2013	2016-2036	$276,432	RDDI	Area 02	12,123	5.0%	95.0%	$262,610	**$21.66**
716	Footpath Works	Renew-footpath works on Wellington St from Parkins La to Blanche St (Left footpath)	Road Management Plan 2013	2016-2036	$106,062	PADI	Area 11	9,327	5.0%	95.0%	$100,759	**$10.80**
717	Footpath Works	Renew-footpath works on Talpin St from St Georges Rd to Park St (Both	Road Management Plan 2013	2016-2036	$108,649	PADI	Area 02	9,618	5.0%	95.0%	$103,217	**$10.73**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		footpaths)										
718	Footpath Works	Renew-footpath works on Michael St from Rowe St to McKean St (Right footpath)	Road Management Plan 2013	2016-2036	$112,960	PADI	Area 02	9,618	5.0%	95.0%	$107,312	**$11.16**
719	Pavement Works	Renew-pavement works on St Gothards Rd from Como St to Lucerne Cres	Road Management Plan 2013	2016-2036	$118,996	RDDI	Area 04	6,255	5.0%	95.0%	$113,046	**$18.07**
721	Footpath Works	Renew-footpath works on Gertrude St from Nicholson St to Fitzroy St (Right footpath)	Road Management Plan 2013	2016-2036	$121,583	PADI	Area 05	12,559	5.0%	95.0%	$115,504	**$9.20**
722	Pavement Works	Renew-pavement works on Garton St from Richardson St to MacPherson St	Road Management Plan 2013	2016-2036	$129,344	RDDI	Area 01	6,399	5.0%	95.0%	$122,877	**$19.20**
724	Pavement Works	Renew-pavement works on Moss St from Park St to Scotchmer St	Road Management Plan 2013	2016-2036	$133,656	RDDI	Area 02	12,123	5.0%	95.0%	$126,973	**$10.47**
726	Footpath Works	Renew-footpath works on Twickenham Cres from Gibdon St to Loyola Gr (Left footpath)	Road Management Plan 2013	2016-2036	$149,177	PADI	Area 10	4,950	5.0%	95.0%	$141,718	**$28.63**
727	Footpath Works	Renew-footpath works on Abbotsford St from Hunter St to Paterson St (Resheet footpath, both sides)	Road Management Plan 2013	2016-2036	$172,459	PADI	Area 07	12,872	5.0%	95.0%	$163,836	**$12.73**
728	Pavement Works	Renew-pavement works on Dyer St from Walker St to Spensley St	Road Management Plan 2013	2016-2036	$174,183	RDDI	Area 03	5,252	5.0%	95.0%	$165,474	**$31.51**
729	Pavement Works	Renew-pavement worksworks on Cambridge St from Stanley St to Peel St	Road Management Plan 2013	2016-2036	$181,944	DRDI	Area 06	11,064	5.0%	95.0%	$172,847	**$15.62**
730	Pavement Works	Renew-pavement works on Wellington St from Langridge St to Gipps St	Road Management Plan 2013	2016-2036	$250,853	DRDI	Area 06	11,064	5.0%	95.0%	$238,310	**$21.54**
731	Pavement Works	Renew-pavement works on Gold St from Page St to Hodgkinson St	Road Management Plan 2013	2016-2036	$236,269	RDDI	Area 06	19,935	5.0%	95.0%	$224,456	**$11.26**
732	Pavement Works	Renew-pavement works on Canterbury St from Boyd St to End of street	Road Management Plan 2013	2016-2036	$7,070	RDDI	Area 09	16,308	5.0%	95.0%	$6,717	**$0.41**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
733	Pavement Works	Renew-pavement works on Balmain St from Cubit St to Stephenson St	Road Management Plan 2013	2016-2036	$51,351	PADI	Area 11	9,327	5.0%	95.0%	$48,783	**$5.23**
734	Pavement Works	Renew-pavement works on Fraser St from Corsair St to Edinburgh St	Road Management Plan 2013	2016-2036	$12,373	RDDI	Area 09	16,308	5.0%	95.0%	$11,754	**$0.72**
735	Footpath Works	Renew-footpath works on Argyle St from Young St to Napier St (Left footpath)	Road Management Plan 2013	2016-2036	$15,025	PADI	Area 05	12,559	5.0%	95.0%	$14,274	**$1.14**
736	Footpath Works	Renew-footpath works on Green St from Swan St to End of street (Left footpath)	Road Management Plan 2013	2016-2036	$16,793	PADI	Area 10 Area 11	14,277	5.0%	95.0%	$15,953	**$1.12**
737	Footpath Works	Renew-footpath works on Tait St from Fergie St to End of street (Right footpath)	Road Management Plan 2013	2016-2036	$18,560	PADI	Area 02	9,618	5.0%	95.0%	$17,632	**$1.83**
738	Pavement Works	Renew-pavement works on Fitzgibbon St from Cubit St to Dover St	Road Management Plan 2013	2016-2036	$19,444	RDDI	Area 11	10,158	5.0%	95.0%	$18,472	**$1.82**
739	Footpath Works	Renew-footpath works on Holden St from Rae St to Brunswick St (Left footpath)	Road Management Plan 2013	2016-2036	$20,328	PADI	Area 02	9,618	5.0%	95.0%	$19,312	**$2.01**
740	Footpath Works	Renew-footpath works on Henry St from Newry St to End of street (Both footpaths)	Road Management Plan 2013	2016-2036	$20,328	PADI	Area 01	5,441	5.0%	95.0%	$19,312	**$3.55**
741	Pavement Works	Renew-pavement works on Allowah Tce from Bridge Rd to End of street	Road Management Plan 2013	2016-2036	$20,328	RDDI	Area 09	16,308	5.0%	95.0%	$19,312	**$1.18**
744	Pavement Works	Renew-pavement works on Davis St from Brighton St to Mary St	Road Management Plan 2013	2016-2036	$114,901	PADI	Area 10	4,950	5.0%	95.0%	$109,156	**$22.05**
745	Footpath Works	Renew-footpath works on Melrose St from Gough St to Kelso St (Left footpath)	Road Management Plan 2013	2016-2036	$28,283	PADI	Area 11	9,327	5.0%	95.0%	$26,869	**$2.88**
746	Footpath Works	Renew-footpath works on Dummett Cres from Queens Pde to Heidelberg Rd (Left footpath)	Road Management Plan 2013	2016-2036	$38,005	PADI	Area 03	4,024	5.0%	95.0%	$36,105	**$8.97**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
747	Pavement Works	Renew-pavement works on Church St from Buckingham St to Baker St	Road Management Plan 2013	2016-2036	$120,447	PADI	Area 08	17,737	5.0%	95.0%	$114,425	**$6.45**
748	Pavement Works	Renew-pavement works on Lego Pl from Bosisto St to End of street	Road Management Plan 2013	2016-2036	$39,773	RDDI	Area 08	26,673	5.0%	95.0%	$37,784	**$1.42**
749	Pavement Works	Renew-pavement works on NEW St from Egan St to York St	Road Management Plan 2013	2016-2036	$42,425	RDDI	Area 08	26,673	5.0%	95.0%	$40,304	**$1.51**
751	Pavement Works	Renew-pavement works on Budd St from Sackville St to Johnston St	Road Management Plan 2013	2016-2036	$53,915	RDDI	Area 06	19,935	5.0%	95.0%	$51,219	**$2.57**
752	Pavement Works	Renew-pavement works on Sheedy St from Coppin St to Mary St	Road Management Plan 2013	2016-2036	$53,915	RDDI	Area 09	16,308	5.0%	95.0%	$51,219	**$3.14**
753	Footpath Works	Renew-footpath works on Tyson St from Tanner St to Richmond Tce (Left footpath)	Road Management Plan 2013	2016-2036	$54,798	PADI	Area 09	12,712	5.0%	95.0%	$52,058	**$4.10**
754	Footpath Works	Renew-footpath works on Napier St from Argyle St to Johnston St	Road Management Plan 2013	2016-2036	$59,218	PADI	Area 05	12,559	5.0%	95.0%	$56,257	**$4.48**
756	Pavement Works	Renew-pavement works on Little Oxford St from Peel St to Langridge St	Road Management Plan 2013	2016-2036	$136,972	PADI	Area 06	12,640	5.0%	95.0%	$130,123	**$10.29**
757	Footpath Works	Renew-footpath works on Truro St from Hoddle St to entire length (Right footpath)	Road Management Plan 2013	2016-2036	$62,753	PADI	Area 07	12,872	5.0%	95.0%	$59,615	**$4.63**
758	Footpath Works	Renew-footpath works on Church St from Nicholson St to St Georges Rd	Road Management Plan 2013	2016-2036	$62,753	PADI	Area 02	9,618	5.0%	95.0%	$59,615	**$6.20**
760	Footpath Works	Renew-footpath works on Little Oxford St from Stanley St to Peel St (Right footpath)	Road Management Plan 2013	2016-2036	$69,824	PADI	Area 06	12,640	5.0%	95.0%	$66,333	**$5.25**
762	Footpath Works	Renew-footpath works on Langridge St from Hoddle St to Park St	Road Management Plan 2013	2016-2036	$73,359	PADI	Area 07	12,872	5.0%	95.0%	$69,691	**$5.41**
763	Footpath Works	Renew-footpath works on Tranmere St from Brunswick St to St Georges	Road Management Plan 2013	2016-2036	$74,243	PADI	Area 02	9,618	5.0%	95.0%	$70,531	**$7.33**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Rd (Right footpath)										
764	Pavement Works	Renew-pavement works on Lilly St from Ramsden St to Spensley St	Road Management Plan 2013	2016-2036	$75,127	RDDI	Area 03	5,252	5.0%	95.0%	$71,371	**$13.59**
766	Pavement Works	Renew-pavement works on Ferguson St from Victoria St to entire length	Road Management Plan 2013	2016-2036	$87,501	RDDI	Area 07	17,726	5.0%	95.0%	$83,126	**$4.69**
767	Pavement Works	Renew-pavement works on Rathdowne St from Lee St to Davis St (Road resheet, both sides)	Road Management Plan 2013	2016-2036	$90,153	RDDI	Area 01	6,399	5.0%	95.0%	$85,645	**$13.38**
768	Pavement Works	Renew-pavement works on Dove St from Stephenson St to End of street	Road Management Plan 2013	2016-2036	$98,107	RDDI	Area 11	10,158	5.0%	95.0%	$93,202	**$9.18**
769	Footpath Works	Renew-footpath works on Reid St from Rae St to Brunswick St (Left footpath)	Road Management Plan 2013	2016-2036	$101,643	PADI	Area 02	9,618	5.0%	95.0%	$96,561	**$10.04**
770	Footpath Works	Renew-footpath works on St David St from Young St to Napier St (Resheet north footpath)	Road Management Plan 2013	2016-2036	$104,294	PADI	Area 05	12,559	5.0%	95.0%	$99,079	**$7.89**
771	Pavement Works	Renew-pavement works on Madden Gr from Mary St to Coppin St	Road Management Plan 2013	2016-2036	$107,830	RDDI	Area 10	7,518	5.0%	95.0%	$102,439	**$13.62**
772	Pavement Works	Renew-pavement works on Rokeby St from Langridge St to Victoria Pde	Road Management Plan 2013	2016-2036	$110,481	RDDI	Area 06	19,935	5.0%	95.0%	$104,957	**$5.27**
774	Pavement Works	Renew-pavement works on Clarke St from North St to End of street	Road Management Plan 2013	2016-2036	$118,436	RDDI	Area 08	26,673	5.0%	95.0%	$112,514	**$4.22**
776	Pavement Works	Renew-pavement works on Benson St from Mary St to Coppin St	Road Management Plan 2013	2016-2036	$120,204	RDDI	Area 09	16,308	5.0%	95.0%	$114,194	**$7.00**
777	Footpath Works	Renew-footpath works on Hoddle St from Eastern Fwy to South Tce (Left footpath)	Road Management Plan 2013	2016-2036	$121,971	PADI	Area 03	4,024	5.0%	95.0%	$115,872	**$28.80**
778	Pavement Works	Renew-pavement works on Dickens St from Type St to Burnley St	Road Management Plan 2013	2016-2036	$122,855	RDDI	Area 09	16,308	5.0%	95.0%	$116,712	**$7.16**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
779	Footpath Works	Renew-footpath works on White St from Miller St to Boundary (Left footpath)	Road Management Plan 2013	2016-2036	$243,577	PADI	Area 02	9,618	5.0%	95.0%	$231,398	**$24.06**
782	Footpath Works	Renew-footpath works on Valiant St from Nicholson St to Johnston St (Both footpaths)	Road Management Plan 2013	2016-2036	$148,487	PADI	Area 07	12,872	5.0%	95.0%	$141,063	**$10.96**
784	Pavement Works	Renew-pavement works on Harmsworth St from Perry St to Vere St	Road Management Plan 2013	2016-2036	$229,802	RDDI	Area 06	19,935	5.0%	95.0%	$218,312	**$10.95**
785	Footpath Works	Renew-footpath works on O'Grady St from Berry St to Fenwick St (Both footpaths)	Road Management Plan 2013	2016-2036	$170,583	PADI	Area 03	4,024	5.0%	95.0%	$162,054	**$40.28**
786	Footpath Works	Renew-footpath works on Victoria Pde from Wellington St to Rokeby St (Left footpath)	Road Management Plan 2013	2016-2036	$187,377	PADI	Area 06	12,640	5.0%	95.0%	$178,008	**$14.08**
787	Pavement Works	Renew-pavement worksworks on Nicholson St from Scotchmer St to Reid St (Right kerb)	Road Management Plan 2013	2016-2036	$190,028	DRDI	Area 01 Area 02	14,462	5.0%	95.0%	$180,527	**$12.48**
788	Footpath Works	Renew-footpath works on Wellington St from Blanche St to Swan St (Both footpaths)	Road Management Plan 2013	2016-2036	$197,983	PADI	Area 11	9,327	5.0%	95.0%	$188,084	**$20.17**
789	Pavement Works	Renew-pavement works on Lennox St from Highett St to Erin St	Road Management Plan 2013	2016-2036	$209,473	RDDI	Area 08	26,673	5.0%	95.0%	$198,999	**$7.46**
790	Footpath Works	Renew-footpath works on Mark St from Tait St to Scotchmer St (Right footpath)	Road Management Plan 2013	2016-2036	$922,743	PADI	Area 02	9,618	5.0%	95.0%	$876,606	**$91.15**
792	Pavement Works	Renew-pavement works on Princess St from Abinger St to End of street	Road Management Plan 2013	2016-2036	$18,119	RDDI	Area 09	16,308	5.0%	95.0%	$17,213	**$1.06**
795	Footpath Works	Renew-footpath works on Brown St from Langridge St to entire length (Left footpath)	Road Management Plan 2013	2016-2036	$21,742	PADI	Area 06	12,640	5.0%	95.0%	$20,655	**$1.63**
796	Footpath Works	Renew-footpath works on Curtain Pl from York St to End of street (Left	Road Management Plan 2013	2016-2036	$24,460	PADI	Area 02	9,618	5.0%	95.0%	$23,237	**$2.42**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		footpath)										
797	Pavement Works	Renew-pavement works on Rae St from Annand St to Watkins St	Road Management Plan 2013	2016-2036	$84,255	PADI	Area 02	9,618	5.0%	95.0%	$80,042	**$8.32**
798	Pavement Works	Renew-pavement works on Oakes St from Adams St to Como St	Road Management Plan 2013	2016-2036	$45,960	RDDI	Area 04	6,255	5.0%	95.0%	$43,662	**$6.98**
799	Pavement Works	Renew-pavement works on Palmer St from Johnston St to Perry St	Road Management Plan 2013	2016-2036	$98,792	PADI	Area 06	12,640	5.0%	95.0%	$93,852	**$7.43**
800	Footpath Works	Renew-footpath works on Bundara St from Barkly St to End of street (Left footpath)	Road Management Plan 2013	2016-2036	$28,084	PADI	Area 02	9,618	5.0%	95.0%	$26,680	**$2.77**
801	Footpath Works	Renew-footpath works on Blanche St from Punt Rd to Cremorne St	Road Management Plan 2013	2016-2036	$57,295	PADI	Area 11	9,327	5.0%	95.0%	$54,430	**$5.84**
802	Footpath Works	Renew-footpath works on Byron St from Swan St to End of street (Both footpaths)	Road Management Plan 2013	2016-2036	$38,049	PADI	Area 10 Area 11	14,277	5.0%	95.0%	$36,147	**$2.53**
804	Footpath Works	Renew-footpath works on Gipps St from Clifton St to Lennox St	Road Management Plan 2013	2016-2036	$41,673	PADI	Area 09	12,712	5.0%	95.0%	$39,589	**$3.11**
805	Footpath Works	Renew-footpath works on Caroline St from Fenwick St to Yambla St	Road Management Plan 2013	2016-2036	$45,297	PADI	Area 03	4,024	5.0%	95.0%	$43,032	**$10.69**
806	Footpath Works	Renew-footpath works on Fenwick St from Ramsden St to Wight St	Road Management Plan 2013	2016-2036	$48,015	PADI	Area 03	4,024	5.0%	95.0%	$45,614	**$11.34**
807	Pavement Works	Renew-pavement works on Fitzroy St from Alexandra Pde to Cecil St (Re sheet road pavement)	Road Management Plan 2013	2016-2036	$48,921	RDDI	Area 05	19,186	5.0%	95.0%	$46,475	**$2.42**
809	Footpath Works	Renew-footpath works on Gipps St from Church St to Clifton St	Road Management Plan 2013	2016-2036	$49,827	PADI	Area 09	12,712	5.0%	95.0%	$47,336	**$3.72**
810	Footpath Works	Renew-footpath works on Amess St from MacPherson St to Fenwick St	Road Management Plan 2013	2016-2036	$50,733	PADI	Area 01	5,441	5.0%	95.0%	$48,196	**$8.86**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
811	Footpath Works	Renew-footpath works on Condell St from Young St to Napier St (Right footpath)	Road Management Plan 2013	2016-2036	$51,639	PADI	Area 05	12,559	5.0%	95.0%	$49,057	**$3.91**
812	Pavement Works	Renew-pavement worksworks on Napier St from Leicester St to Rose St	Road Management Plan 2013	2016-2036	$51,639	DRDI	Area 05	10,669	5.0%	95.0%	$49,057	**$4.60**
813	Pavement Works	Renew-pavement works on Fenwick St from Wright St to Spensley St	Road Management Plan 2013	2016-2036	$357,779	PADI	Area 03	4,024	5.0%	95.0%	$339,890	**$84.47**
814	Footpath Works	Renew-footpath works on Brunswick St from Newry St to York St	Road Management Plan 2013	2016-2036	$141,492	PADI	Area 05	12,559	5.0%	95.0%	$134,417	**$10.70**
815	Pavement Works	Renew-pavement works on Rathdowne St from Fenwick St to Curtain St	Road Management Plan 2013	2016-2036	$58,886	RDDI	Area 01	6,399	5.0%	95.0%	$55,942	**$8.74**
816	Footpath Works	Renew-footpath works on Nicholson St from Langridge St to Victoria St	Road Management Plan 2013	2016-2036	$59,792	PADI	Area 07	12,872	5.0%	95.0%	$56,802	**$4.41**
818	Pavement Works	Renew-pavement works on Hanover St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$65,228	RDDI	Area 05	19,186	5.0%	95.0%	$61,967	**$3.23**
820	Pavement Works	Renew-pavement works on Dunn St from Stephenson St to Green St	Road Management Plan 2013	2016-2036	$67,946	RDDI	Area 11	10,158	5.0%	95.0%	$64,549	**$6.35**
822	Footpath Works	Renew-footpath works on Docker St from Gipps St to Richmond Tce	Road Management Plan 2013	2016-2036	$67,946	PADI	Area 09	12,712	5.0%	95.0%	$64,549	**$5.08**
823	Pavement Works	Renew-pavement works on Docker St from Swan St to Gipps St	Road Management Plan 2013	2016-2036	$101,117	PADI	Area 09	12,712	5.0%	95.0%	$96,061	**$7.56**
824	Pavement Works	Renew-pavement works on Burgess St from Mary St to Brighton St	Road Management Plan 2013	2016-2036	$71,570	RDDI	Area 10	7,518	5.0%	95.0%	$67,992	**$9.04**
825	Footpath Works	Renew-footpath works on Scotchmer St from Brunswick St to Birkenhead St	Road Management Plan 2013	2016-2036	$78,817	PADI	Area 02	9,618	5.0%	95.0%	$74,876	**$7.79**
827	Footpath Works	Renew-footpath works on Rae St from Barkly St to Holden St (Right footpath)	Road Management Plan 2013	2016-2036	$84,253	PADI	Area 02	9,618	5.0%	95.0%	$80,040	**$8.32**
829	Footpath Works	Renew-footpath works on Fitzroy St from Hanover St	Road Management	2016-2036	$87,877	PADI	Area 05	12,559	5.0%	95.0%	$83,483	**$6.65**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		to Palmer St (Left footpath)	Plan 2013									
830	Footpath Works	Renew-footpath works on Gertrude St from Brunswick St to Young St (Right footpath)	Road Management Plan 2013	2016-2036	$96,030	PADI	Area 05	12,559	5.0%	95.0%	$91,229	**$7.26**
831	Pavement Works	Renew-pavement works on Bowen St from Lennox St to End of street	Road Management Plan 2013	2016-2036	$101,466	RDDI	Area 08	26,673	5.0%	95.0%	$96,393	**$3.61**
832	Footpath Works	Renew-footpath works on Chestnut St from Adolph St to Chapel St	Road Management Plan 2013	2016-2036	$105,996	PADI	Area 11	9,327	5.0%	95.0%	$100,696	**$10.80**
833	Footpath Works	Renew-footpath works on Oxford St from Stanley St to Peel St (Resheet west footpath)	Road Management Plan 2013	2016-2036	$111,431	PADI	Area 06	12,640	5.0%	95.0%	$105,859	**$8.37**
834	Footpath Works	Renew-footpath works on Strode St from Sherwood St to End of street (Both footpaths)	Road Management Plan 2013	2016-2036	$134,080	PADI	Area 09	12,712	5.0%	95.0%	$127,376	**$10.02**
838	Pavement Works	Renew-pavement works on Gardner St from Kent St to Bennett St	Road Management Plan 2013	2016-2036	$166,694	RDDI	Area 08	26,673	5.0%	95.0%	$158,359	**$5.94**
839	Pavement Works	Renew-pavement works on St Georges Rd from Brunswick St to Church St	Road Management Plan 2013	2016-2036	$302,397	PADI	Area 02	9,618	5.0%	95.0%	$287,277	**$29.87**
840	Pavement Works	Renew-pavement works on Madden Gr from Gibdon St to Loyola Gr (Road resheet)	Road Management Plan 2013	2016-2036	$171,224	RDDI	Area 10	7,518	5.0%	95.0%	$162,663	**$21.64**
841	Pavement Works	Renew-pavement works on Duke St from Swan St to Wall St	Road Management Plan 2013	2016-2036	$176,660	RDDI	Area 09	16,308	5.0%	95.0%	$167,827	**$10.29**
842	Pavement Works	Renew-pavement works on Hanover St from Nicholson St to Fitzroy St	Road Management Plan 2013	2016-2036	$244,193	RDDI	Area 05	19,186	5.0%	95.0%	$231,983	**$12.09**
843	Footpath Works	Renew-footpath works on Spensley St from Fenwick St to Dyer St (Both footpath)	Road Management Plan 2013	2016-2036	$193,873	PADI	Area 03	4,024	5.0%	95.0%	$184,179	**$45.77**
844	Pavement Works	Renew-pavement works on Bendigo St from Khartoum St to Vesper St	Road Management Plan 2013	2016-2036	$206,556	RDDI	Area 09	16,308	5.0%	95.0%	$196,228	**$12.03**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
846	Pavement Works	Renew-pavement worksworks on Drummond St from Richardson St to Pigdon St	Road Management Plan 2013	2016-2036	$257,289	DRDI	Area 01	5,243	5.0%	95.0%	$244,425	**$46.61**
847	Footpath Works	Renew-footpath works on Turnbull St from Heidelberg Rd to North Tce (Both footpaths)	Road Management Plan 2013	2016-2036	$270,879	PADI	Area 03	4,024	5.0%	95.0%	$257,335	**$63.96**
848	Footpath Works	Renew-footpath works on Reid St from Nicholson St to Rae St	Road Management Plan 2013	2016-2036	$64,435	PADI	Area 02	9,618	5.0%	95.0%	$61,213	**$6.36**
849	Pavement Works	Renew-pavement works on Bedford St from Perry St to Otter St	Road Management Plan 2013	2016-2036	$36,215	RDDI	Area 06	19,935	5.0%	95.0%	$34,404	**$1.73**
851	Pavement Works	Renew-pavement works on George St from Cecil St to Westgarth St	Road Management Plan 2013	2016-2036	$102,757	PADI	Area 05	12,559	5.0%	95.0%	$97,619	**$7.77**
852	Pavement Works	Renew-pavement works on George St from Leicester St to Rose St	Road Management Plan 2013	2016-2036	$68,539	PADI	Area 05	12,559	5.0%	95.0%	$65,112	**$5.18**
853	Pavement Works	Renew-pavement works on George St from Westgarth St to Leicester St	Road Management Plan 2013	2016-2036	$69,515	PADI	Area 05	12,559	5.0%	95.0%	$66,039	**$5.26**
854	Footpath Works	Renew-footpath works on George St from Alexandra Pde to Cecil St	Road Management Plan 2013	2016-2036	$52,930	PADI	Area 05	12,559	5.0%	95.0%	$50,284	**$4.00**
856	Footpath Works	Renew-footpath works on Brunswick St from Reid St to St Georges Rd	Road Management Plan 2013	2016-2036	$118,589	PADI	Area 05	12,559	5.0%	95.0%	$112,660	**$8.97**
857	Footpath Works	Renew-footpath works on Freeman St from Rae St to Brunswick St	Road Management Plan 2013	2016-2036	$118,589	PADI	Area 02	9,618	5.0%	95.0%	$112,660	**$11.71**
858	Footpath Works	Renew-footpath works on Freeman St from St Georges Rd to Rae St	Road Management Plan 2013	2016-2036	$118,589	PADI	Area 02	9,618	5.0%	95.0%	$112,660	**$11.71**
859	Pavement Works	Renew-pavement works on Latrobe Ave from Lugton St to Heidelberg Rd	Road Management Plan 2013	2016-2036	$525,994	DRDI	Area 04	4,147	5.0%	95.0%	$499,694	**$120.51**
860	Pavement Works	Renew-pavement worksworks on Clifton Ave from Ramsden St to Roseneath St (Both sides	Road Management Plan 2013	2016-2036	$464,299	DRDI	Area 03	3,983	5.0%	95.0%	$441,084	**$110.74**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		selective repairs and footpath)										
861	Pavement Works	Renew-pavement works on Easey St from Wellington St to Gold St	Road Management Plan 2013	2016-2036	$752,561	DRDI	Area 06	11,064	5.0%	95.0%	$714,933	**$64.62**
862	Pavement Works	Renew-pavement works on Lithgow St from Mollison St to Victoria St	Road Management Plan 2013	2016-2036	$1,013,599	PADI	Area 07	12,872	5.0%	95.0%	$962,919	**$74.81**
863	Footpath Works	Renew-footpath works on Clifton St from Spensley St to Little Edmund St (Left footpath)	Road Management Plan 2013	2016-2036	$928,599	PADI	Area 03	4,024	5.0%	95.0%	$882,169	**$219.25**
864	Pavement Works	Renew-pavement works on Victoria St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$138,356	PADI	Area 05	12,559	5.0%	95.0%	$131,438	**$10.47**
866	Footpath Works	Renew-footpath works on Clifton St from Gipps St to Richmond Tce	Road Management Plan 2013	2016-2036	$19,036	PADI	Area 09	12,712	5.0%	95.0%	$18,084	**$1.42**
867	Pavement Works	Renew-pavement worksworks on Nicholson St from Sailsbury Cres to Brooks Cres	Road Management Plan 2013	2016-2036	$52,817	DRDI	Area 01 Area 02	14,462	5.0%	95.0%	$50,176	**$3.47**
868	Pavement Works	Renew-pavement works on Gore St from Little Victoria St to Victoria Pde	Road Management Plan 2013	2016-2036	$74,514	PADI	Area 05	12,559	5.0%	95.0%	$70,788	**$5.64**
869	Footpath Works	Renew-footpath works on Best St from Scotchmer St to St Georges Rd	Road Management Plan 2013	2016-2036	$33,313	PADI	Area 02	9,618	5.0%	95.0%	$31,647	**$3.29**
870	Footpath Works	Renew-footpath works on Gore St from Webb St to Gertrude St	Road Management Plan 2013	2016-2036	$38,072	PADI	Area 05	12,559	5.0%	95.0%	$36,168	**$2.88**
871	Footpath Works	Renew-footpath works on Paterson St from Arnold St to Wilson St (Right footpath)	Road Management Plan 2013	2016-2036	$59,964	PADI	Area 01	5,441	5.0%	95.0%	$56,966	**$10.47**
873	Pavement Works	Renew-pavement worksworks on Best St from Park St to Scotchmer St	Road Management Plan 2013	2016-2036	$145,253	DRDI	Area 02	9,218	5.0%	95.0%	$137,990	**$14.97**
874	Pavement Works	Renew-pavement worksworks on Stephenson	Road Management	2016-2036	$117,182	DRDI	Area 11	6,308	5.0%	95.0%	$111,323	**$17.65**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		St from Dunn St to Cubit St	Plan 2013									
875	Pavement Works	Renew-pavement works on Doonside St from Burnley St to David St	Road Management Plan 2013	2016-2036	$251,707	DRDI	Area 08	15,316	5.0%	95.0%	$239,122	**$15.61**
876	Pavement Works	Renew-pavement works on McKean St from Delbridge St to Michael St	Road Management Plan 2013	2016-2036	$136,218	PADI	Area 02	9,618	5.0%	95.0%	$129,407	**$13.46**
878	Footpath Works	Renew-footpath works on McKean St from Michael St to Rushall Cres	Road Management Plan 2013	2016-2036	$208,752	PADI	Area 02	9,618	5.0%	95.0%	$198,314	**$20.62**
879	Pavement Works	Renew-pavement works on Scotchmer St from Nicholson St to Rae St	Road Management Plan 2013	2016-2036	$449,027	DRDI	Area 02	9,218	5.0%	95.0%	$426,576	**$46.28**
881	Pavement Works	Renew-pavement worksworks on St Heliers St from Clarke St to entire length	Road Management Plan 2013	2016-2036	$179,892	DRDI	Area 07	11,166	5.0%	95.0%	$170,897	**$15.31**
884	Footpath Works	Renew-footpath works on Hunter St from Marine Pde to Valiant St (Right footpath)	Road Management Plan 2013	2016-2036	$951,814	PADI	Area 07	12,872	5.0%	95.0%	$904,223	**$70.25**
885	Footpath Works	Renew-footpath works on Groom St from Roseneath St to Noone St (Both footpaths)	Road Management Plan 2013	2016-2036	$951,814	PADI	Area 03	4,024	5.0%	95.0%	$904,223	**$224.73**
886	Footpath Works	Renew-footpath works on Marion St from Fitzroy St to End of street	Road Management Plan 2013	2016-2036	$1,951	PADI	Area 05	12,559	5.0%	95.0%	$1,853	**$0.15**
887	Pavement Works	Renew-pavement works on Little Napier St from Little Victoria St to Gertrude St	Road Management Plan 2013	2016-2036	$67,388	PADI	Area 05	12,559	5.0%	95.0%	$64,019	**$5.10**
888	Footpath Works	Renew-footpath works on Belgravia St from Swan St to End of street	Road Management Plan 2013	2016-2036	$4,878	PADI	Area 09	12,712	5.0%	95.0%	$4,634	**$0.36**
889	Pavement Works	Renew-pavement works on Howe St from Michael St to End of street	Road Management Plan 2013	2016-2036	$45,519	PADI	Area 02	9,618	5.0%	95.0%	$43,243	**$4.50**
890	Footpath Works	Renew-footpath works on Cecil St from Brunswick St to Young St (Left footpath)	Road Management Plan 2013	2016-2036	$6,829	PADI	Area 05	12,559	5.0%	95.0%	$6,488	**$0.52**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
891	Footpath Works	Renew-footpath works on Condell St from George St to Gore St (Resheet north footpath)	Road Management Plan 2013	2016-2036	$6,829	PADI	Area 05	12,559	5.0%	95.0%	$6,488	**$0.52**
893	Footpath Works	Renew-footpath works on Rose St from George St to Gore St (Resheet footpath both sides)	Road Management Plan 2013	2016-2036	$6,829	PADI	Area 05	12,559	5.0%	95.0%	$6,488	**$0.52**
894	Footpath Works	Renew-footpath works on Young St from Moor St to King William St	Road Management Plan 2013	2016-2036	$6,829	RDDI	Area 05	19,186	5.0%	95.0%	$6,488	**$0.34**
895	Footpath Works	Renew-footpath works on Young St from Alexandra Pde to Cecil St (Right footpath)	Road Management Plan 2013	2016-2036	$108,580	PADI	Area 05	12,559	5.0%	95.0%	$103,151	**$8.21**
896	Footpath Works	Renew-footpath works on Condell St from Napier St to George St (Resheet footpath, both sides)	Road Management Plan 2013	2016-2036	$7,804	PADI	Area 05	12,559	5.0%	95.0%	$7,414	**$0.59**
897	Footpath Works	Renew-footpath works on James St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$8,780	PADI	Area 05	12,559	5.0%	95.0%	$8,341	**$0.66**
898	Footpath Works	Renew-footpath works on Kelso St from Cubit St to Cremorne St	Road Management Plan 2013	2016-2036	$8,780	PADI	Area 11	9,327	5.0%	95.0%	$8,341	**$0.89**
899	Footpath Works	Renew-footpath works on Leigh Pl from Bridge Rd to Erin St	Road Management Plan 2013	2016-2036	$9,756	PADI	Area 08	17,737	5.0%	95.0%	$9,268	**$0.52**
900	Footpath Works	Renew-footpath works on Glasshouse Rd from Wellington St to Rokeby St	Road Management Plan 2013	2016-2036	$31,313	PADI	Area 06	12,640	5.0%	95.0%	$29,747	**$2.35**
901	Footpath Works	Renew-footpath works on Stephenson St from Cubit St to Cremorne St (Left footpath)	Road Management Plan 2013	2016-2036	$10,731	PADI	Area 11	9,327	5.0%	95.0%	$10,194	**$1.09**
902	Pavement Works	Renew-pavement works on Rochester St from Chapel St to Johnston St	Road Management Plan 2013	2016-2036	$58,783	PADI	Area 05	12,559	5.0%	95.0%	$55,844	**$4.45**
903	Pavement Works	Renew-pavement works on Stephenson St from Balmain St to Kelso St	Road Management Plan 2013	2016-2036	$76,363	PADI	Area 11	9,327	5.0%	95.0%	$72,545	**$7.78**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
904	Footpath Works	Renew-footpath works on Gipps St from Victoria Cres to End of street (Both footpaths selective kerb & channel repairs)	Road Management Plan 2013	2016-2036	$11,707	PADI	Area 06	12,640	5.0%	95.0%	$11,122	**$0.88**
905	Footpath Works	Renew-footpath works on George St from Condell St to Charles St	Road Management Plan 2013	2016-2036	$11,707	PADI	Area 05	12,559	5.0%	95.0%	$11,122	**$0.89**
906	Footpath Works	Renew-footpath works on Brighton St from Cotter St to Barkly Ave	Road Management Plan 2013	2016-2036	$11,707	PADI	Area 10 Area 11	14,277	5.0%	95.0%	$11,122	**$0.78**
907	Footpath Works	Renew-footpath works on Marine Pde from Nicholson St to Hunter St (Right footpath)	Road Management Plan 2013	2016-2036	$43,526	PADI	Area 07	12,872	5.0%	95.0%	$41,350	**$3.21**
908	Footpath Works	Renew-footpath works on George St from Charles St to Webb St	Road Management Plan 2013	2016-2036	$12,682	PADI	Area 05	12,559	5.0%	95.0%	$12,048	**$0.96**
909	Footpath Works	Renew-footpath works on George St from Moor St to Condell St	Road Management Plan 2013	2016-2036	$12,682	PADI	Area 05	12,559	5.0%	95.0%	$12,048	**$0.96**
910	Footpath Works	Renew-footpath works on Webb St from George St to Gore St (Left footpath)	Road Management Plan 2013	2016-2036	$54,746	PADI	Area 05	12,559	5.0%	95.0%	$52,009	**$4.14**
912	Pavement Works	Renew-pavement works on Palmer St from Coppin St to Griffiths St	Road Management Plan 2013	2016-2036	$159,516	PADI	Area 08	17,737	5.0%	95.0%	$151,540	**$8.54**
913	Footpath Works	Renew-footpath works on Brunswick St from Alexandra Pde to Cecil St	Road Management Plan 2013	2016-2036	$14,634	PADI	Area 02 Area 05	22,176	5.0%	95.0%	$13,902	**$0.63**
914	Footpath Works	Renew-footpath works on George St from Greeves St to St David St	Road Management Plan 2013	2016-2036	$14,634	PADI	Area 05	12,559	5.0%	95.0%	$13,902	**$1.11**
915	Footpath Works	Renew-footpath works on Little Charles St from Napier St to George St (Resheet footpath)	Road Management Plan 2013	2016-2036	$14,634	PADI	Area 05	12,559	5.0%	95.0%	$13,902	**$1.11**
916	Footpath Works	Renew-footpath works on Rose St from Brighton St to Mary St (Sections of both footpaths)	Road Management Plan 2013	2016-2036	$14,634	PADI	Area 10	4,950	5.0%	95.0%	$13,902	**$2.81**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
917	Footpath Works	Renew-footpath works on Wellington St from Gipps St to Singleton St	Road Management Plan 2013	2016-2036	$15,609	PADI	Area 06	12,640	5.0%	95.0%	$14,829	**$1.17**
918	Footpath Works	Renew-footpath works on Wellington St from Perry St to Johnston St	Road Management Plan 2013	2016-2036	$15,609	PADI	Area 06	12,640	5.0%	95.0%	$14,829	**$1.17**
921	Footpath Works	Renew-footpath works on Chapel St from Green St to Walnut St	Road Management Plan 2013	2016-2036	$15,609	PADI	Area 11	9,327	5.0%	95.0%	$14,829	**$1.59**
923	Footpath Works	Renew-footpath works on MacPherson St from Amess St to Canning St (Left footpath)	Road Management Plan 2013	2016-2036	$16,585	PADI	Area 01	5,441	5.0%	95.0%	$15,756	**$2.90**
924	Footpath Works	Renew-footpath works on Brunswick St from Freeman St to Newry St	Road Management Plan 2013	2016-2036	$17,560	PADI	Area 05	12,559	5.0%	95.0%	$16,682	**$1.33**
925	Footpath Works	Renew-footpath works on George St from St David St to Moor St	Road Management Plan 2013	2016-2036	$17,560	PADI	Area 05	12,559	5.0%	95.0%	$16,682	**$1.33**
926	Footpath Works	Renew-footpath works on Napier St from Freeman St to Newry St (right footpath)	Road Management Plan 2013	2016-2036	$17,560	PADI	Area 05	12,559	5.0%	95.0%	$16,682	**$1.33**
927	Footpath Works	Renew-footpath works on Young St from Johnston St to Greeves St	Road Management Plan 2013	2016-2036	$17,560	PADI	Area 05	12,559	5.0%	95.0%	$16,682	**$1.33**
928	Footpath Works	Renew-footpath works on Curtain St from Lygon St to Drummond St (Resheet north footpath)	Road Management Plan 2013	2016-2036	$17,560	PADI	Area 01	5,441	5.0%	95.0%	$16,682	**$3.07**
929	Footpath Works	Renew-footpath works on Fenwick St from Drummond St to Lygon St	Road Management Plan 2013	2016-2036	$17,560	PADI	Area 01	5,441	5.0%	95.0%	$16,682	**$3.07**
930	Footpath Works	Renew-footpath works on David St from Appleton St to End of street (Right footpath)	Road Management Plan 2013	2016-2036	$56,516	PADI	Area 08	17,737	5.0%	95.0%	$53,690	**$3.03**
931	Footpath Works	Renew-footpath works on Gwynne St from Kelso St to Stephenson St	Road Management Plan 2013	2016-2036	$18,536	PADI	Area 11	9,327	5.0%	95.0%	$17,609	**$1.89**
932	Footpath Works	Renew-footpath works on Alexandra Pde from Gore St to Smith St (Right footpath)	Road Management Plan 2013	2016-2036	$18,536	PADI	Area 02 Area 05	22,176	5.0%	95.0%	$17,609	**$0.79**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
933	Footpath Works	Renew-footpath works on Thompson St from Victoria St to Nelson St (Left footpath)	Road Management Plan 2013	2016-2036	$105,154	PADI	Area 07	12,872	5.0%	95.0%	$99,896	**$7.76**
935	Footpath Works	Renew-footpath works on Scotchmer St from Rae St to Brunswick St (Left footpath)	Road Management Plan 2013	2016-2036	$107,389	PADI	Area 02	9,618	5.0%	95.0%	$102,020	**$10.61**
937	Footpath Works	Renew-footpath works on Victoria St from Little Lithgow St to Albert St	Road Management Plan 2013	2016-2036	$20,487	PADI	Area 07 Area 08	30,609	5.0%	95.0%	$19,463	**$0.64**
938	Footpath Works	Renew-footpath works on Smith St from Little Victoria St to Victoria Pde	Road Management Plan 2013	2016-2036	$21,463	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$20,390	**$0.81**
939	Footpath Works	Renew-footpath works on Green St from Adelaide St to Chapel St	Road Management Plan 2013	2016-2036	$21,463	PADI	Area 11	9,327	5.0%	95.0%	$20,390	**$2.19**
940	Footpath Works	Renew-footpath works on Lennox St from Goodwood St to Rowena Pde (Both footpaths)	Road Management Plan 2013	2016-2036	$113,384	PADI	Area 09	12,712	5.0%	95.0%	$107,715	**$8.47**
941	Footpath Works	Renew-footpath works on Napier St from Condell St to Charles St (Resheet east footpath)	Road Management Plan 2013	2016-2036	$23,414	PADI	Area 05	12,559	5.0%	95.0%	$22,243	**$1.77**
942	Footpath Works	Renew-footpath works on Reeves St from Alexandra Pde to Council St	Road Management Plan 2013	2016-2036	$23,414	PADI	Area 03	4,024	5.0%	95.0%	$22,243	**$5.53**
943	Pavement Works	Renew-pavement works on St Georges Rd from Freeman St to Newry St	Road Management Plan 2013	2016-2036	$233,683	PADI	Area 02	9,618	5.0%	95.0%	$221,999	**$23.08**
944	Pavement Works	Renew-pavement works on Lygon St from Curtain St to Newry St	Road Management Plan 2013	2016-2036	$106,464	PADI	Area 01	5,441	5.0%	95.0%	$101,141	**$18.59**
945	Footpath Works	Renew-footpath works on Newry St from Drummond St to Lygon St (Right footpath)	Road Management Plan 2013	2016-2036	$24,390	PADI	Area 01	5,441	5.0%	95.0%	$23,171	**$4.26**
946	Footpath Works	Renew-footpath works on Darlington Pde from Waltham St to Church St	Road Management Plan 2013	2016-2036	$25,365	PADI	Area 09	12,712	5.0%	95.0%	$24,097	**$1.90**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
947	Footpath Works	Renew-footpath works on Station St from MacPherson St to Fenwick St	Road Management Plan 2013	2016-2036	$25,365	PADI	Area 01	5,441	5.0%	95.0%	$24,097	**$4.43**
948	Footpath Works	Renew-footpath works on Russell St from Gipps St to Langridge St (Resheet west footpath)	Road Management Plan 2013	2016-2036	$26,341	PADI	Area 07	12,872	5.0%	95.0%	$25,024	**$1.94**
949	Footpath Works	Renew-footpath works on Johnston St from Brunswick St to Young St	Road Management Plan 2013	2016-2036	$26,341	PADI	Area 05	12,559	5.0%	95.0%	$25,024	**$1.99**
950	Footpath Works	Renew-footpath works on Alexandra Pde from Wellington St to Gold St	Road Management Plan 2013	2016-2036	$99,207	PADI	Area 02 Area 03	13,641	5.0%	95.0%	$94,247	**$6.91**
951	Footpath Works	Renew-footpath works on St Georges Rd from Holden St to Park St	Road Management Plan 2013	2016-2036	$79,372	PADI	Area 02	9,618	5.0%	95.0%	$75,403	**$7.84**
953	Footpath Works	Renew-footpath works on Gertrude St from George St to Gore St	Road Management Plan 2013	2016-2036	$60,903	PADI	Area 05	12,559	5.0%	95.0%	$57,858	**$4.61**
954	Footpath Works	Renew-footpath works on Gertrude St from Gore St to Smith St	Road Management Plan 2013	2016-2036	$60,903	PADI	Area 05	12,559	5.0%	95.0%	$57,858	**$4.61**
955	Footpath Works	Renew-footpath works on Gertrude St from Napier St to George St	Road Management Plan 2013	2016-2036	$60,903	PADI	Area 05	12,559	5.0%	95.0%	$57,858	**$4.61**
956	Footpath Works	Renew-footpath works on Drummond St from Curtain St to Fenwick St	Road Management Plan 2013	2016-2036	$28,292	PADI	Area 01	5,441	5.0%	95.0%	$26,877	**$4.94**
957	Pavement Works	Renew-pavement worksworks on Hertford St from Chapel St to Johnston St (Right kerb and channel)	Road Management Plan 2013	2016-2036	$29,268	DRDI	Area 05	10,669	5.0%	95.0%	$27,805	**$2.61**
958	Footpath Works	Renew-footpath works on Coppin St from Bridge Rd to Abinger St (Right side footpath)	Road Management Plan 2013	2016-2036	$70,305	PADI	Area 09	12,712	5.0%	95.0%	$66,790	**$5.25**
959	Footpath Works	Renew-footpath works on Rae St from Liverpool St to Scotchmer St (Resheet east footpath sections)	Road Management Plan 2013	2016-2036	$93,590	PADI	Area 02	9,618	5.0%	95.0%	$88,911	**$9.24**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
960	Footpath Works	Renew-footpath works on Roseneath St from Rutland St to Groom St (Right footpath)	Road Management Plan 2013	2016-2036	$30,243	PADI	Area 03	4,024	5.0%	95.0%	$28,731	**$7.14**
961	Footpath Works	Renew-footpath works on Carroll St from Gipps St to Richmond Tce	Road Management Plan 2013	2016-2036	$30,243	PADI	Area 09	12,712	5.0%	95.0%	$28,731	**$2.26**
962	Footpath Works	Renew-footpath works on Alfred Cr from Grant St to Jamieson St (Left side footpath)	Road Management Plan 2013	2016-2036	$31,219	PADI	Area 02	9,618	5.0%	95.0%	$29,658	**$3.08**
963	Footpath Works	Renew-footpath works on Park St from Rae St to Brunswick St (Right footpath)	Road Management Plan 2013	2016-2036	$31,219	PADI	Area 02	9,618	5.0%	95.0%	$29,658	**$3.08**
964	Footpath Works	Renew-footpath works on St Philips St from Gipps St to Vere St (Right footpath)	Road Management Plan 2013	2016-2036	$187,948	PADI	Area 07	12,872	5.0%	95.0%	$178,551	**$13.87**
965	Footpath Works	Renew-footpath works on Noone St from Rutland St to Groom St (Left footpath)	Road Management Plan 2013	2016-2036	$32,195	PADI	Area 03	4,024	5.0%	95.0%	$30,585	**$7.60**
966	Footpath Works	Renew-footpath works on Burnley St from Murphy St to Somerset St	Road Management Plan 2013	2016-2036	$32,195	PADI	Area 08	17,737	5.0%	95.0%	$30,585	**$1.72**
967	Footpath Works	Renew-footpath works on Victoria Pde from Young St to Napier St	Road Management Plan 2013	2016-2036	$32,195	PADI	Area 05	12,559	5.0%	95.0%	$30,585	**$2.44**
969	Footpath Works	Renew-footpath works on Napier St from Closure to Gertrude St (Right footpath Left footpath year 10)	Road Management Plan 2013	2016-2036	$34,146	PADI	Area 05	12,559	5.0%	95.0%	$32,439	**$2.58**
970	Pavement Works	Renew-pavement works on Nicholson St from York St to Alexandra Pde	Road Management Plan 2013	2016-2036	$170,279	PADI	Area 01 Area 02 Area 05	27,618	5.0%	95.0%	$161,765	**$5.86**
971	Footpath Works	Renew-footpath works on Lennox St from Bridge Rd to Goodwood St (Left footpath)	Road Management Plan 2013	2016-2036	$36,097	PADI	Area 09	12,712	5.0%	95.0%	$34,292	**$2.70**
972	Footpath Works	Renew-footpath works on Johnston St from Hoddle St to Park St	Road Management Plan 2013	2016-2036	$36,097	PADI	Area 07	12,872	5.0%	95.0%	$34,292	**$2.66**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
973	Pavement Works	Renew-pavement works on Nicholson St from Newry St to York St	Road Management Plan 2013	2016-2036	$230,294	PADI	Area 01 Area 02 Area 05	27,618	5.0%	95.0%	$218,779	**$7.92**
974	Footpath Works	Renew-footpath works on Brunswick St from Hanover St to Palmer St	Road Management Plan 2013	2016-2036	$38,048	PADI	Area 05	12,559	5.0%	95.0%	$36,146	**$2.88**
975	Footpath Works	Renew-footpath works on MacPherson St from Arnold St to Wilson St (Left footpath)	Road Management Plan 2013	2016-2036	$38,048	PADI	Area 01	5,441	5.0%	95.0%	$36,146	**$6.64**
976	Footpath Works	Renew-footpath works on Batman St from Alfred St to Scotchmer St	Road Management Plan 2013	2016-2036	$124,278	PADI	Area 02	9,618	5.0%	95.0%	$118,064	**$12.28**
977	Footpath Works	Renew-footpath works on Wellington St from Singleton St to Vere St	Road Management Plan 2013	2016-2036	$39,024	PADI	Area 06	12,640	5.0%	95.0%	$37,073	**$2.93**
979	Footpath Works	Renew-footpath works on Mary St from Amsterdam St to End of street	Road Management Plan 2013	2016-2036	$40,000	PADI	Area 10	4,950	5.0%	95.0%	$38,000	**$7.68**
980	Footpath Works	Renew-footpath works on Wellington St from Vere St to Perry St (Left footpath)	Road Management Plan 2013	2016-2036	$204,046	PADI	Area 06	12,640	5.0%	95.0%	$193,844	**$15.34**
981	Footpath Works	Renew-footpath works on Queens Pde from Delbridge St to Michael St	Road Management Plan 2013	2016-2036	$41,951	PADI	Area 02 Area 03	13,641	5.0%	95.0%	$39,853	**$2.92**
983	Footpath Works	Renew-footpath works on Newry St from St Georges Rd to Rae St (Left footpath)	Road Management Plan 2013	2016-2036	$136,307	PADI	Area 02	9,618	5.0%	95.0%	$129,492	**$13.46**
985	Footpath Works	Renew-footpath works on Alexandra Pde from Groom St to Gray St	Road Management Plan 2013	2016-2036	$43,902	PADI	Area 03	4,024	5.0%	95.0%	$41,707	**$10.37**
986	Footpath Works	Renew-footpath works on Marine Pde from Hunter St to Paterson St (Right footpath)	Road Management Plan 2013	2016-2036	$44,878	PADI	Area 07	12,872	5.0%	95.0%	$42,634	**$3.31**
987	Pavement Works	Renew-pavement worksworks on Bedford St from Johnston St to Perry St	Road Management Plan 2013	2016-2036	$103,305	DRDI	Area 06	11,064	5.0%	95.0%	$98,140	**$8.87**
988	Footpath Works	Renew-footpath works on Brunswick St from Park St to Scotchmer St	Road Management Plan 2013	2016-2036	$46,829	PADI	Area 05	12,559	5.0%	95.0%	$44,488	**$3.54**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
989	Pavement Works	Renew-pavement worksworks on Napier St from Charles St to Webb St	Road Management Plan 2013	2016-2036	$46,829	DRDI	Area 05	10,669	5.0%	95.0%	$44,488	**$4.17**
990	Footpath Works	Renew-footpath works on Moor St from George St to Gore St	Road Management Plan 2013	2016-2036	$90,843	PADI	Area 05	12,559	5.0%	95.0%	$86,301	**$6.87**
991	Footpath Works	Renew-footpath works on Moor St from Napier St to George St	Road Management Plan 2013	2016-2036	$90,843	PADI	Area 05	12,559	5.0%	95.0%	$86,301	**$6.87**
994	Pavement Works	Renew-pavement worksworks on Newry St from Nicholson St to St Georges Rd (Left side)	Road Management Plan 2013	2016-2036	$124,069	DRDI	Area 02	9,218	5.0%	95.0%	$117,866	**$12.79**
995	Footpath Works	Renew-footpath works on Queens Pde from Rushall Cres to Brennand St	Road Management Plan 2013	2016-2036	$53,658	PADI	Area 02 Area 03	13,641	5.0%	95.0%	$50,975	**$3.74**
997	Footpath Works	Renew-footpath works on May St from King St to Ida St (Right footpath)	Road Management Plan 2013	2016-2036	$58,536	PADI	Area 02	9,618	5.0%	95.0%	$55,609	**$5.78**
998	Pavement Works	Renew-pavement worksworks on Argyle St from Nicholson St to Spring St	Road Management Plan 2013	2016-2036	$118,266	DRDI	Area 05	10,669	5.0%	95.0%	$112,353	**$10.53**
999	Footpath Works	Renew-footpath works on Victoria Cres from Gipps St to Albert St (Sections of footpath, both sides (Mollison St to Albert St))	Road Management Plan 2013	2016-2036	$59,512	PADI	Area 07	12,872	5.0%	95.0%	$56,536	**$4.39**
1000	Footpath Works	Renew-footpath works on Victoria Pde from Nicholson St to Fitzroy St	Road Management Plan 2013	2016-2036	$62,439	PADI	Area 05	12,559	5.0%	95.0%	$59,317	**$4.72**
1001	Footpath Works	Renew-footpath works on Westgarth St from Napier St to George St	Road Management Plan 2013	2016-2036	$128,819	PADI	Area 05	12,559	5.0%	95.0%	$122,378	**$9.74**
1002	Footpath Works	Renew-footpath works on Burnley St from Buckingham St to Victoria St (Resheet west footpath sections)	Road Management Plan 2013	2016-2036	$69,268	PADI	Area 08	17,737	5.0%	95.0%	$65,805	**$3.71**
1005	Pavement Works	Renew-pavement works on Freeman St from Nicholson St to St Georges Rd	Road Management Plan 2013	2016-2036	$269,874	DRDI	Area 02	9,218	5.0%	95.0%	$256,380	**$27.81**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1006	Pavement Works	Renew-pavement worksworks on McIlwraith St from Pigdon St to Paterson St	Road Management Plan 2013	2016-2036	$88,780	DRDI	Area 01	5,243	5.0%	95.0%	$84,341	**$16.08**
1007	Footpath Works	Renew-footpath works on Delbridge St from Rowe St to McKean St (Both footpaths)	Road Management Plan 2013	2016-2036	$97,560	PADI	Area 02	9,618	5.0%	95.0%	$92,682	**$9.64**
1008	Pavement Works	Renew-pavement works on Vere St from Park St to Nicholson St	Road Management Plan 2013	2016-2036	$271,597	RDDI	Area 07	17,726	5.0%	95.0%	$258,017	**$14.56**
1009	Footpath Works	Renew-footpath works on Hodgkinson St from Gold St to Turnbull St	Road Management Plan 2013	2016-2036	$198,320	PADI	Area 03	4,024	5.0%	95.0%	$188,404	**$46.82**
1011	Pavement Works	Renew-pavement worksworks on Newry St from St Georges Rd to Rae St	Road Management Plan 2013	2016-2036	$252,318	DRDI	Area 02	9,218	5.0%	95.0%	$239,702	**$26.00**
1012	Pavement Works	Renew-pavement works on Egremont St from Scotchmer St to Tranmere St	Road Management Plan 2013	2016-2036	$616,550	DRDI	Area 02	9,218	5.0%	95.0%	$585,723	**$63.54**
1014	Footpath Works	Renew-footpath works on Council St from Reeves St to Smith St (Resheet south footpath)	Road Management Plan 2013	2016-2036	$113,475	PADI	Area 03	4,024	5.0%	95.0%	$107,801	**$26.79**
1015	Footpath Works	Renew-footpath works on Council St from Wellington St to Reeves St (Resheet north footpath)	Road Management Plan 2013	2016-2036	$80,708	PADI	Area 03	4,024	5.0%	95.0%	$76,673	**$19.06**
1016	Footpath Works	Renew-footpath works on Mary St from Swan St to Madden Gr (resheet east footpath)	Road Management Plan 2013	2016-2036	$15,000	PADI	Area 10	4,950	5.0%	95.0%	$14,250	**$2.88**
1017	Footpath Works	Renew-footpath works on Kneen St from Falconer St to Rushall Cres	Road Management Plan 2013	2016-2036	$15,000	PADI	Area 02	9,618	5.0%	95.0%	$14,250	**$1.48**
1018	Footpath Works	Renew-footpath works on Cecil St from Gore St to Smith St	Road Management Plan 2013	2016-2036	$20,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$19,000	**$0.75**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1020	Road Drainage	Renew-Road Drainage on Laity St from Lambert St to Church St (Drainage works - Remove conduit and repair pipe, Pit 7021.)	Road Management Plan 2013	2016-2036	$20,000	RDDI	Area 08	26,673	5.0%	95.0%	$19,000	**$0.71**
1021	Road Drainage	Renew-Road Drainage on Lord St from Bridge Rd to Abinger St	Road Management Plan 2013	2016-2036	$20,000	RDDI	Area 09	16,308	5.0%	95.0%	$19,000	**$1.17**
1022	Pavement Works	Renew-pavement works on Abbotsford St from Nicholson St to Hunter St	Road Management Plan 2013	2016-2036	$229,699	PADI	Area 07	12,872	5.0%	95.0%	$218,214	**$16.95**
1023	Pavement Works	Renew-pavement works on King William St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$118,988	PADI	Area 05	12,559	5.0%	95.0%	$113,039	**$9.00**
1024	Footpath Works	Renew-footpath works on Barkly St from Dean St to Melville St	Road Management Plan 2013	2016-2036	$161,295	PADI	Area 02	9,618	5.0%	95.0%	$153,230	**$15.93**
1025	Footpath Works	Renew-footpath works on Keele St from Budd St to Wellington St	Road Management Plan 2013	2016-2036	$31,707	PADI	Area 06	12,640	5.0%	95.0%	$30,122	**$2.38**
1026	Pavement Works	Renew-pavement works on Fairchild St from Victoria St to Nelson St	Road Management Plan 2013	2016-2036	$107,475	RDDI	Area 07	17,726	5.0%	95.0%	$102,101	**$5.76**
1027	Footpath Works	Renew-footpath works on Kerr St from George St to Gore St	Road Management Plan 2013	2016-2036	$25,000	PADI	Area 05	12,559	5.0%	95.0%	$23,750	**$1.89**
1028	Footpath Works	Renew-footpath works on Kerr St from Gore St to Smith St	Road Management Plan 2013	2016-2036	$25,000	PADI	Area 05	12,559	5.0%	95.0%	$23,750	**$1.89**
1029	Pavement Works	Renew-pavement works on Bennett St from Park St to Scotchmer St	Road Management Plan 2013	2016-2036	$237,074	PADI	Area 02	9,618	5.0%	95.0%	$225,220	**$23.42**
1030	Footpath Works	Renew-footpath works on Park St from Garton St to Lang St	Road Management Plan 2013	2016-2036	$25,000	PADI	Area 01	5,441	5.0%	95.0%	$23,750	**$4.36**
1031	Footpath Works	Renew-footpath works on Sackville St from Wellington St to Gold St (Resheet north footpath sections)	Road Management Plan 2013	2016-2036	$111,971	PADI	Area 06	12,640	5.0%	95.0%	$106,372	**$8.42**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1033	Footpath Works	Renew-footpath works on Edmund St from Little Edmund St to Walker St (Resheet west footpath sections, include north footpath section Lt Edmund St up to laneway.)	Road Management Plan 2013	2016-2036	$30,000	PADI	Area 03	4,024	5.0%	95.0%	$28,500	**$7.08**
1036	Pavement Works	Renew-pavement works on Bedford St from Otter St to End of street	Road Management Plan 2013	2016-2036	$89,930	RDDI	Area 06	19,935	5.0%	95.0%	$85,434	**$4.29**
1037	Pavement Works	Renew-pavement works on Islington St from Hood St to Gipps St	Road Management Plan 2013	2016-2036	$30,000	RDDI	Area 06	19,935	5.0%	95.0%	$28,500	**$1.43**
1038	Pavement Works	Renew-pavement works on Highett Pl from Greeves St to End of street	Road Management Plan 2013	2016-2036	$30,000	RDDI	Area 05	19,186	5.0%	95.0%	$28,500	**$1.49**
1039	Road Drainage	Renew-Road Drainage on Turner St from Trenerry Cres to End of street	Road Management Plan 2013	2016-2036	$30,000	RDDI	Area 07	17,726	5.0%	95.0%	$28,500	**$1.61**
1040	Road Drainage	Renew-Road Drainage on Gipps St from Park St to Nicholson St (Drainage repair works - Pit 936-34139 & Pit34139-34122)	Road Management Plan 2013	2016-2036	$30,000	RDDI	Area 06	19,935	5.0%	95.0%	$28,500	**$1.43**
1041	Pavement Works	Renew-pavement worksonBrighton St from Barkly Ave to Albert St	Road Management Plan 2013	2016-2036	$45,609	RDDI	Area 10	7,518	5.0%	95.0%	$43,329	**$5.76**
1043	Footpath Works	Renew-footpath works on Park St from Station St to Nicholson St	Road Management Plan 2013	2016-2036	$35,000	PADI	Area 01	5,441	5.0%	95.0%	$33,250	**$6.11**
1044	Pavement Works	Renew-pavement worksworks on Trenerry Cres from Turner St to Johnston St (Left)	Road Management Plan 2013	2016-2036	$35,000	DRDI	Area 07	11,166	5.0%	95.0%	$33,250	**$2.98**
1045	Pavement Works	Renew-pavement worksworks on Pigdon St from Drummond St to Rathdowne St	Road Management Plan 2013	2016-2036	$35,000	DRDI	Area 01	5,243	5.0%	95.0%	$33,250	**$6.34**
1046	Pavement Works	Renew-pavement worksworks on Pigdon St from Lygon St to Drummond St	Road Management Plan 2013	2016-2036	$178,856	DRDI	Area 01	5,243	5.0%	95.0%	$169,913	**$32.40**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1047	Footpath Works	Renew-footpath works on Keele St from Smith St to Budd St	Road Management Plan 2013	2016-2036	$72,073	PADI	Area 06	12,640	5.0%	95.0%	$68,469	**$5.42**
1048	Pavement Works	Renew-pavement works on Victoria St from Nicholson St to Fitzroy St	Road Management Plan 2013	2016-2036	$59,036	PADI	Area 05	12,559	5.0%	95.0%	$56,084	**$4.47**
1049	Pavement Works	Renew-pavement works on Carroll St from Swan St to Gipps St	Road Management Plan 2013	2016-2036	$100,000	PADI	Area 09	12,712	5.0%	95.0%	$95,000	**$7.47**
1050	Footpath Works	Renew-footpath works on Johnston St from Gold St to Hoddle St (Left footpath)	Road Management Plan 2013	2016-2036	$40,000	PADI	Area 06	12,640	5.0%	95.0%	$38,000	**$3.01**
1051	Footpath Works	Renew-footpath works on Johnston St from Wellington St to Gold St	Road Management Plan 2013	2016-2036	$40,000	PADI	Area 06	12,640	5.0%	95.0%	$38,000	**$3.01**
1052	Pavement Works	Renew-pavement works on Langridge St from Rokeby St to Rupert St	Road Management Plan 2013	2016-2036	$70,000	DRDI	Area 07	11,166	5.0%	95.0%	$66,500	**$5.96**
1057	Pavement Works	Renew-pavement works on Blanche St from Hotham St to Mater St	Road Management Plan 2013	2016-2036	$85,000	RDDI	Area 06	19,935	5.0%	95.0%	$80,750	**$4.05**
1058	Footpath Works	Renew-footpath works on Rae St from Newry St to York St	Road Management Plan 2013	2016-2036	$40,000	PADI	Area 02	9,618	5.0%	95.0%	$38,000	**$3.95**
1059	Footpath Works	Renew-footpath works on Rae St from York St to Alexandra Pde	Road Management Plan 2013	2016-2036	$40,000	PADI	Area 02	9,618	5.0%	95.0%	$38,000	**$3.95**
1061	Footpath Works	Renew-footpath works on Barkly St from Rae St to Dean St	Road Management Plan 2013	2016-2036	$165,281	PADI	Area 02	9,618	5.0%	95.0%	$157,017	**$16.33**
1063	Pavement Works	Renew-pavement works on Garton St from Lang St to Gallagher Reserve	Road Management Plan 2013	2016-2036	$81,541	RDDI	Area 01	6,399	5.0%	95.0%	$77,464	**$12.11**
1064	Footpath Works	Renew-footpath works on Sackville St from Gold St to Hoddle St (Resheet north footpath sections)	Road Management Plan 2013	2016-2036	$143,278	PADI	Area 06	12,640	5.0%	95.0%	$136,114	**$10.77**
1067	Footpath Works	Renew-footpath works on Lygon St from Park St to Holtham St East	Road Management Plan 2013	2016-2036	$45,000	PADI	Area 01	5,441	5.0%	95.0%	$42,750	**$7.86**
1069	Pavement Works	Renew-pavement works on Scotchmer St from	Road Management	2016-2036	$45,000	RDDI	Area 02	12,123	5.0%	95.0%	$42,750	**$3.53**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Woodhead St to Falconer St	Plan 2013									
1070	Pavement Works	Renew-pavement works on Langridge St from Wellington St to Rokeby St	Road Management Plan 2013	2016-2036	$90,000	PADI	Area 07	12,872	5.0%	95.0%	$85,500	**$6.64**
1071	Pavement Works	Renew-pavement works on Federation La from Trenerry Cres to Lulie St	Road Management Plan 2013	2016-2036	$90,000	DRDI	Area 07	11,166	5.0%	95.0%	$85,500	**$7.66**
1072	Pavement Works	Renew-pavement works on Smith St from Charles St to Webb St	Road Management Plan 2013	2016-2036	$95,000	DRDI	Area 05 Area 06	21,733	5.0%	95.0%	$90,250	**$4.15**
1073	Pavement Works	Renew-pavement works on Pilkington St from Holden St to Barkly St	Road Management Plan 2013	2016-2036	$70,836	RDDI	Area 02	12,123	5.0%	95.0%	$67,294	**$5.55**
1074	Pavement Works	Renew-pavement works on Mary St from Madden Gr to Barkly Ave	Road Management Plan 2013	2016-2036	$50,000	RDDI	Area 10	7,518	5.0%	95.0%	$47,500	**$6.32**
1077	Pavement Works	Renew-pavement worksworks on Smith St from Condell St to Charles St	Road Management Plan 2013	2016-2036	$103,348	DRDI	Area 05 Area 06	21,733	5.0%	95.0%	$98,181	**$4.52**
1083	Pavement Works	Renew-pavement works on Pigdon St from Canning St to Station St	Road Management Plan 2013	2016-2036	$53,000	RDDI	Area 01	6,399	5.0%	95.0%	$50,350	**$7.87**
1084	Pavement Works	Renew-pavement works on Pigdon St from Amess St to Canning St Pavement	Road Management Plan 2013	2016-2036	$128,051	RDDI	Area 01	6,399	5.0%	95.0%	$121,648	**$19.01**
1085	Pavement Works	Renew-pavement works on Abbotsford St from Paterson St to Clarke St	Road Management Plan 2013	2016-2036	$198,526	RDDI	Area 07	17,726	5.0%	95.0%	$188,600	**$10.64**
1088	Pavement Works	Renew-pavement works on Madden Gr from Stawell St to Gibdon St	Road Management Plan 2013	2016-2036	$60,000	RDDI	Area 10	7,518	5.0%	95.0%	$57,000	**$7.58**
1089	Pavement Works	Renew-pavement works on Stephenson St from Kelso St to Dunn St	Road Management Plan 2013	2016-2036	$157,108	RDDI	Area 11	10,158	5.0%	95.0%	$149,253	**$14.69**
1091	Road Drainage	Renew-Road Drainage on Spensley St from John St to Berry St	Road Management Plan 2013	2016-2036	$60,000	RDDI	Area 03	5,252	5.0%	95.0%	$57,000	**$10.85**
1094	Pavement Works	Renew-pavement works on Garton St from Pigdon St to Paterson St	Road Management Plan 2013	2016-2036	$191,757	RDDI	Area 01	6,399	5.0%	95.0%	$182,169	**$28.47**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1097	Pavement Works	Renew-pavement works on Victoria St from Brunswick St to Young St	Road Management Plan 2013	2016-2036	$189,859	DRDI	Area 05	10,669	5.0%	95.0%	$180,366	**$16.91**
1098	Pavement Works	Renew-pavement worksworks on Little Turner St from Lulie St to RICH St	Road Management Plan 2013	2016-2036	$166,745	DRDI	Area 07	11,166	5.0%	95.0%	$158,408	**$14.19**
1099	Pavement Works	Renew-pavement works on Bendigo St from Hotham St to Alexandra Pde	Road Management Plan 2013	2016-2036	$344,827	RDDI	Area 06	19,935	5.0%	95.0%	$327,586	**$16.43**
1101	Pavement Works	Renew-pavement works on Nicholson St from Harper St to Gipps St	Road Management Plan 2013	2016-2036	$150,000	DRDI	Area 07	11,166	5.0%	95.0%	$142,500	**$12.76**
1103	Pavement Works	Renew-pavement works on Argyle St from Fitzroy St to Brunswick St	Road Management Plan 2013	2016-2036	$204,622	DRDI	Area 05	10,669	5.0%	95.0%	$194,391	**$18.22**
1104	Pavement Works	Renew-pavement works on Yorkshire St from Brighton St to Mary St	Road Management Plan 2013	2016-2036	$140,000	DRDI	Area 10	3,905	5.0%	95.0%	$133,000	**$34.06**
1105	Pavement Works	Renew-pavement works on Fergie St from Alfred Cr to Scotchmer St	Road Management Plan 2013	2016-2036	$323,659	RDDI	Area 02	12,123	5.0%	95.0%	$307,476	**$25.36**
1106	Road Drainage	Renew-Road Drainage on Glass St from Beissel St to Newry St (Multiple pipes need to be replaced and pits constructed)	Road Management Plan 2013	2016-2036	$80,000	RDDI	Area 09	16,308	5.0%	95.0%	$76,000	**$4.66**
1108	Pavement Works	Renew-pavement works on Madden Gr from Burnley St to Stawell St	Road Management Plan 2013	2016-2036	$290,357	RDDI	Area 10	7,518	5.0%	95.0%	$275,839	**$36.69**
1111	Pavement Works	Renew-pavement works on Abbott St from Lulie St to Trenerry Cres	Road Management Plan 2013	2016-2036	$279,244	RDDI	Area 07	17,726	5.0%	95.0%	$265,282	**$14.97**
1113	Footpath Works	Renew-footpath works on Alfred Cr from St Georges Rd to Best St	Road Management Plan 2013	2016-2036	$85,000	PADI	Area 02	9,618	5.0%	95.0%	$80,750	**$8.40**
1116	Pavement Works	Renew-pavement works on Lulie St from Johnston St to Turner St	Road Management Plan 2013	2016-2036	$230,000	PADI	Area 07	12,872	5.0%	95.0%	$218,500	**$16.98**
1117	Pavement Works	Renew-pavement works on Somerset St from Davison St to Burnley St	Road Management Plan 2013	2016-2036	$145,000	RDDI	Area 08	26,673	5.0%	95.0%	$137,750	**$5.16**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1120	Pavement Works	Renew-pavement works on Noone St from Wellington St to Gold St (Road resheet, include bike path renewal)	Road Management Plan 2013	2016-2036	$100,000	RDDI	Area 03	5,252	5.0%	95.0%	$95,000	**$18.09**
1122	Pavement Works	Renew-pavement works on Clifton St from Swan St to Gipps St	Road Management Plan 2013	2016-2036	$269,789	PADI	Area 09	12,712	5.0%	95.0%	$256,300	**$20.16**
1128	Pavement Works	Renew-pavement works on Gibdon St from Madden Gr to Twickenham Cres	Road Management Plan 2013	2016-2036	$120,000	RDDI	Area 10	7,518	5.0%	95.0%	$114,000	**$15.16**
1129	Pavement Works	Renew-pavement works on Campbell St from Vere St to Gipps St (Road Resheet (Vere-McCutcheon), incl footpath and kerb & channel sections + LATMS12 @ Campbell/McCutheon)	Road Management Plan 2013	2016-2036	$125,000	RDDI	Area 06	19,935	5.0%	95.0%	$118,750	**$5.96**
1131	Pavement Works	Renew-pavement works on Hunter St from Bridge Rd to Corsair St	Road Management Plan 2013	2016-2036	$429,757	RDDI	Area 09	16,308	5.0%	95.0%	$408,269	**$25.04**
1132	Pavement Works	Renew-pavement works on Rathdowne St from Richardson St to MacPherson St	Road Management Plan 2013	2016-2036	$224,218	RDDI	Area 01	6,399	5.0%	95.0%	$213,007	**$33.29**
1133	Pavement Works	Renew-pavement works on Drummond St from MacPherson St to Richardson St (Both sides)	Road Management Plan 2013	2016-2036	$150,000	RDDI	Area 01	6,399	5.0%	95.0%	$142,500	**$22.27**
1138	Footpath Works	Renew-footpath works on Smith St from Webb St to Gertrude St (Resheet east footpath, remove existing concrete sections.)	Road Management Plan 2013	2016-2036	$193,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$183,350	**$7.28**
1147	Traffic Management	LATM-13 Abbotsford (area bounded by Johnston St, Hoddle St, Victoria St and the river) Planning, community consultation design and constructionfor area bounded by Johnston St, Hoddle St, Victoria St	Strategic Transport Statement	2016-2036	$10,000	RDDI	Area 07	17,726	5.0%	95.0%	$9,500	**$0.54**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		and the river										
1148	Traffic Management	LATM 3 (Scotchmer) Planning, consultation and design work to occur in year 2 local precincts 3 (Scotchmer: Bound by Nicholson St, Alexandra Pde, Brunswick St and St Georges Rd) Planning, community consultation and design for area bounded by May Street,	Strategic Transport Statement	2016-2036	$10,000	RDDI	Area 01 Area 02 Area 05	37,708	5.0%	95.0%	$9,500	**$0.25**
1150	Traffic Management	New installation of traffic devices in Gold Precinct (Area bounded by Hoddle/Johnston/Smith Sts & Alexandra Pde)	Strategic Transport Statement	2016-2036	$179,700	RDDI	Area 03 Area 05 Area 06 Area 07	62,098	5.0%	95.0%	$170,715	**$2.75**
1151	Traffic Management	New installation of traffic control devices in Princes Hill area - speed humps, kerb extensions, turn bans etc area bounded	Strategic Transport Statement	2016-2036	$613,000	RDDI	Area 01	6,399	5.0%	95.0%	$582,350	**$91.00**
1152	Traffic Management	New installation of stage 1 traffic devices in Rose Precinct-Area between Johnston/Nicholson/Smith Sts &Alexandra Pde)	Strategic Transport Statement	2016-2036	$313,600	RDDI	Area 02 Area 05	31,309	5.0%	95.0%	$297,920	**$9.52**
1153	Bicycle Network	New works complying with the Bicycle strategy typically bicycle lanes, ramps & signal changes	Bike Strategy 2010 - 2015	2016-2036	$2,220,000	PADI	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area 11	106,506	5.0%	95.0%	$2,109,000	**$19.80**
1154	Pedestrian Provisions	New improvements to pedestrian amenity-comply with Encouraging and Increasing Walking Strategy	Walking Strategy	2016-2036	$2,204,000	PADI	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area	106,506	5.0%	95.0%	$2,093,800	**$19.66**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Yarra Development Contributions Plan 2017

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
							11					
1177	Retail Footpath	Renew retail footpath Johnston Street Activity Centre	Urban Design Strategy 2011	2016-2036	$1,050,000	PADI	Area 06	12,640	5.0%	95.0%	$997,500	**$78.92**
1178	Retail Footpath	Renew - Nicholson St Liverpool St Scotchmer St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$500,000	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$475,000	**$31.54**
1180	Retail Footpath	Renew - St Georges Rd Fergie St Scotchmer St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$100,000	PADI	Area 02	9,618	5.0%	95.0%	$95,000	**$9.88**
1181	Retail Footpath	Renew - St Georges Rd Newry St Nicholson St- Retail Footpath	Urban Design Strategy 2011	2016-2036	$100,000	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$95,000	**$6.31**
1182	Retail Footpath	Renew - Church St Adolph St Swan St - Retail Footpath (Rehabilitate footpath to match Activity Centre improvement Right footpath)	Urban Design Strategy 2011	2016-2036	$13,000	PADI	Area 10 Area 11	14,277	5.0%	95.0%	$12,350	**$0.87**
1183	Retail Footpath	Renew - Nicholson St Freeman St Newry St - Retail Footpath (Right footpath)	Urban Design Strategy 2011	2016-2036	$34,000	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$32,300	**$2.14**
1184	Retail Footpath	Renew - Victoria Pde Gore St Smith St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$45,000	PADI	Area 05	12,559	5.0%	95.0%	$42,750	**$3.40**
1185	Retail Carparks	Renew - Dights Falls Carpark Trenerry Cres Yarra River- Retail Carparks	Urban Design Strategy 2011	2016-2036	$50,000	RDDI	Area 07	17,726	5.0%	95.0%	$47,500	**$2.68**
1186	Retail Footpath	Renew - Nicholson St Victoria St Bell St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$50,000	PADI	Area 05	12,559	5.0%	95.0%	$47,500	**$3.78**
1187	Retail Footpath	Renew - Church St Buckingham St Baker St - Retail Footpath (Right footpath)	Urban Design Strategy 2011	2016-2036	$52,000	PADI	Area 08	17,737	5.0%	95.0%	$49,400	**$2.79**
1188	Retail Footpath	Renew - Swan St Burnley St Stawell St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$54,000	PADI	Area 09 Area 10	17,662	5.0%	95.0%	$51,300	**$2.90**
1189	Retail Footpath	Renew - St Georges Rd Barkly St Holden St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$100,000	PADI	Area 02	9,618	5.0%	95.0%	$95,000	**$9.88**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1190	Retail Footpath	Renew - St Georges Rd Scotchmer St Alfred CR- Retail Footpath (Left footpath Scotchmer to Best Streets)	Urban Design Strategy 2011	2016-2036	$100,000	PADI	Area 02	9,618	5.0%	95.0%	$95,000	**$9.88**
1191	Retail Footpath	Renew - Church St Balmain St Adolph St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$100,000	PADI	Area 08	17,737	5.0%	95.0%	$95,000	**$5.36**
1192	Retail Carparks	Renew - Adolph St Carpark Chestnut St Church St - Retail Carparks	Urban Design Strategy 2011	2016-2036	$54,000	RDDI	Area 11	10,158	5.0%	95.0%	$51,300	**$5.05**
1193	Retail Footpath	Renew - Church St Bridge Rd Highett St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$80,000	PADI	Area 08	17,737	5.0%	95.0%	$76,000	**$4.28**
1194	Retail Footpath	Renew - Church St Swan St Gipps St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$100,000	PADI	Area 09	12,712	5.0%	95.0%	$95,000	**$7.47**
1196	Retail Footpath	Renew - Victoria St Hoddle St Shelly St - Retail Footpath (Resheet footpath to match PTV sections)	Urban Design Strategy 2011	2016-2036	$41,000	PADI	Area 07 Area 08	30,609	5.0%	95.0%	$38,950	**$1.27**
1197	Retail Footpath	Renew - Church St Victoria St End of street- Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$45,000	PADI	Area 07	12,872	5.0%	95.0%	$42,750	**$3.32**
1198	Retail Footpath	Renew - Johnston St Wellington St Gold St- Retail Footpath (Right footpath)	Urban Design Strategy 2011	2016-2036	$45,000	PADI	Area 06	12,640	5.0%	95.0%	$42,750	**$3.38**
1199	Retail Carparks	Renew - Eddy Crt Carpark Stanton St Stanton St - Retail Carparks	Urban Design Strategy 2011	2016-2036	$50,000	RDDI	Area 07	17,726	5.0%	95.0%	$47,500	**$2.68**
1200	Retail Footpath	Renew - Church St Baker St Victoria St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$65,000	PADI	Area 07 Area 08	30,609	5.0%	95.0%	$61,750	**$2.02**
1201	Retail Footpath	Renew - Johnston St Gold St Hoddle St- Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$65,000	PADI	Area 06	12,640	5.0%	95.0%	$61,750	**$4.89**
1202	Retail Footpath	Renew - Johnston St Napier St George St - Retail Footpath (Right footpath)	Urban Design Strategy 2011	2016-2036	$71,000	PADI	Area 05	12,559	5.0%	95.0%	$67,450	**$5.37**
1203	Retail Footpath	Renew - Johnston St Gore St Smith St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$75,000	PADI	Area 05	12,559	5.0%	95.0%	$71,250	**$5.67**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1204	Retail Footpath	Derby Street New Public Space	Urban Design Strategy 2011	2016-2036	$675,000	PADI	Area 05	12,559	5.0%	95.0%	$641,250	**$51.06**
1205	Retail Footpath	Urban design improvements integrated with Blackspot funding sites.	Urban Design Strategy 2011	2016-2036	$2,090,000	PADI	Area 05	12,559	5.0%	95.0%	$1,985,500	**$158.10**
1206	Retail Footpath	Renew - Retail footpath - Bridge Road Activity Centre	Urban Design Strategy 2011	2016-2036	$1,500,000	PADI	Area 08 Area 09	30,449	5.0%	95.0%	$1,425,000	**$46.80**
1207	Retail Footpath	Renew - Retail footpath Swan Street Activity Centre	Urban Design Strategy 2011	2016-2036	$2,600,000	PADI	Area 09 Area 10	17,662	5.0%	95.0%	$2,470,000	**$139.85**
1208	Retail Footpath	Renew - Smith St Charles St Webb St - Retail Footpath (Resheet east footpath sections, remove existing concrete sections (up to new development))	Urban Design Strategy 2011	2016-2036	$22,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$20,900	**$0.83**
1209	Retail Footpath	Renew - Smith St Greeves St St David St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$25,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$23,750	**$0.94**
1210	Retail Footpath	Renew - Nicholson St Alexandra Pde Cecil St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$26,000	PADI	Area 01 Area 02 Area 05	27,618	5.0%	95.0%	$24,700	**$0.89**
1211	Retail Footpath	Renew - Swan St Mary St Coppin St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$28,000	PADI	Area 09 Area 10	17,662	5.0%	95.0%	$26,600	**$1.51**
1212	Retail Footpath	Renew - Smith St St David St Moor St - Retail Footpath	Urban Design Strategy 2011	2016-2036	$31,500	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$29,925	**$1.19**
1213	Retail Footpath	Renew - Nicholson St Reid St Sailsbury Cres- Retail Footpath	Urban Design Strategy 2011	2016-2036	$35,500	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$33,725	**$2.24**
1214	Retail Footpath	Renew - Smith St Johnston St Greeves St - Retail Footpath (Left footpath Johnston to Otter Stand intersection at Perry St)	Urban Design Strategy 2011	2016-2036	$46,500	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$44,175	**$1.75**
1215	Retail Footpath	Renew - Punt Rd Kelso St Blanche St - Retail Footpath (Right footpath)	Urban Design Strategy 2011	2016-2036	$47,500	PADI	Area 11	9,327	5.0%	95.0%	$45,125	**$4.84**
1216	Retail Carparks	Renew - Alexandra Pde Carpark Brunswick St George St - Retail Carparks	Urban Design Strategy 2011	2016-2036	$50,000	RDDI	Area 02 Area 05	31,309	5.0%	95.0%	$47,500	**$1.52**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
1217	Retail Footpath	Renew - Punt Rd Blanche St Stephenson St - Retail Footpath (Right footpath)	Urban Design Strategy 2011	2016-2036	$60,000	PADI	Area 11	9,327	5.0%	95.0%	$57,000	**$6.11**
1218	Retail Footpath	Renew - Smith St Webb St Gertrude St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$72,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$68,400	**$2.71**
1219	Retail Footpath	Construct Lennox St/Victoria St and Nicholson/Victoria public space, public domain improvements based on Victoria Street Streetscape Masterplan.	Urban Design Strategy 2011	2016-2036	$2,800,000	PADI	Area 07 Area 08	30,609	5.0%	95.0%	$2,660,000	**$86.90**
1220	Retail Footpath	Renew - Smith St Condell St Charles St - Retail Footpath (Resheet east footpath, remove existing concrete sections.)	Urban Design Strategy 2011	2016-2036	$66,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$62,700	**$2.49**
1221	Retail Footpath	Renew - Smith St Moor St Condell St - Retail Footpath (Resheet east footpath, remove existing concrete sections.)	Urban Design Strategy 2011	2016-2036	$75,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$71,250	**$2.83**
1222	Retail Footpath	Renew - Victoria St Lennox St Church St - Retail Footpath (Left footpath)	Urban Design Strategy 2011	2016-2036	$200,000	PADI	Area 07 Area 08	30,609	5.0%	95.0%	$190,000	**$6.21**
1225	Street Bins	Renewing street litter bins and cigarette butt bins.	No strategy	2016-2036	$630,000	PADI	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area 11	106,506	5.0%	95.0%	$598,500	**$5.62**
2039	Public Toilet	New Public Toilets - Nicholson Street - between Richardson Street and Linear Park Reserve - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$456,000	**$30.28**
2040	Public Toilet	New Public Toilets - Brunswick Street - between	Municipal Public Health	2016-2036	$480,000	PADI	Area 05	12,559	5.0%	95.0%	$456,000	**$36.31**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		Johnston Street and Alexandra Parade - Exeloo	and Wellbeing Plan 2013-2017									
2041	Public Toilet	New Public Toilets - Swan Street - between Edinburgh Street and Bendigo Street - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 09 Area 10	17,662	5.0%	95.0%	$456,000	**$25.82**
2043	Public Toilet	New Public Toilets - Stanton Street, Abbotsford - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 07	12,872	5.0%	95.0%	$456,000	**$35.43**
2044	Public Toilet	New Public Toilets - Gertrude Street - between Nicholson Street and George Street - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 05	12,559	5.0%	95.0%	$456,000	**$36.31**
2045	Public Toilet	New Public Toilets - Johnston Street – between Lulie Street and Yarra River - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 07	12,872	5.0%	95.0%	$456,000	**$35.43**
2047	Public Toilet	New Public Toilets - Bridge Road -between Burnley Street and River Street - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 08 Area 09	30,449	5.0%	95.0%	$456,000	**$14.98**
2048	Public Toilet	New Church Street - between Swan Street and Yarra River, Cremorne - Exeloo	Municipal Public Health and Wellbeing Plan 2013-2017	2016-2036	$480,000	PADI	Area 11	9,327	5.0%	95.0%	$456,000	**$48.89**
2049	Public Toilet	New Victoria Park, Abbotsford - Exeloo	Municipal Public Health and	2016-2036	$480,000	PADI	Area 07	12,872	5.0%	95.0%	$456,000	**$35.43**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
			Wellbeing Plan 2013-2017									
2100	Bicycle Network	Main Yarra Trail Upgrades as per Bike Strategy Refresh	Bike Strategy 2010 - 2015	2016-2036	$1,290,000	PADI	Area 03 Area 07 Area 08 Area 09	47,344	5.0%	95.0%	$1,225,500	**$25.88**
2101	Bicycle Network	Brunswick St South of Alexandra Parade Bicycle Lane Upgrade	Bike Strategy 2010 - 2015	2016-2036	$300,000	PADI	Area 05	12,559	5.0%	95.0%	$285,000	**$22.69**
2102	Bicycle Network	Gipps St Bicycle Corridor Upgrades	Bike Strategy 2010 - 2015	2016-2036	$360,000	PADI	Area 06	12,640	5.0%	95.0%	$342,000	**$27.06**
2103	Bicycle Network	Upgrades to South Richmond Rail Corridor Bicycle Route	Bike Strategy 2010 - 2015	2016-2036	$100,000	PADI	Area 10 Area 11	14,277	5.0%	95.0%	$95,000	**$6.65**
2104	Bicycle Network	Gertrude St Bike Corridor upgrades	Bike Strategy 2010 - 2015	2016-2036	$540,000	PADI	Area 05	12,559	5.0%	95.0%	$513,000	**$40.85**
2105	Bicycle Network	Linear Park Trail/Napier St bicycle upgrades	Bike Strategy 2010 - 2015	2016-2036	$430,000	PADI	Area 05	12,559	5.0%	95.0%	$408,500	**$32.53**
2106	Bicycle Network	Moor/Stanley St Bicycle Corridor upgrades	Bike Strategy 2010 - 2015	2016-2036	$40,000	PADI	Area 05	12,559	5.0%	95.0%	$38,000	**$3.03**
2107	Bicycle Network	Johnston/Nicholson Street Intersection Northbound Bicycle Lane upgrades	Bike Strategy 2010 - 2015	2016-2036	$50,000	PADI	Area 05	12,559	5.0%	95.0%	$47,500	**$3.78**
2108	Bicycle Network	Richmond East-West Bicycle Link upgrades as per Bike Strategy Refresh	Bike Strategy 2010 - 2015	2016-2036	$1,490,000	PADI	Area 09	12,712	5.0%	95.0%	$1,415,500	**$111.35**
2109	Bicycle Network	Rathdowne Street upgrade at Princes Street intersection bicycle lanes upgrades	Bike Strategy 2010 - 2015	2016-2036	$50,000	PADI	Area 01	5,441	5.0%	95.0%	$47,500	**$8.73**
2110	Bicycle Network	Kerr/Truro/Easey Streets bike corridor upgrades	Bike Strategy 2010 - 2015	2016-2036	$40,000	PADI	Area 05 Area 06	25,199	5.0%	95.0%	$38,000	**$1.51**
2111	Bicycle Network	Church St Corridor Bicycle Facilities Upgrade	Bike Strategy 2010 - 2015	2016-2036	$50,000	PADI	Area 08 Area 09 Area 10 Area 11	44,726	5.0%	95.0%	$47,500	**$1.06**
2112	Bicycle Network	North Fitzroy bicycle route along Pigdon/Scotchmer/Michael Streets upgrades	Bike Strategy 2010 - 2015	2016-2036	$50,000	PADI	Area 01 Area 02	15,059	5.0%	95.0%	$47,500	**$3.15**
2113	Bicycle Network	Lennox Street from Victoria to Highett Streets bicycle upgrades	Bike Strategy 2010 - 2015	2016-2036	$5,000	PADI	Area 08	17,737	5.0%	95.0%	$4,750	**$0.27**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
G001	Community Facility	Burnley Golf Course - Upgrades to Shop/Commercial/Tearoom Burnley Golf Course Administration,Residence, Pavilions, Clubrooms and Changerooms Burnley Golf Course Social Room, Stores/Sheds/Garages Burnley Golf Course Equipment Shed and provide an enhanced experience for all users of Burnley Golf Course by providing a dedicated outdoor entertaining area for social events	Yarra Open Space Strategy 2007	2016-2036	$217,900	CFCI	Area 01 Area 02 Area 03 Area 04 Area 05 Area 06 Area 07 Area 08 Area 09 Area 10 Area 11	64,602	5.0%	95.0%	$207,005	**$3.20**
G002	Community Facility	Richmond Recreation Centre - Design and construction of upgrades to the Richmond Recreation Centre to improve access and quality of facilities. Details of exact requirements will be advised through Leisure Master-plan document	Building Asset Management Plan	2016-2036	$12,733,463	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$12,096,790	**$504.87**
G003	Community Facility	Fitzroy Leisure Centre - Demolish the existing FSP facilities dry-side and replace with a new "fit for purpose" building capable of offering a more diversified and user friendly environment for use by the whole community including design and construct and accessible Hydrotherapy pool facility to allow delivery of hydrotherapy-based programs, improvements to change rooms and pool concourse	Building Asset Management Plan	2016-2036	$18,836,978	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$17,895,129	**$857.29**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
G004	Community Facility	Collingwood Leisure Centre - Redevelopment of Collingwood Leisure Centre's dry-side. Project to include the Gymnasium, Group Fitness and Spinning Studio's. Initial designs put forward has been based on a two storey development. The project will include the addition of Dry-Side change area	Building Asset Management Plan	2016-2036	$7,128,628	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$6,772,197	**$342.59**
G005	Community Facility	Fitzroy Town Hall - Upgrade and renewal works. A conservation audit recommends extensive roof works and HVAC system to Level 2 Hall and Reading Room. Re model main hall A/c to increase heating Upgrade air conditioning to main hall & reading room to meet OH&S	Building Asset Management Plan	2016-2036	$2,360,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$2,242,000	**$107.41**
G006	Community Facility	Richmond Town Hall - Rollout of generators, upgrade of security equipment and toilet improvements	Building Asset Management Plan	2016-2036	$5,785,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$5,495,750	**$229.37**
G007	Community Facility	Jim Loughnan Hall - Renew - Renovation of the Community Hall Jim Loughnan Hall 65-67 Coppin St- including plumbing and roof	Building Asset Management Plan	2016-2036	$625,000	CFCI	Area 08 Area 09 Area 10 Area 11	23,960	5.0%	95.0%	$593,750	**$24.78**
G008	Community Facility	Edinburgh Gardens - Upgrade - Tennis Courts & Clubhouses Tennis Club,Pavilions, Clubrooms and Changerooms Juniors Pavilion, Community Halls, Increase the underground water storage tank taking	Yarra Open Space Strategy 2007	2016-2036	$4,058,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$3,855,100	**$195.02**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Project Number	Project Category	Project Name	Reference Document	Delivery Horizon	Estimated Cost	Project Type	Main Catchment Area (MCA)	Demand Units	External Demand or Use Allowance	Share of Use to MCA	Cost Apportioned to MCA	Cost Per Demand Unit
		treated stormwater, Public toilets South near Juniors Pavilion										
G009	Community Facility	Fairfield Park - Upgrade Pavilions, Clubrooms and Changerooms Canoe Club & Residence, stores/Sheds/Garages Equipment Shed, Amenities, Shop/Commercial/Tearoom	Yarra Open Space Strategy 2007	2016-2036	$825,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$783,750	**$39.65**
G010	Community Facility	Victoria Park - Renew - Grandstand and Undercroft Pavilions, Clubrooms and Changerooms	Yarra Open Space Strategy 2007	2016-2036	$620,000	CFCI	Area 05 Area 06 Area 07	20,874	5.0%	95.0%	$589,000	**$28.22**
G012	Community Facility	North Carlton Children's Centre - The project will examine the opportunities that the North Carlton Children's Centre has for possible expansion of existing childcare places	Building Asset Management Plan	2016-2036	$3,681,000	CFDI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$3,496,950	**$176.90**
G013	Community Facility	Carlton Library - Works to upgrade and stabilize the rear structure of the building from moving, toilet upgrade	Building Asset Management Plan	2016-2036	$119,000	CFCI	Area 01 Area 02 Area 03 Area 04	19,768	5.0%	95.0%	$113,050	**$5.72**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Table 8 - DCP Charges by Detailed Infrastructure Category (30 June 2017)

		Community Infrastructure Levy	Development Infrastructure Levy						Adjusted Levy February 2019
Area No.	Area Name	Community Facility CFCI (with $1,150 Cap)	Community Facility CFDI	Path PADI	Road RDDI	Drainage RDDI	Development Contributions Plan DCPP	Total DI	TOTAL Policy Levy
Residential Charge for 1 Dwelling									
Area 01	Carlton North - Princes Hill	**$794.04**	$179.48	$824.61	$341.44	$132.83	$0.83	**$1,479.19**	**$2,273.23**
Area 02	Fitzroy North	**$794.04**	$179.48	$1,142.13	$112.80	$438.34	$0.83	**$1,873.58**	**$2,667.61**
Area 03	Clifton Hill	**$794.04**	$179.48	$1,461.74	$215.93	$1,000.57	$0.83	**$2,858.55**	**$3,652.58**
Area 04	Fairfield - Alphington	**$794.04**	$179.48	$47.40	$29.90	$120.51	$0.83	**$378.11**	**$1,172.15**
Area 05	Fitzroy	**$1,109.16**	$62.01	$986.43	$64.06	$107.51	$0.83	**$1,220.84**	**$2,330.00**
Area 06	Collingwood	**$1,109.16**	$15.16	$508.11	$126.43	$134.77	$0.83	**$785.30**	**$1,894.46**
Area 07	Abbotsford	**$1,109.16**	$2.57	$714.03	$89.87	$73.88	$0.83	**$881.19**	**$1,990.35**
Area 08	North Richmond	**$1,087.94**	$2.57	$426.29	$39.90	$29.23	$0.83	**$498.82**	**$1,584.17**
Area 09	Central Richmond	**$1,087.94**	$14.55	$611.22	$114.56	$2.05	$0.83	**$743.20**	**$1,767.29**
Area 10	Burnley - Richmond South	**$1,150.00**	$2.57	$408.37	$231.38	$55.29	$0.83	**$698.44**	**$1,675.52**
Area 11	Cremorne	**$1,087.94**	$2.57	$219.14	$63.43	$41.59	$0.83	**$327.56**	**$1,415.50**
Retail Charge for 1 SQM of Floorspace									
Area 01	Carlton North - Princes Hill			$10.99	$17.97	$1.33	$0.01	**$30.30**	**$30.30**
Area 02	Fitzroy North			$15.23	$5.94	$4.38	$0.01	**$25.56**	**$25.56**
Area 03	Clifton Hill			$19.49	$11.36	$10.00	$0.01	**$40.87**	**$40.87**
Area 04	Fairfield - Alphington			$0.63	$1.57	$1.20	$0.01	**$3.42**	**$3.42**
Area 05	Fitzroy			$13.15	$3.37	$1.07	$0.01	**$17.61**	**$17.61**
Area 06	Collingwood			$6.77	$6.65	$1.34	$0.01	**$14.78**	**$14.78**
Area 07	Abbotsford			$9.52	$4.73	$0.74	$0.01	**$15.00**	**$15.00**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

		Community Infrastructure Levy	Development Infrastructure Levy					Adjusted Levy February 2019
Area 08	North Richmond			$5.68	$2.10	$0.29	$0.01	**$8.08**	**$8.08**
Area 09	Central Richmond			$8.15	$6.03	$0.02	$0.01	**$14.21**	**$13.39**
Area 10	Burnley - Richmond South			$5.44	$12.18	$0.55	$0.01	**$18.18**	**$12.10**
Area 11	Cremorne			$2.92	$3.34	$0.41	$0.01	**$6.68**	**$6.68**
Commercial Charge for 1 SQM of Floorspace									
Area 01	Carlton North - Princes Hill			$16.49	$2.82	$1.33	$0.01	**$20.65**	**$20.65**
Area 02	Fitzroy North			$22.84	$0.93	$4.38	$0.01	**$28.17**	**$28.17**
Area 03	Clifton Hill			$29.23	$1.78	$10.00	$0.01	**$41.03**	**$41.03**
Area 04	Fairfield - Alphington			$0.95	$0.25	$1.20	$0.01	**$2.41**	**$2.41**
Area 05	Fitzroy			$19.73	$0.53	$1.07	$0.01	**$21.34**	**$21.34**
Area 06	Collingwood			$10.16	$1.04	$1.34	$0.01	**$12.56**	**$12.56**
Area 07	Abbotsford			$14.28	$0.74	$0.74	$0.01	**$15.77**	**$15.77**
Area 08	North Richmond			$8.53	$0.33	$0.29	$0.01	**$9.15**	**$9.15**
Area 09	Central Richmond			$12.22	$0.95	$0.02	$0.01	**$13.20**	**$11.97**
Area 10	Burnley - Richmond South			$8.17	$1.91	$0.55	$0.01	**$10.64**	**$8.38**
Area 11	Cremorne			$4.38	$0.52	$0.41	$0.01	**$5.33**	**$5.33**
Industrial Charge for 1 SQM of Floorspace									
Area 01	Carlton North - Princes Hill			$1.65	$5.10	$0.66	$0.01	**$7.42**	**$7.42**
Area 02	Fitzroy North			$2.28	$1.68	$2.19	$0.01	**$6.17**	**$6.17**
Area 03	Clifton Hill			$2.92	$3.22	$5.00	$0.01	**$11.16**	**$11.16**
Area 04	Fairfield - Alphington			$0.09	$0.45	$0.60	$0.01	**$1.15**	**$1.15**
Area 05	Fitzroy			$1.97	$0.96	$0.53	$0.01	**$3.47**	**$3.47**
Area 06	Collingwood			$1.02	$1.89	$0.67	$0.01	**$3.58**	**$3.58**
Area 07	Abbotsford			$1.43	$1.34	$0.37	$0.01	**$3.15**	**$3.15**
Area 08	North Richmond			$0.85	$0.60	$0.14	$0.01	**$1.60**	**$1.60**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

		Community Infrastructure Levy	Development Infrastructure Levy					Adjusted Levy February 2019
Area 09	Central Richmond			$1.22	$1.71	$0.01	$0.01	**$2.95**	**$2.83**
Area 10	Burnley - Richmond South			$0.82	$3.45	$0.27	$0.01	**$4.55**	**$2.93**
Area 11	Cremorne			$0.44	$0.95	$0.20	$0.01	**$1.60**	**$1.60**

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

12 APPENDIX 4 - ANNUAL REPORTING REQUIREMENTS

Ministerial Reporting Requirements as at 11 October 2016 are shown below.

Annexure

MINISTERIAL REPORTING REQUIREMENTS

Table 1 – Total DCP levies received in [*Insert Financial Year*]

DCP name and year approved	Levies received in [*Insert Year*] financial year ($)
Total	

Table 2 – DCP land, works, services or facilities accepted as works-in-kind in [*Insert Financial Year*]

DCP name and year approved	Project ID	Project description	Item purpose	Project value ($)
Total				

Table 3 – Total DCP contributions received and expended to date *(for DCPs approved after 1 June 2016)*

DCP name and year approved	Total levies received ($)	Total levies expended ($)	Total works-in-kind accepted ($)	Total DCP contributions received (levies and works-in-kind) ($)
Total				

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Table 4 – Land, works, services or facilities delivered in [*Insert Financial Year*] from DCP levies collected

Project description	Project ID	DCP name and year approved	DCP fund expended ($)	Works-in-kind accepted ($)	Council's contribution ($)	Other contributions ($)	Total project expenditure ($)	Percentage of item delivered
Total								

13 APPENDIX 5 - INDEXED DCP CHARGES FOR FINANCIAL YEAR 2018/2019

Table 9 - DCP Charges (1 July 2018 to 30 June 2019)

Residential Dwellings

AREA		LEVIES PAYABLE BY RESIDENTAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Dwelling	Per Dwelling	Per Dwelling
Area 01	Carlton North - Princes Hill	$1,516.50	$814.07	$2,330.57
Area 02	Fitzroy North	$1,920.84	$814.07	$2,734.90
Area 03	Clifton Hill	$2,930.65	$814.07	$3,744.72
Area 04	Fairfield - Alphington	$387.65	$814.07	$1,201.72
Area 05	Fitzroy	$1,251.63	$1,137.14	$2,388.78
Area 06	Collingwood	$805.11	$1,137.14	$1,942.25
Area 07	Abbotsford	$903.42	$1,137.14	$2,040.56
Area 08	North Richmond	$508.76	$1,115.37	$1,624.13
Area 09	Central Richmond	$696.50	$1,115.37	$1,811.87
Area 10	Burnley - Richmond South	$538.78	$1,179.01	$1,717.79
Area 11	Cremorne	$538.78	$1,179.01	$1,717.79

Retail Floorspace (sqm)

AREA		LEVIES PAYABLE BY RETAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$31.07	-	$31.07
Area 02	Fitzroy North	$26.20	-	$26.20
Area 03	Clifton Hill	$41.90	-	$41.90
Area 04	Fairfield - Alphington	$3.50	-	$3.50
Area 05	Fitzroy	$18.05	-	$18.05
Area 06	Collingwood	$15.16	-	$15.16
Area 07	Abbotsford	$15.37	-	$15.37
Area 08	North Richmond	$8.29	-	$8.29
Area 09	Central Richmond	$13.73	-	$13.73
Area 10	Burnley - Richmond South	$12.40	-	$12.40
Area 11	Cremorne	$12.40	-	$12.40

Continued ...

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Commercial Floorspace (sqm)

AREA		LEVIES PAYABLE BY COMMERCIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$21.17	-	$21.17
Area 02	Fitzroy North	$28.88	-	$28.88
Area 03	Clifton Hill	$42.07	-	$42.07
Area 04	Fairfield - Alphington	$2.47	-	$2.47
Area 05	Fitzroy	$21.88	-	$21.88
Area 06	Collingwood	$12.88	-	$12.88
Area 07	Abbotsford	$16.17	-	$16.17
Area 08	North Richmond	$9.39	-	$9.39
Area 09	Central Richmond	$12.28	-	$12.28
Area 10	Burnley - Richmond South	$8.59	-	$8.59
Area 11	Cremorne	$8.59	-	$8.59

Industrial Floorspace (sqm)

AREA		LEVIES PAYABLE BY INDUSTRIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$7.60	-	$7.60
Area 02	Fitzroy North	$6.32	-	$6.32
Area 03	Clifton Hill	$11.44	-	$11.44
Area 04	Fairfield - Alphington	$1.18	-	$1.18
Area 05	Fitzroy	$3.56	-	$3.56
Area 06	Collingwood	$3.67	-	$3.67
Area 07	Abbotsford	$3.23	-	$3.23
Area 08	North Richmond	$1.64	-	$1.64
Area 09	Central Richmond	$2.90	-	$2.90
Area 10	Burnley - Richmond South	$3.01	-	$3.01
Area 11	Cremorne	$3.01	-	$3.01

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

Disclaimer

1. This report is for the confidential use only of the party to whom it is addressed ("Client") for the specific purposes to which it refers and has been based on, and takes into account, the Client's specific instructions. It is not intended to be relied on by any third party who, subject to paragraph 3, must make their own enquiries in relation to the issues with which this report deals.

2. Hill PDA makes no representations as to the appropriateness, accuracy or completeness of this report for the purpose of any party other than the Client ("Recipient"). Hill PDA disclaims all liability to any Recipient for any loss, error or other consequence which may arise as a result of the Recipient acting, relying upon or using the whole or part of this report's contents.

3. This report must not be disclosed to any Recipient or reproduced in whole or in part, for any purpose not directly connected to the project for which Hill PDA was engaged to prepare the report, without the prior written approval of Hill PDA. In the event that a Recipient wishes to rely upon this report, the Recipient must inform Hill PDA who may, in its sole discretion and on specified terms, provide its consent.

4. This report and its attached appendices are based on estimates, assumptions and information provided by the Client or sourced and referenced from external sources by Hill PDA. While we endeavour to check these estimates, assumptions and information, no warranty is given in relation to their reliability, feasibility, accuracy or reasonableness. Hill PDA presents these estimates and assumptions as a basis for the Client's interpretation and analysis. With respect to forecasts, Hill PDA does not present them as results that will actually be achieved. Hill PDA relies upon the interpretation of the Client to judge for itself the likelihood of whether these projections can be achieved or not.

5. Due care has been taken to prepare the attached financial models from available information at the time of writing, however no responsibility can be or is accepted for errors or inaccuracies that may have occurred either with the programming or the resultant financial projections and their assumptions.

6. This report does not constitute a valuation of any property or interest in property. In preparing this report Hill PDA has relied upon information concerning the subject property and/or proposed development provided by the Client and Hill PDA has not independently verified this information except where noted in this report.

Attachment 2 - Yarra Development Contributions Plan (incorporated document)

HillPDA CONSULTING

ABN 52 003 963 755

Melbourne

Suite 114, 838 Collins Street
Docklands VIC 3008
t: +61 3 9629 1842
f: +61 3 9629 6315
e: melbourne@hillpda.com

Sydney

Level 3, 234 George Street
Sydney NSW 2000
GPO Box 2748 Sydney NSW 2001
t: +61 2 9252 8777
f: +61 2 9252 6077
e: sydney@hillpda.com

Attachment 3 - Revised Development Contributions Plan Overlay Schedule 1

SCHEDULE 1 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY

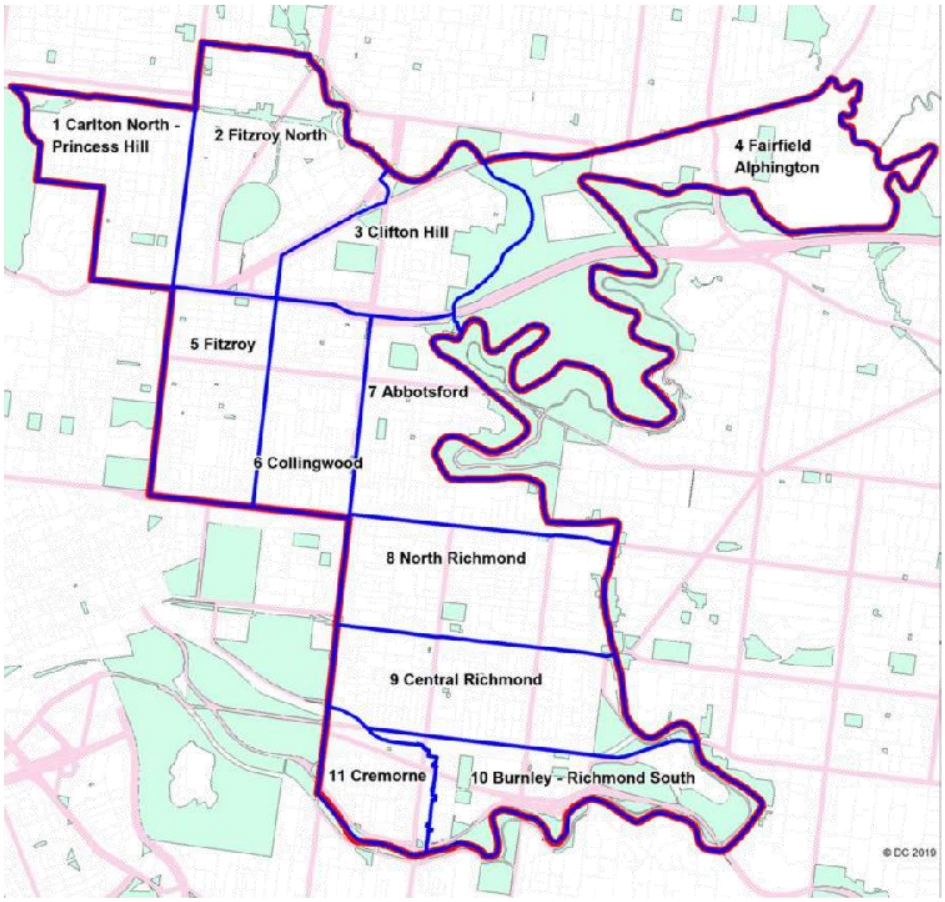
Shown on the planning scheme map as **DCPO1**.

YARRA DEVELOPMENT CONTRIBUTIONS PLAN 2017

1.0 Area covered by this development contributions plan

DD/MM/YYY Y Proposed C238

This Development Contributions Plan (DCP) applies to all new development within the 11 Charge Areas as shown below.



Attachment 3 - Revised Development Contributions Plan Overlay Schedule 1

2.0 Summary of costs

—DD/MM/YYYY Proposed C238

Facility Type and Code	Total Cost	Time of Provision	Actual Cost Contribution Attributed to New Development	Proportion of Cost Attributed to New Development
Community Facility CFCI	$72,963,969	2016-2036	$24,426,587	33.48%
Community Facility CFDI	$825,000	2016-2036	$246,299	29.85%
Path PADI	$72,600,362	2016-2036	$22,454,018	30.93%
Road RDDI	$16,349,427	2016-2036	$4,640,648	28.38%
Drainage RDDI	$14,352,825	2016-2036	$4,017,998	27.99%
Development Contributions Plan DCPP	$79,725	2016-2036	$24,382	30.58%
Total	**$177,171,308**		**$55,809,932**	**31.50%**

Notes:

This table sets out a summary of the costs prescribed in the Development Contributions Plan. Refer to the incorporated document (Yarra Development Contributions Plan 2017) for full details.

Yarra City Council commits to delivering the DCP projects by December 31 2036, but may deliver projects earlier. It is likely that projects will be progressively delivered over the DCP period.

Yarra City Council is Collecting Agency for this DCP and all its projects.

Yarra City Council is Development Agency for this DCP and all its projects.

Should Council not proceed with any of the infrastructure projects listed in this DCP, the funds collected for these items will be either:

- Used for the provision of other infrastructure as approved by the Minister responsible for the Planning and Environment Act, or
- Refunded to owners of land subject to these DCP charges.

3.0 Summary of contributions

-- C— DD/MM/YYYY Proposed C238

AREA		LEVIES PAYABLE BY RESIDENTAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure Per Dwelling	Community infrastructure Per Dwelling	All infrastructure Per Dwelling
Area 01	Carlton North - Princes Hill	$1,516.50	$814.07	$2,330.57
Area 02	Fitzroy North	$1,920.84	$814.07	$2,734.90
Area 03	Clifton Hill	$2,930.65	$814.07	$3,744.72
Area 04	Fairfield - Alphington	$387.65	$814.07	$1,201.72
Area 05	Fitzroy	$1,251.63	$1,137.14	$2,388.78
Area 06	Collingwood	$805.11	$1,137.14	$1,942.25
Area 07	Abbotsford	$903.42	$1,137.14	$2,040.56
Area 08	North Richmond	$508.76	$1,115.37	$1,624.13
Area 09	Central Richmond	$696.50	$1,115.37	$1,811.87
Area 10	Burnley - Richmond South	$538.78	$1,179.01	$1,717.79
Area 11	Cremorne	$538.78	$1,179.01	$1,717.79

Attachment 3 - Revised Development Contributions Plan Overlay Schedule 1

AREA		LEVIES PAYABLE BY RETAIL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$31.07	-	$31.07
Area 02	Fitzroy North	$26.20	-	$26.20
Area 03	Clifton Hill	$41.90	-	$41.90
Area 04	Fairfield - Alphington	$3.50	-	$3.50
Area 05	Fitzroy	$18.05	-	$18.05
Area 06	Collingwood	$15.16	-	$15.16
Area 07	Abbotsford	$15.37	-	$15.37
Area 08	North Richmond	$8.29	-	$8.29
Area 09	Central Richmond	$13.73	-	$13.73
Area 10	Burnley - Richmond South	$12.40	-	$12.40
Area 11	Cremorne	$12.40	-	$12.40

AREA		LEVIES PAYABLE BY COMMERCIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$21.17	-	$21.17
Area 02	Fitzroy North	$28.88	-	$28.88
Area 03	Clifton Hill	$42.07	-	$42.07
Area 04	Fairfield - Alphington	$2.47	-	$2.47
Area 05	Fitzroy	$21.88	-	$21.88
Area 06	Collingwood	$12.88	-	$12.88
Area 07	Abbotsford	$16.17	-	$16.17
Area 08	North Richmond	$9.39	-	$9.39
Area 09	Central Richmond	$12.28	-	$12.28
Area 10	Burnley - Richmond South	$8.59	-	$8.59
Area 11	Cremorne	$8.59	-	$8.59

Attachment 3 - Revised Development Contributions Plan Overlay Schedule 1

AREA		LEVIES PAYABLE BY INDUSTRIAL DEVELOPMENT		
Charge Area Number and Name		Development Infrastructure	Community infrastructure	All infrastructure
		Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace	Per Square Metre (SQM) of Floorspace
Area 01	Carlton North - Princes Hill	$7.60	-	$7.60
Area 02	Fitzroy North	$6.32	-	$6.32
Area 03	Clifton Hill	$11.44	-	$11.44
Area 04	Fairfield - Alphington	$1.18	-	$1.18
Area 05	Fitzroy	$3.56	-	$3.56
Area 06	Collingwood	$3.67	-	$3.67
Area 07	Abbotsford	$3.23	-	$3.23
Area 08	North Richmond	$1.64	-	$1.64
Area 09	Central Richmond	$2.90	-	$2.90
Area 10	Burnley - Richmond South	$3.01	-	$3.01
Area 11	Cremorne	$3.01	-	$3.01

Note: Square metres of floorspace (SQM) refers to gross floorspace.

The above listed contribution amounts are current as at 30 June 2017. They will be adjusted annually on July 1 each year to cover the cost of inflation and fluctuations in the cost of construction. The amount of adjustment will be in accordance with the Consumer Price Index for Melbourne (All Groups) as published by the Australian Bureau of Statistics in any adjustment period. A list showing the current contribution amounts will be held at Council's Planning Department.

For land uses not falling within an expressly defined land use term within this Planning Scheme the applicable rate is determined as commercial.

Payment of development contributions is to be made in cash.

4.0 Land or development excluded from development contributions plan

DD/MM/YYYY Proposed C238

No land or development is exempt from this Development Contributions Plan unless exempt by Legislation or Ministerial Direction or Legal Agreement with Yarra City Council or stated below. The following development is exempt from a development contribution:

- Land developed for a non-government school, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016;
- Land developed for housing by or for the Department of Health and Human Services, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016. This applies to social housing development delivered by and for registered housing associations. This exemption does not apply to private dwellings developed by the Department of Health and Human Services or registered housing associations;
- Land which has a section 173 Agreement under the Planning and Environment Act 1987 and/or a Deed of Agreement which:
    - requires the payment of a development contributions levy; or
    - requires the provision of specified works services or facilities beyond those necessary on or to the land or other land as a result of the grant of any permit; or

Attachment 3 - Revised Development Contributions Plan Overlay Schedule 1

  - requires the payment of any development contributions or the provision of specified works services or facilities required to be provided public and/or community infrastructure by any other provision of this scheme.
  - requires the provision of land for works services or facilities (other than land required to be provided as public open space pursuant to clause 53.01 or section 18 of the Subdivision Act 1988) ; or
  - explicitly excludes further development contributions to be made.

  For the avoidance of any doubt, the exemption is limited to the extent of any contribution secured by the section 173 Agreement.

- Construction of a building or carrying out of works or a subdivision that do not generate a net increase in additional demand units, including:
  - Replacement of a building;
  - Renovations or alterations to an existing building;
  - Construction of a fence;
  - Outbuildings normal to an existing dwelling;
- Dwelling units that are replaced within a development. This exemption does not apply to net additional dwelling units created by the development.

Attachment 4 - Amendment C238 documents - unchanged

Planning and Environment Act 1987

YARRA PLANNING SCHEME

AMENDMENT C238

EXPLANATORY REPORT

Who is the planning authority?

This amendment has been prepared by Yarra City Council which is the planning authority for this amendment.

The Amendment has been made at the request of Yarra City Council.

Land affected by the Amendment

The amendment applies to all land within the City of Yarra and affects new residential, commercial and industrial development within the municipality (Figure 1).

Land developed for a non-government school, as defined in Ministerial Direction on the Preparation and Content of Development Contributions Plans of 11 October 2016 and certain types of development (renovations, alterations, demolition and construction of a replacement building, outbuildings, reinstatement of damaged buildings) are exempt from the requirement to make contributions.

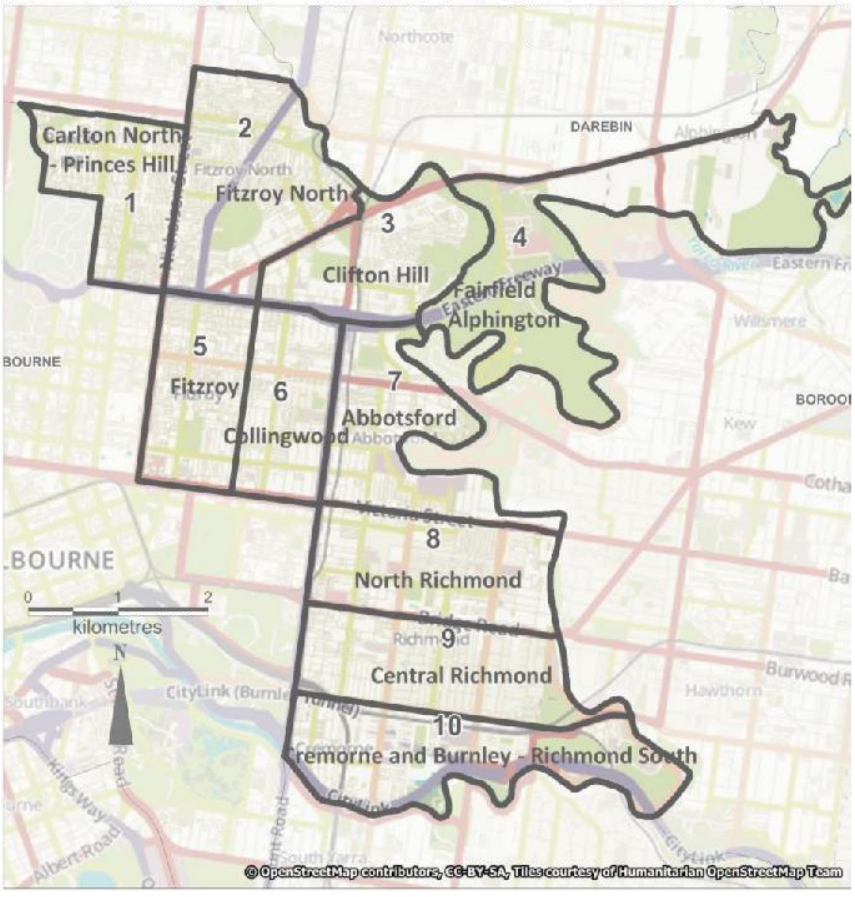


Figure 1: Subject Land

Attachment 4 - Amendment C238 documents - unchanged

What the amendment does

The Amendment:

- Inserts a new Clause 45.06 Development Contributions Plan Overlay and a new Schedule 1 to the Clause 45.06 into the Yarra Planning Scheme. .
- Amends the Schedule to Clause 72.03 to include new Planning Scheme Maps: 1DCPO1, 2DCPO1, 3DCPO1, 4DCPO1, 5DCPO1, 6DCPO1, 7DCPO1, 8DCPO1, 9DCPO1 into the Yarra Planning Scheme.
- Amends the Schedule to Clause 72.04 Schedule to incorporate the Yarra Development Contributions Plan –2017 into the Yarra Planning Scheme.

Strategic assessment of the Amendment

Why is the Amendment required?

The amendment implements the municipal-wide *Yarra Development Contributions Plan 2017*. The Development Contributions Plan (DCP) imposes a development infrastructure levy and/or a community infrastructure levy to fund a range of social and physical infrastructure throughout the municipality. The DCP includes capital infrastructure projects such as roads, footpath, streetscape works as well as community infrastructure projects (for example- a community centre).

The infrastructure is required to cater for the growing population of the municipality and the consequential increased demand on infrastructure.

The DCP will provide certainty for Council, developers and the broader community about how and to what extent new residential, commercial and industrial developments will be levied to ensure the necessary infrastructure is delivered in a timely manner. The DCP will further reduce the uncertainty and resource intensity associated with the current case-by-case voluntary agreements for contributions between Council and proponents.

Does the Amendment address relevant bushfire risk?

This amendment does not have an impact on bushfire risk.

Does the Amendment comply with the requirements of any Minister's Direction applicable to the amendment?

The amendment is consistent with each of the Ministerial Directions on Development Contribution Plans made under the *Planning and Environment Act 1987*. The amendment is consistent with the Ministerial Direction on the Form and Content of Planning Schemes under section 7(5) of the *Planning and Environment Act 1987*.

The Amendment complies with the requirements of the Ministerial Direction on the Form and Content of Planning Schemes (section 7(5) of the Act)

How does the Amendment support or implement the State Planning Policy Framework and any adopted State policy?

Clause 19 Infrastructure

This clause encourages planning authorities to consider the use of development contributions in the funding of infrastructure in an efficient, equitable, accessible and timely manner.

In particular the amendment is consistent with Clause 19.03-1S Development and infrastructure contributions plans which seeks 'to facilitate the timely provision of planned infrastructure to communities through the preparation and implementation of development contributions plans'.

The strategies to implement this objective are:

- Prepare development contributions plans and infrastructure contributions plans, under the Planning and Environment Act 1987, to manage contributions towards infrastructure.
- Collect development contributions on the basis of approved development and infrastructure contributions plans.

- Require annual reporting by collecting and development agencies to monitor the collection and expenditure of levies and the delivery of infrastructure.

Planning authorities should consider the Development Contributions Guidelines when preparing a DCP (Department of Sustainability and Environment, June 2003 – as amended March 2007) and the relevant Ministerial guidelines.

How does the Amendment support or implement the Local Planning Policy Framework, and specifically the Municipal Strategic Statement?

Amendment C238 is consistent with the following Clauses contained in Council's Local Planning Policy Framework:

Clause 21.05-4 Public environment

This clause requires new development to add positively to Yarra's overall character and help create a safe and engaging public environment where pedestrian activity and interaction are encouraged. Public spaces and urban squares provide outdoor spaces for people to meet and gather.

There is a need to ensure that, as development occurs, Yarra's public environment, buildings and transport infrastructure are accessible to all people.

Clause 21.06-1 Walking and cycling

Strategy 31 encourages improved pedestrian and cycling links in association with new development where possible.

Clause 21.07-3 Water quality

Strategy 38.1 encourages the use of stormwater retention and treatment devices to improve water quality.

Clause 21.10 Future work

This clause identifies nominates the investigation of *an appropriate contributions system* for areas that are forecast to experience significant rates of residential development as further work required to meet the strategies and objectives of the MSS

Does the Amendment make proper use of the Victoria Planning Provisions?

The Amendment makes proper use of the Victoria Planning Provisions by applying the Development Contributions Plan Overlay to all land and introducing a Development Contribution Plan to equitably collect funding for community and development infrastructure throughout the municipality.

How does the Amendment address the views of any relevant agency?

The views of relevant agencies will be sought during the formal exhibition process of Amendment C238.

Does the Amendment address relevant requirements of the Transport Integration Act 2010?

There are no particular requirements of the Transport Integration Act 2010 that are of relevance to the introduction of the amendment

Resource and administrative costs

What impact will the new planning provisions have on the resource and administrative costs of the responsible authority?

The introduction of the DCP will impact on Council's administrative costs because Council will need to set up a new accounting and auditing system to monitor the income and expenditure from the DCP. However, the DCP will also generate revenue for Council to assist in delivering essential community and development infrastructure. The amendment will represent a cost saving to Council in so far as it is presently required to negotiate on a case by case basis for contributions to infrastructure.

Where you may inspect this Amendment

Attachment 4 - Amendment C238 documents - unchanged

The Amendment is available for public inspection, free of charge, during office hours at the following places:

City of Yarra website at www.yarracity.vic.gov.au/amendmentc238

Richmond Town Hall, 333 Bridge Road, Richmond.

The Amendment can also be inspected free of charge at the Department of Environment, Land, Water and Planning website at www.planning.vic.gov.au/public-inspection.

Submissions

Any person who may be affected by the Amendment [and/or planning permit] may make a submission to the planning authority. Submissions about the Amendment [and/or planning permit] must be received by 21 September 2018.

A submission must be sent to:

email

info@yarracity.vic.gov.au (please use Amendment C238 in the subject header)

or

post

Strategic Planning
City of Yarra
PO Box 168
Richmond. 3121.

Panel hearing dates

In accordance with clause 4(2) of Ministerial Direction No.15 the following panel hearing dates have been set for this amendment:

- directions hearing: Week of 10 December 2018
- panel hearing: Week of 25 February 2019

Attachment 4 - Amendment C238 documents - unchanged

Planning and Environment Act 1987

YARRA PLANNING SCHEME

AMENDMENT C238

INSTRUCTION SHEET

The planning authority for this amendment is the City of Yarra

The Yarra Planning Scheme is amended as follows:

Planning Scheme Maps

The Planning Scheme Maps are amended by a total of 9 attached map sheets.

Overlay Maps

1. Insert new Planning Scheme Map Nos. 1DCPO1, 2DCPO1, 3DCPO1, 4DCPO1, 5DCPO1, 6DCPO1, 7DCPO1, 8DCPO1, 9DCPO1 in the manner shown on the attached maps marked "Yarra Planning Scheme, Amendment C238".

Planning Scheme Ordinance

The Planning Scheme Ordinance is amended as follows:

2. In Overlays – insert Clause 45.06, in the form of the attached document.

3. In Overlays – following Clause 45.06, insert a new Schedule 1 in the form of the attached document.

4. In General Provisions – Clause 72.03, replace the schedule with a new Schedule in the form of the attached document.

5. In Incorporated Documents – Clause 72.04, replace the Schedule with a new Schedule in the form of the attached document.

End of document

Attachment 4 - Amendment C238 documents - unchanged

45.06 DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY

19/01/2006
VC37

Shown on the planning scheme map as **DCPO** with a number.

Purpose

To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.

To identify areas which require the preparation of a development contributions plan for the purpose of levying contributions for the provision of works, services and facilities before development can commence.

45.06-1 Development contributions plan

19/01/2006
VC37

A permit must not be granted to subdivide land, construct a building or construct or carry out works until a development contributions plan has been incorporated into this scheme.

This does not apply to the construction of a building, the construction or carrying out of works or a subdivision specifically excluded by a schedule to this overlay.

A permit granted must:

- Be consistent with the provisions of the relevant development contributions plan.
- Include any conditions required to give effect to any contributions or levies imposed, conditions or requirements set out in the relevant schedule to this overlay.

45.06-2 Preparation of a development contributions plan

19/01/2006
VC37

The development contributions plan may consist of plans or other documents and may, with the agreement of the planning authority, be prepared and implemented in stages.

The development contributions plan must:

- Specify the area to which the plan applies.
- Set out the works, services and facilities to be funded through the plan, including the staging of the provision of those works, services and facilities.
- Relate the need for the works, services or facilities to the proposed development of land in the area.
- Specify the estimated costs of each of the works, services and facilities.
- Specify the proportion of the total estimated costs of the works, services and facilities which is to be funded by a development infrastructure levy or community infrastructure levy or both.
- Specify the land in the area and the types of development in respect of which a levy is payable and the method for determining the levy payable in respect of any development of land.
- Provide for the procedures for the collection of a development infrastructure levy in respect to any development for which a permit is not required.

The development contributions plan may:

- Exempt certain land or certain types of development from payment of a development infrastructure levy or community infrastructure levy or both.
- Provide for different rates or amounts of levy to be payable in respect of different types of development of land or different parts of the area.

Attachment 4 - Amendment C238 documents - unchanged

Notes: *Refer to the* State Planning Policy Framework *and the* Local Planning Policy Framework, *including the* Municipal Strategic Statement, *for strategies and policies which may affect the use and development of land.*

Check the requirements of the zone which applies to the land.

Other requirements may also apply. These can be found at Particular Provisions.

Attachment 4 - Amendment C238 documents - unchanged

ProposedC238

SCHEDULE TO CLAUSE 72.03 WHAT DOES THIS PLANNING SCHEME CONSIST OF?

1.0 **Maps comprising part of this planning scheme:**

Proposed C238

- Maps No. 1, 1HO, 1DDO, 1SBO, 1PAO, 1EAO, 1DCPO
- Maps No. 2, 2SLO, 2ESO, 2HO, 2DDO, 2SLIO, 2SBO, 2PAO, 2EAO, 2DCPO
- Maps No. 3, 3SLO, 3ESO, 3HO, 3DPO, 3DDO, 3LSIO, 3SBO, 3PAO, 3EAO, 3DCPO
- Maps No. 4, 4SLO, 4ESO, 4HO, 4DPO, 4DDO, 4LSIO, 4PAO, 4EAO, 4DCPO
- Maps No. 5, 5HO, 5DPO, 5DDO, 5EAO, 5DCPO
- Maps No. 6, 6SLO, 6HO, 6DPO, 6DDO, 6IPO, 6LISO, 6SBO, 6PAO, 6EAO, 6PO, 6DCPO
- Maps No. 7, 7SLO, 7DPO, 7DDO, 7LSIO, 7SBO, 7PAO, 7HO, 7EAO, 7DCPO
- Maps No. 8, 8SLO, 8HO, 8DDO, 8LSIO, 8SBO, 8EAO, 8CLPO, 8DCPO
- Maps No. 9, 9SLO9, 9HO, 9DPO, 9DDO, 9LSIO, 9PAO, 9EAO, 9CLPO, 9DCPO

Attachment 4 - Amendment C238 documents - unchanged

Proposed C238

SCHEDULE TO CLAUSE 72.04 DOCUMENTS INCORPORATED IN THIS PLANNING SCHEME

1.0 Incorporated documents

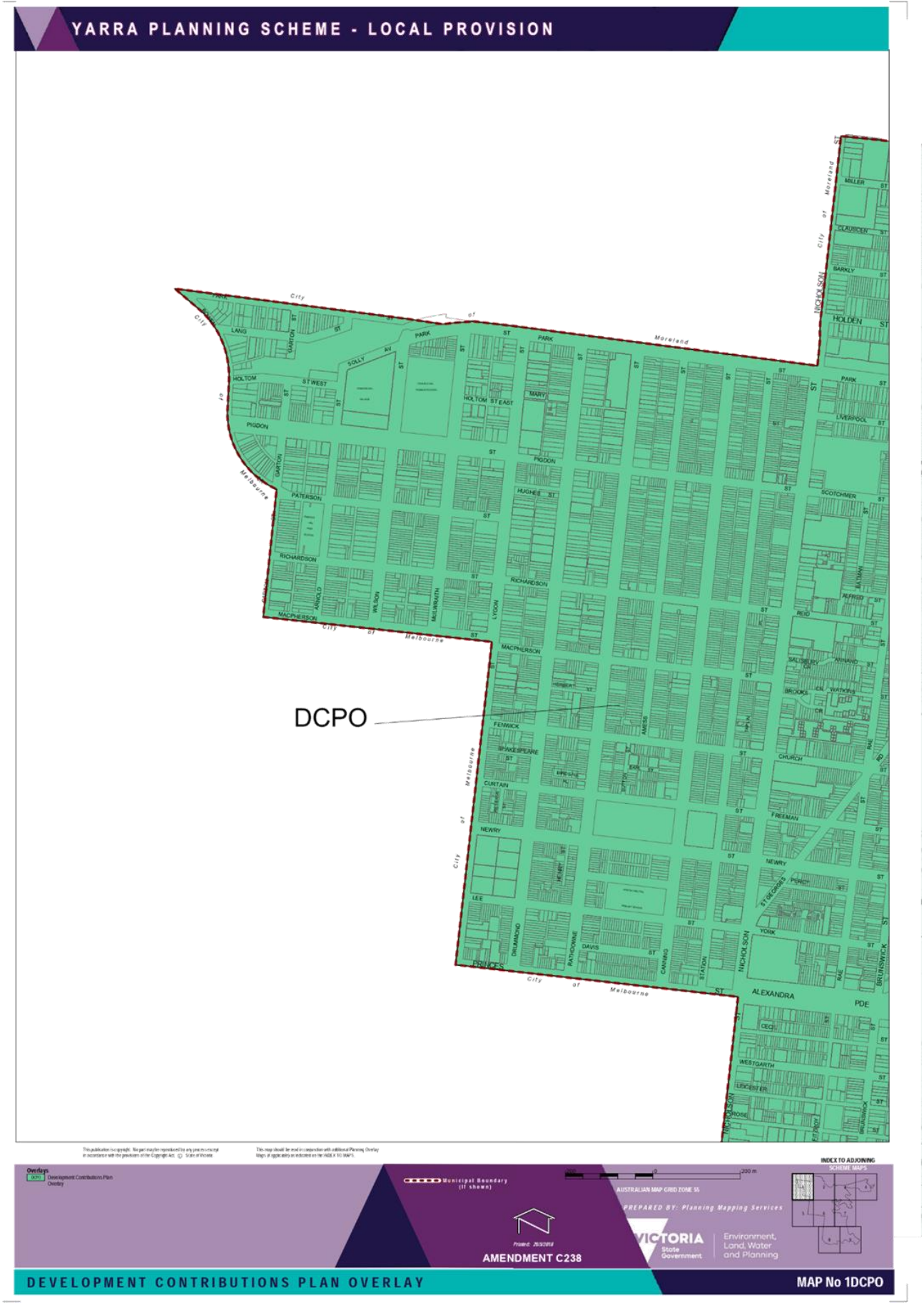
Proposed C238

Name of document	Introduced by:
10 Bromham Place, Richmond Incorporated Document, February 2013	C171
18-62 Trenerry Crescent, Abbotsford (Incorporated Plan, May 2018)	C218
32-68 Mollison Street and 61-69 William Street, Abbotsford July 2013	C170
520 Victoria Street, 2A Burnley Street, and 2 – 30 Burnley Street, Richmond, Burnley Street West Precinct - Incorporated Plan, 2012	C150
Amcor Alphington Paper Mill Site Preparation – Incorporated Document, September 2012	C161
Atherton Gardens – Fitzroy, September 2010	C136
Caulfield Dandenong Rail Upgrade Project, Incorporated Document, April 2016	GC37
Chandler Highway Upgrade Incorporated Document, March 2016 (Amended December 2017)	GC80
City of Yarra Review of Heritage Overlay Areas 2007 Appendix 8, revised February 2018	C237
Cremorne Balmain Dover Street Project	NPS1
Crown Land Car Park Works, Burnley, August 2005	C92
Fitzroy Former Gasworks Site, Incorporated Document, February 2018	C242
Flying Fox Campsite, Yarra Bend Park, December 2004	C90
Hurstbridge Rail Line Upgrade 2017 Incorporated Document, January 2017	GC60
Incorporated Plan under the provisions of clause 43.01 Heritage Overlay, Planning permit exemptions, July 2014	C178
Local Policy "Protection of Biodiversity" Sites of Remnant Vegetation (Biosis 2001)	C49
M1 Redevelopment Project, October 2006	C86
Melbourne City Link Project – Advertising Sign Locations, November 2003	VC20
Planning and Design Principles for the Richmond Maltings Site, Cremorne – November 2007	C101
Richmond Walk Up Estate Redevelopment, September 2010	C136
Social housing redevelopment; Atherton Gardens Estate, Fitzroy, and Richmond Public Housing Estate, Richmond, for which the Minister for Planning is the Responsible Authority, May 2010	C135
Specific Site and Exclusion – Lot 2 on PS433628L (452 Johnston Street, Abbotsford	C56
Swan Street Works, Burnley, June 2005	C91
Tramway Infrastructure Upgrades Incorporated Document, May 2017	GC68
Victoria Gardens Building Envelope and Precinct Plan and Precinct 3 Plan – Warehouse Area	C7
Victoria Gardens Urban Design Guidelines	NPS1
Victorian Institute of Forensic Psychiatry Concept Plan (January 1997)	NPS1

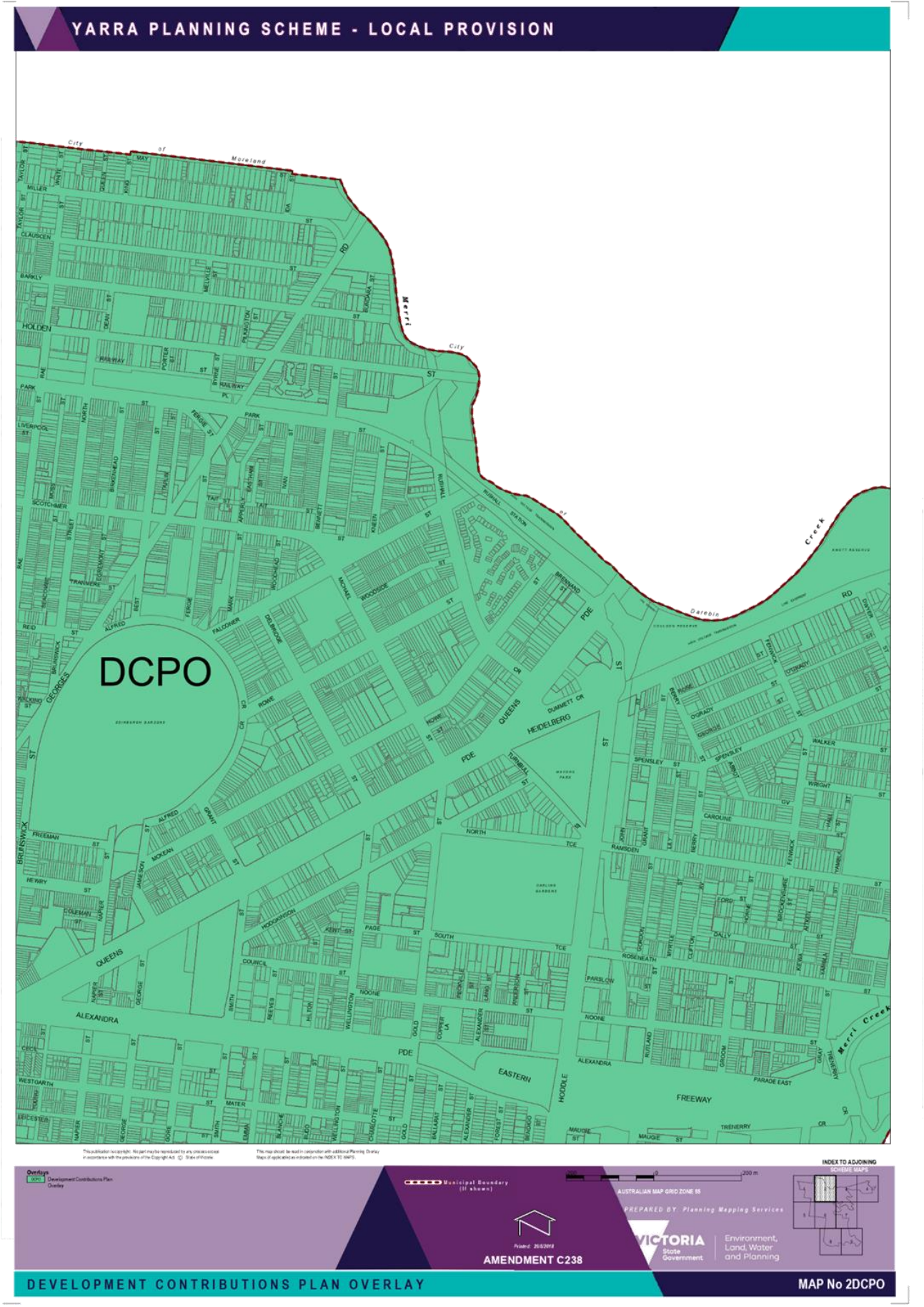
Attachment 4 - Amendment C238 documents - unchanged

Name of document	Introduced by:
Yarra Development Contributions Plan 2017	C238
Yarra Gardens Precinct Plan, December 2009	C128

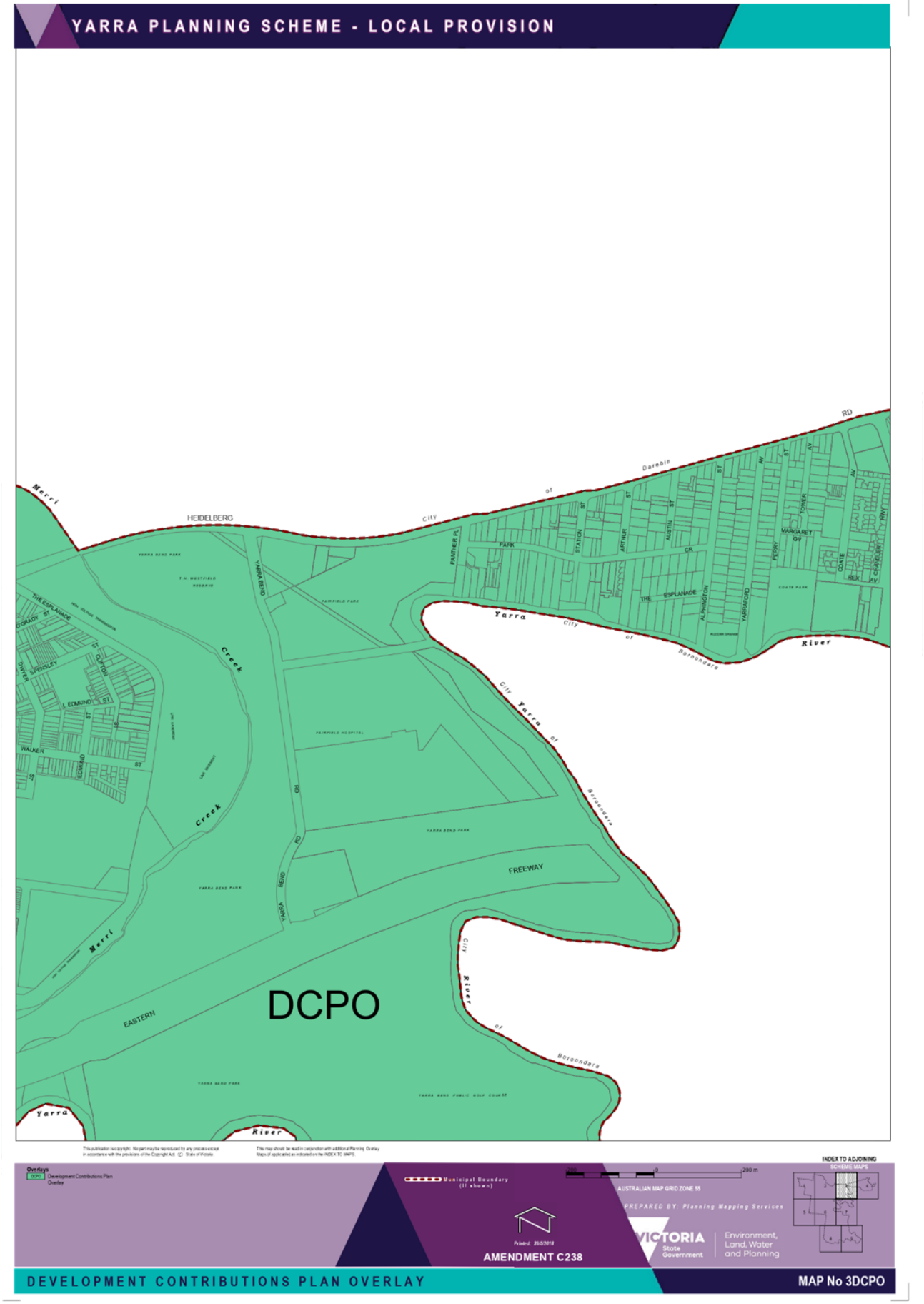
Attachment 4 - Amendment C238 documents - unchanged



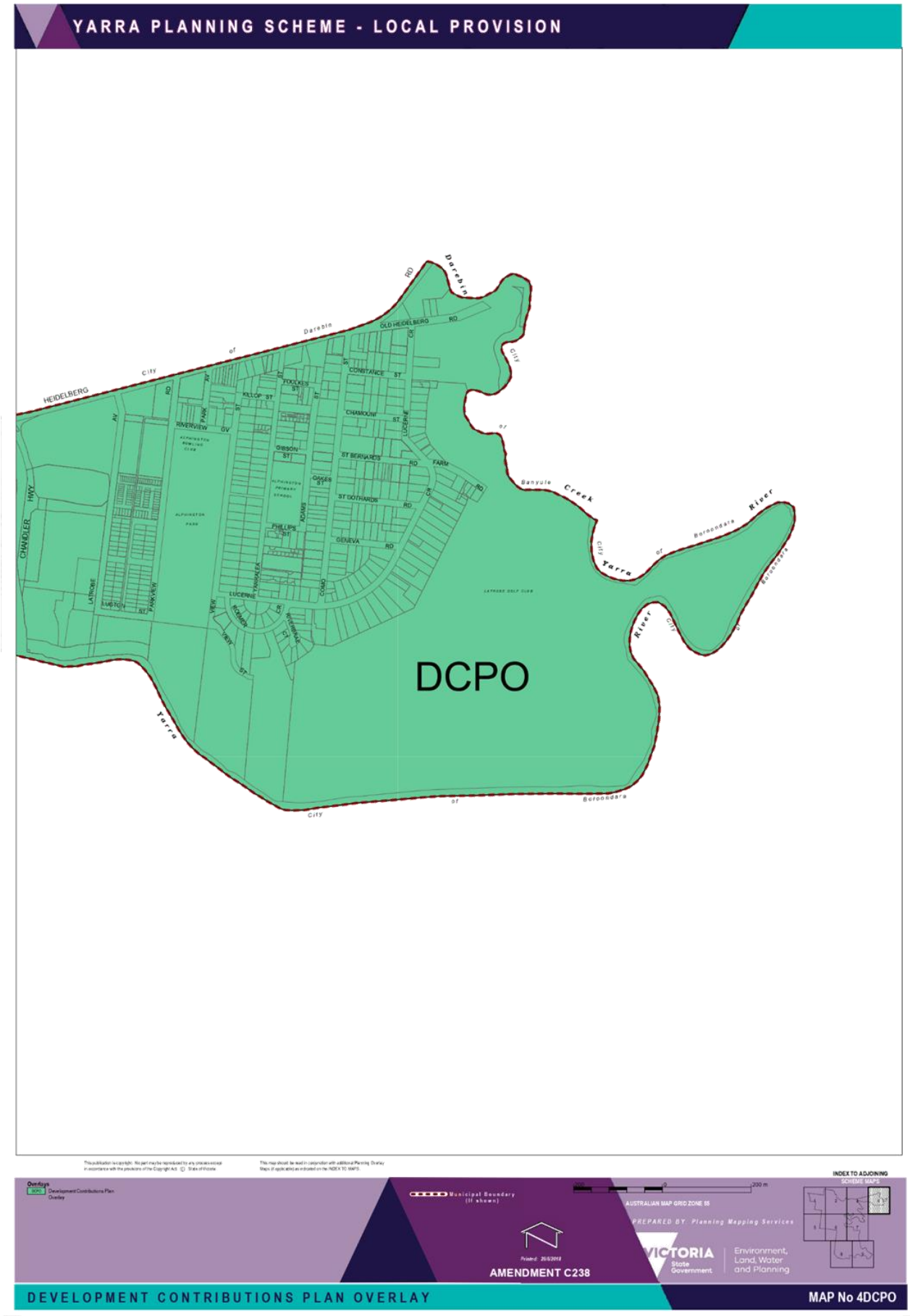
Attachment 4 - Amendment C238 documents - unchanged



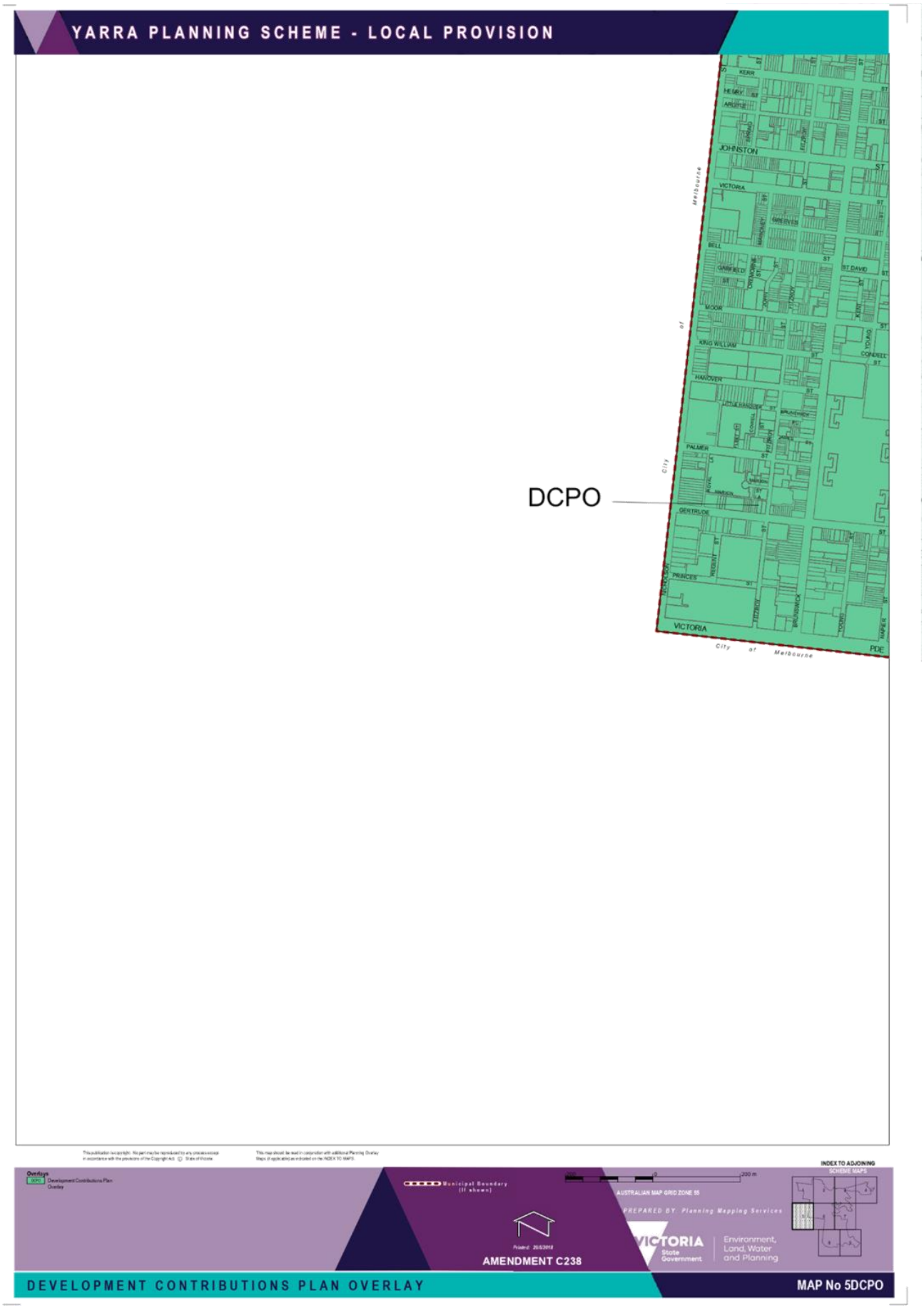
Attachment 4 - Amendment C238 documents - unchanged



Attachment 4 - Amendment C238 documents - unchanged

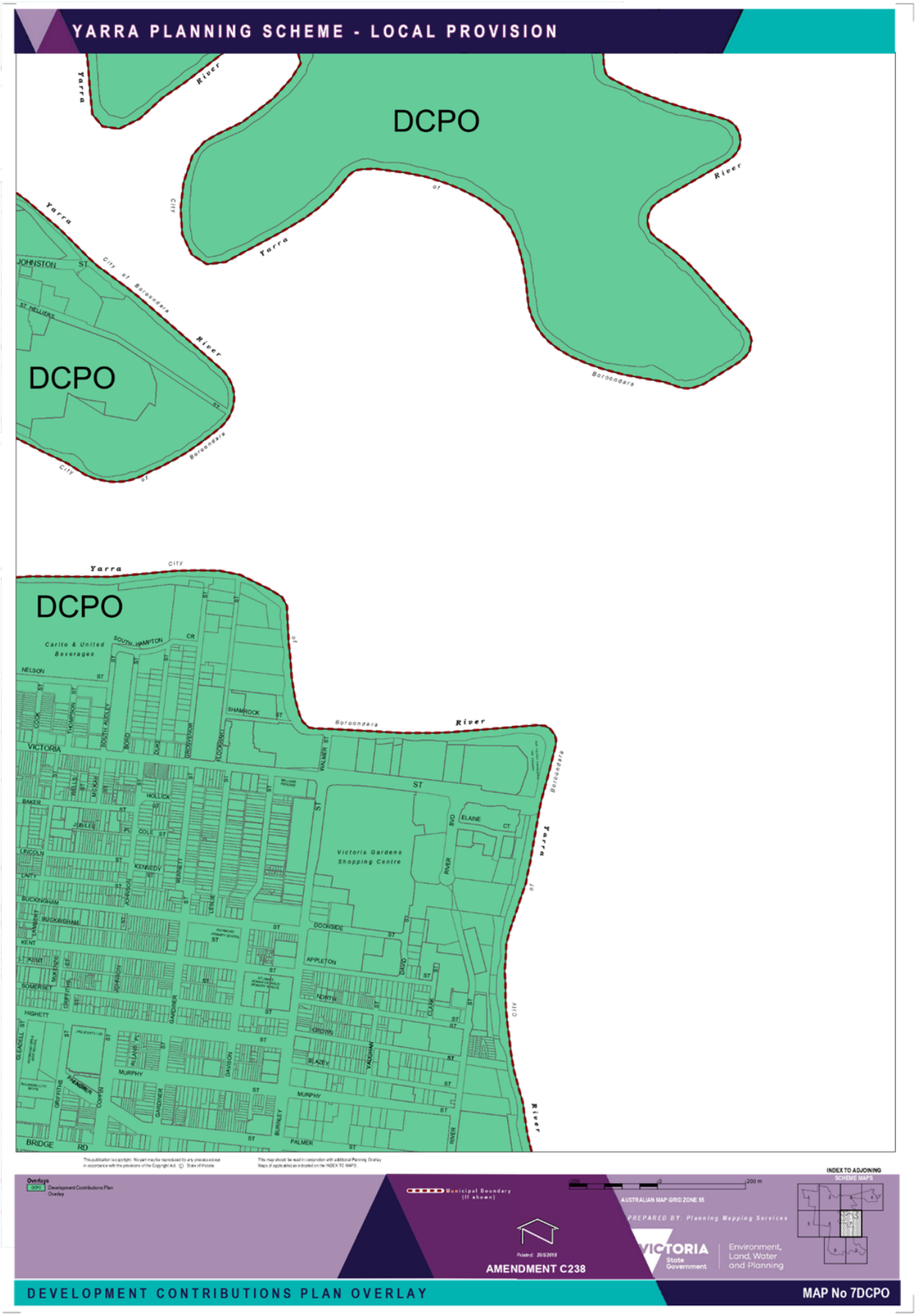


Attachment 4 - Amendment C238 documents - unchanged

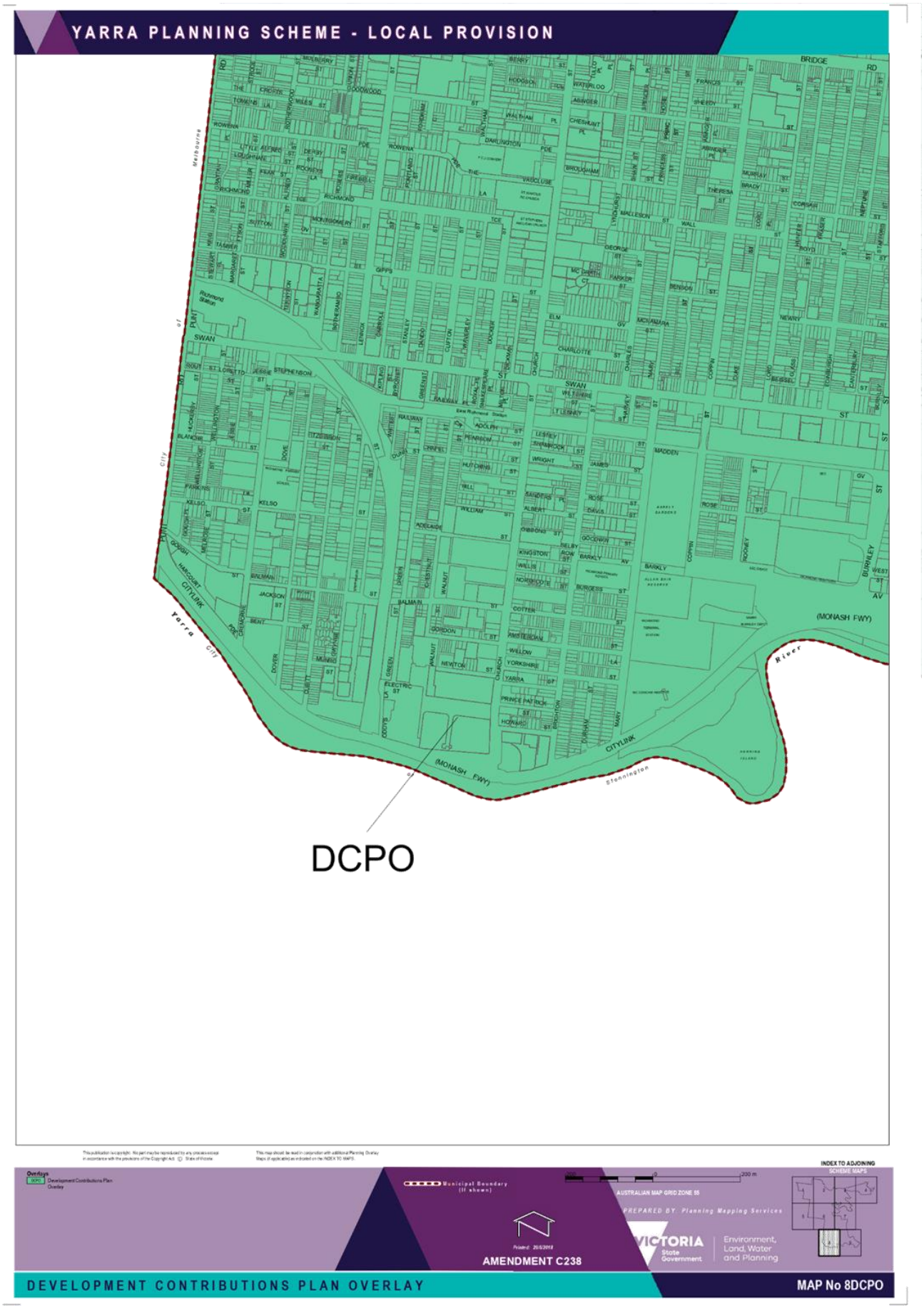


Attachment 4 - Amendment C238 documents - unchanged

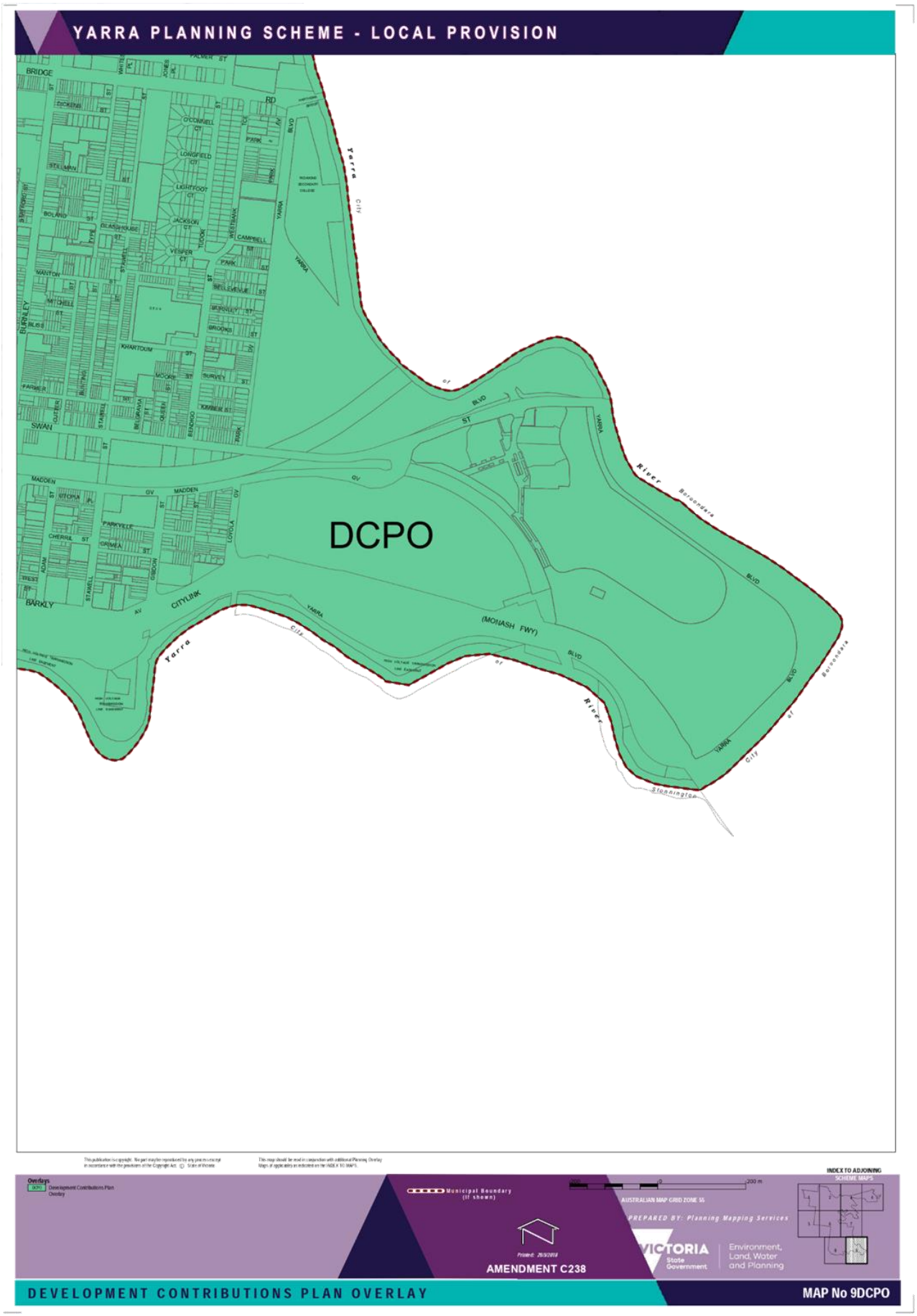
Attachment 4 - Amendment C238 documents - unchanged



Attachment 4 - Amendment C238 documents - unchanged



Attachment 4 - Amendment C238 documents - unchanged



11.5 Community Grants 2019/20 Initiation Report

Executive Summary

Purpose

The purpose of this report is to provide an overview and seek endorsement of the process, objectives, priority areas and assessment procedures for the Annual Grants 2020, Small Project Grants 2019/20 and Room To Create Responsive Grants 2019/20; and outline and seek endorsement of the budget for these three grant programs, pending 2019/20 budget approval.

Key Issues

The Community Grants aim to support community initiatives and projects that address local issues, increase community resilience, build social capital and enhance the wellbeing of Yarra residents. Social outcomes such as knowledge and skills development, increased levels of resilience and celebration of cultural diversity are also aims of the grants program. The grants program is one of the key strategies in which Council addresses social cohesion and supports projects which aim to strengthen the community.

Financial Implications

An amount of $903,100 for the Annual Grants 2020, $75,000 for the Small Project Grants 2019/20 and $25,000 for the Room to Create Responsive Grants 2019/20 are included for endorsement pending 2019/20 budget approval.

PROPOSAL

That Council endorses the funding allocation to the Annual Grants 2020, Small Project Grants 2019/20 and Room to Create Responsive Grants 2019/20 and the guidelines, assessment, monitoring and evaluation processes for each of the programs.

11.5 Community Grants 2019/20 Initiation Report

Trim Record Number: D19/51535
Responsible Officer: Group Manager People, Culture and Community

Purpose

1. The purpose of this report is to:
   (a) provide an overview and seek endorsement of the process, objectives, priority areas and assessment procedures for the Annual Grants 2020, Small Project Grants 2019/20, and Room To Create Responsive Grants 2019/20; and
   (b) outline and seek endorsement of the budget for the Annual Grants 2020, Small Project Grants 2019/20 and Room To Create Responsive Grants 2019/20, pending 2019/20 budget approval.

Background

2. Yarra City Council's Community Grants Program (the Grants Program) is a significant investment in the community. It is one of Victoria's leading local government grant programs, through which the Council has established its reputation for its strong support of the community.
3. The Community Grants Program aims to:
   (a) develop partnerships between Council and community groups to achieve Council's strategic directions;
   (b) direct resources to both the emerging and specific needs of disadvantaged groups;
   (c) develop a positive approach to the resolution of local social issues;
   (d) support local groups, activities and community connectedness; and
   (e) support community organisations to develop skills and increase community participation.
4. The Grants Program is subject to ongoing evaluation for continuous improvement, making the program more responsive, accessible and innovative.
5. The Grants Program currently includes the following grant rounds:
   (a) Annual Grants (AG), providing funding annually;
   (b) Investing in Community Grants (ICG), 2018-2020, providing funding over three years;
   (c) Community Partnership Grants (CPG), 2017-2021, providing funding over four years;
   (d) Small Project Grants (SPG), open throughout the year;
   (e) Creative and Engage Yarra Arts Program 2020-2021 providing funding over two years;
   (f) Celebrate Yarra Festival Program 2020-2022 providing funding over three years;
   (g) Richmond and Collingwood Youth Program Grants, 2017-2020, providing funding over three years; and
   (h) Room to Create Responsive Grants, open throughout the year.
6. This report seeks endorsement by Council for the opening in 2019 of the following three grant rounds:
   (a) Annual Grants 2020;
   (b) Small Project Grants 2019/20; and
   (c) Room to Create Responsive Grants 2019/20.

7. The 2020 Annual Grants have the following seven streams:

   (a) Community Development;

   (b) Arts and Culture;

   (c) Sustainability;

   (d) Sport and Recreation;

   (e) Family, Children & Youth;

   (f) Community Housing; and

   (g) Youth-Led Grants.

Advertising the Grants

8. A variety of methods are used to advertise the grants rounds to ensure as wide an audience as possible. These include email newsletters and networks, posting on the website, Yarra News, information sessions at Town Halls and posters at public housing estates, Senior Citizens' Centres, Connie Benn, Yarra Community Youth Centre, Libraries, Recreation Centres, Maternal Child and Health Centres, Neighbourhood Houses and Learning Centres, the Neighbourhood Justice Centre and Yarra's three Community Health Centres.

Proposed Annual Grants 2020

9. The Annual Grants priorities, streams and objectives are similar to those of last year with minor updates. One of the changes is to allow organisations apply for the costs of purchasing a defibrillator, thought the Community Development grants. The revised Annual Grants Guidelines are provided in **Attachment One**. These grants are for projects delivered in the calendar year of 2020.

10. The following table shows the proposed time-frame for Annual Grants 2020:

Grants Information Session	6-8pm, Tuesday 11 June, 2019
Richmond Town Hall, Meeting Room 1	
Grants Information Session	10am – 12pm, Thursday 13 June 2019
Bargoonga Nganjin, Seminar Room 1	
Grants Information Session	12pm-2pm, Friday 14 June 2019
Collingwood Library, Meeting Room	
Youth-Led Grant Information Session	5pm-7pm, Wednesday 17 June 2019
Yarra Youth Centre, Napier St Fitzroy	
Youth-Led Grant Information Session	5pm-7pm, Monday 24 June 2019
Bargoonga Nganjin, Seminar Room 1	
Grant round opens	**9am Monday 10 June 2019**
Applications close	**11:59pm Monday 22 July 2019**
Announcement of grant outcomes	November 2019
Funding agreements to be returned by successful applicants	From December 2019
Grants paid by Electronic Funds Transfer	From end of December 2019
Projects commence	From 1 January 2020

Community Panels – Annual Grants

11. The Community Panels are made up from external community representatives and can also include Council Officers. The Community Panels comprise at least three people, two of whom are not Council staff. Panellists should have expertise in the stream and preferably a familiarity with grants programs.

12. Community Panels will conduct an assessment process based on the Annual Grants guidelines, objectives, criteria and knowledge of stream priorities and community needs. The panel members receive the application and summary of the internal assessor's comments. The Panels then meet to make their recommendations for approval by Council.

13. Council has established the following selection criteria for community representation on the panels. Panel members are required to possess:

    (a) a strong working knowledge of the Yarra community;

    (b) expertise in, and representative of, a program area relevant to the Annual Grants; and

    (c) a commitment to complying with the ethical requirements of the process, including confidentiality and declaration of any conflict of interest.

14. Membership of the Community Panels will be sought from members of the community that demonstrate the appropriate requirements. Individual members will be identified in the confidential recommendations report to Council. The Yarra Arts Advisory Committee (excluding Councillors on the committee) will make up the Arts and Culture Community Panel. The Yarra Environment Advisory Committee (excluding Councillors on the committee) will make up the Sustainability Community Panel.

Small Project Grants 2019/20

15. The Small Project Grants (SPG) continue to grow in popularity with 144 grant applications since July 2018 compared with 123 in the corresponding period in the previous financial year. Eighty-three grants totalling $75,000 have been awarded so far in the 2018/19.

16. The SPGs allow organisations and individual artists to gain access to small amounts of funding quickly (up to $1,000 within four weeks). The funding pool is split $30,000 for Arts and Culture and $45,000 for all other projects covering, community development, sustainability, sports, family, children and youth. The grants will open again in July 2019 and close in May 2020 or when the funding pool is exhausted. The Small Project Grants 2019/20 guidelines are provided in **Attachment Two**.

Room To Create Responsive Grants 2019/20

17. The Room to Create Grants were launched in 2015 as a Council response to issues related to noise and patron behaviour complaints experienced by venues. The program was successful in its first year with $20,500 allocated to eight recipients. The program has been extended to help creative spaces as well as live music venues to stay in Yarra.

18. $25,000 has been allocated to the program for 2019/20, subject to budget approval. The Room to Create Responsive Grants 2019/20 Guidelines are provided in **Attachment Three**.

External Consultation

19. Extensive feedback was gathered at both the application stage and through the acquittal process from grant applicants and recipients. This feedback was collated, and where practical, incorporated into the guidelines and application process for 2020.

Internal Consultation (One Yarra)

20. We surveyed internal (council officers) and external assessors on their views on the grants process. The feedback was overwhelmingly positive about how the grants program is run. The guidelines and application form are subject to annual review and minor changes are made to improve useability and make the grants process clear as possible. The grants team works throughout the year to improve our governance, accountability and transparency.

21. The Community Grants are a cross-organisational program. The grants team regularly engages and consults with stream managers and internal assessors who are integral to the effective running of the grants program. Stream managers and internal assessors come from the following branches and units: Community Partnerships Branch; Family, Youth and Children Services; Arts, Culture and Venues; Aged and Disability Services, Sustainability and Strategic Transport; and Recreation.

Financial Implications

22. The proposed budget for the Annual Grants 2020, pending 2019/20 budget approval is shown in this table alongside the budgets in 2018 and 2019:

Funding Streams	2018 Allocation	2019 Allocation	Proposed 2020 Allocation
Community Development	$324,000	$341,500	$351,570
Family, Children and Youth	$157,000	$161,000	$162,000
Sustainability	$53,000	$40,000	$42,000
Arts and Culture	$210,000	$214,000	$229,030
Sports	$56,000	$56,000	$56,000
Yarra Housing Grant	$52,500	$52,500	$53,500
Youth-Led Grants	$12,000	$9,000	$9,000
Total	**$864,500**	**$874,000**	**$903,100**

23. The following financial commitments have been referred to the annual budget process for consideration and approval:

    (a) $903,100 for Annual Grants 2020;

    (b) $75,000 in 2019/20 for Small Project Grants; and

    (c) $25,000 in 2019/20 for Room to Create Responsive Grants.

Economic Implications

24. Community Grants strengthen the community sector through providing a flexible and responsive source of funds to community based Not-for-Profit organisations. Funding is used to support projects that deliver the outcomes outlined within the Council Plan, target the areas of highest need within the community, and ultimately aim to improve the long term economic outlook for local individuals, families and businesses through strengthening the capacity of local organisations.

25. Grants redistribute funds to those less advantaged in the community. The festivals and events bring economic benefits and assist with branding Yarra as a destination city. Projects that are funded to support new arrivals, young people and families through skills development or projects that support service coordination also have an indirect economic benefit.

Sustainability Implications

26. All grant applicants are encouraged to consider the environmental impact of their projects and ways in which to minimise their footprint. All applicants, regardless of which grant round they are applying for, are asked to consider ways of reducing and/or re-using resources. The direct environmental outcomes primarily come from the grants recommended through the Sustainability Stream of Annual Grants.

27. All applicants are encouraged to submit their applications online, reducing the need for printed forms. The Guidelines will also be available online. The assessments (both internal and external) will also take place online.

Social Implications

28. The Annual Grants Program aims to address social needs across various areas: arts and culture, environment, community development, sport and recreation, family, children and youth. Social objectives addressed within the grants program are:

    (a) building a sense of community through:

        (i) cultural activities (community celebrations, observance of traditional celebration days, cultural festivals and events);

(ii) recognition of diversity (projects that strengthen Yarra's diverse community or celebrate and recognise diversity); and

(iii) social cohesion (projects which seek to bring people together and support the development of communities with shared aims and aspirations); and

(b) promoting and improving community health and wellbeing through:

(i) recreation opportunities (sports, social recreation, walking and improving access to recreational activities);

(ii) improving health and wellbeing (food security, nutrition, skills development, health information, social engagement and support); and

(iii) promoting the participation of people with a disability in cultural, social and civic activities (encouraging organisers to increase the accessibility of their events and programs).

Human Rights Implications

29. The Community Grants Guidelines are in alignment with the Victorian Charter of Human Rights and Responsibilities Act 2006 and actively support people to participate in and contribute to their community.

Communications with CALD Communities Implications

30. The grants are one of the most visible ways in which the Council interacts with local CALD community organisations. These organisations are encouraged and supported to apply. The grants are promoted through ethnic media and interpreters are available upon request at information sessions and meetings with the grants team. More than 25 CALD organisations were supported through the application process in the 2019 Annual Grants.

Council Plan, Strategy and Policy Implications

31. The 2017 - 2021 Council Plan closely guides the Community Grants objectives. Community Grants are intended to support the delivery of the Council Plan and are a key way in which those objectives can be achieved in partnership with the community.

32. Six of the seven key objectives of the Council Plan relate to the Grants Program.

33. Community health, safety and wellbeing are a focus in everything we do: The Community Grants Program provides a flexible and responsive source of funds to support projects and initiatives within the not for profit community sector. The program supports Council's commitment to social justice and social inclusion principles, and provides support to communities living in Yarra's public housing estates. The program also supports community organisations within the recreational and sporting sector, to encourage greater participation and strengthen their capacity to deliver additional activities for the whole of the Yarra community. Many of the grants address social issues which improve community health and safety by seeking to resolve some of the urban problems of poverty, drug addiction and family violence;

34. Inclusion, diversity and uniqueness are welcomed, respected and celebrated: The program provides support for community groups to offer inclusive and diverse activities, services, information and cultural celebrations, particularly in the arts and cultural and community development stream;

35. Council leads on sustainability and protects and enhances its natural environment: The provision of a Sustainability Stream which provides support to local community groups through community education and engagement in environmental sustainability. All applicants are asked to consider the environmental impact of their project;

36. Local businesses prosper and creative and knowledge industries thrive: The Social Enterprise Grants have helped numerous local small businesses over the years to provide support to the community;

37. Connectivity and travel options are environmentally sustainable, integrated and well-designed: Bicycle projects have been prioritised through the Sustainability grants which incorporates the City of Yarra Bike Strategy; and

38. Transparency, performance and community participation drive the way we operate: Yarra City Council's Community Grants Program is a recognised leader among Local Government in Victoria. As well as having a diverse grants program, Yarra's grants have been an innovative means of connecting with and supporting local communities and involving them in the decision making process. Our transparent administrative processes are highly regarded by other councils.

Legal Implications

39. The grants program enables Council to achieve some of the basic tenets of the *Local Government Act* 1989:

    (a) Section 3C to promote the social, economic and environmental viability and sustainability of the municipal district;

    (b) Section 3D fostering community cohesion and encouraging active participation in civic life; and

    (c) Section 3E planning for and providing services and facilities for the local community.

40. Council has not sought legal advice in relation to the grants program this year.

Other Issues

41. No other issues.

Options

42. No other options.

Conclusion

43. The Community Grants remains a key way for Council to invest in community through a responsive community-focused program. A significant investment of resources is allocated for this purpose with strong outcomes in the community.

RECOMMENDATION

1. That Council:

    (a) endorse the allocation of $903,100 to the Annual Grants Program 2020 pending 2019/20 budget approval;

    (b) endorse the allocation of $75,000 to Small Project Grants 2019/20 pending 2019/20 budget approval;

    (c) endorse the allocation of $25,000 to Room to Create Responsive Grants 2019/20 pending 2019/20 budget approval;

    (d) endorse the guidelines for Annual Grants 2020;

    (e) endorse the guidelines for Small Project Grants 2019/20;

    (f) endorse the guidelines for Room to Create Responsive Grants 2019/20;

    (g) appoint the Yarra Arts Advisory Committee (excluding Councillors on the committee) as the community panel for the Arts and Culture grants stream;

    (h) appoint the Yarra Environment Advisory Committee (excluding Councillors on the committee) as the community panel for the Sustainability grants stream; and

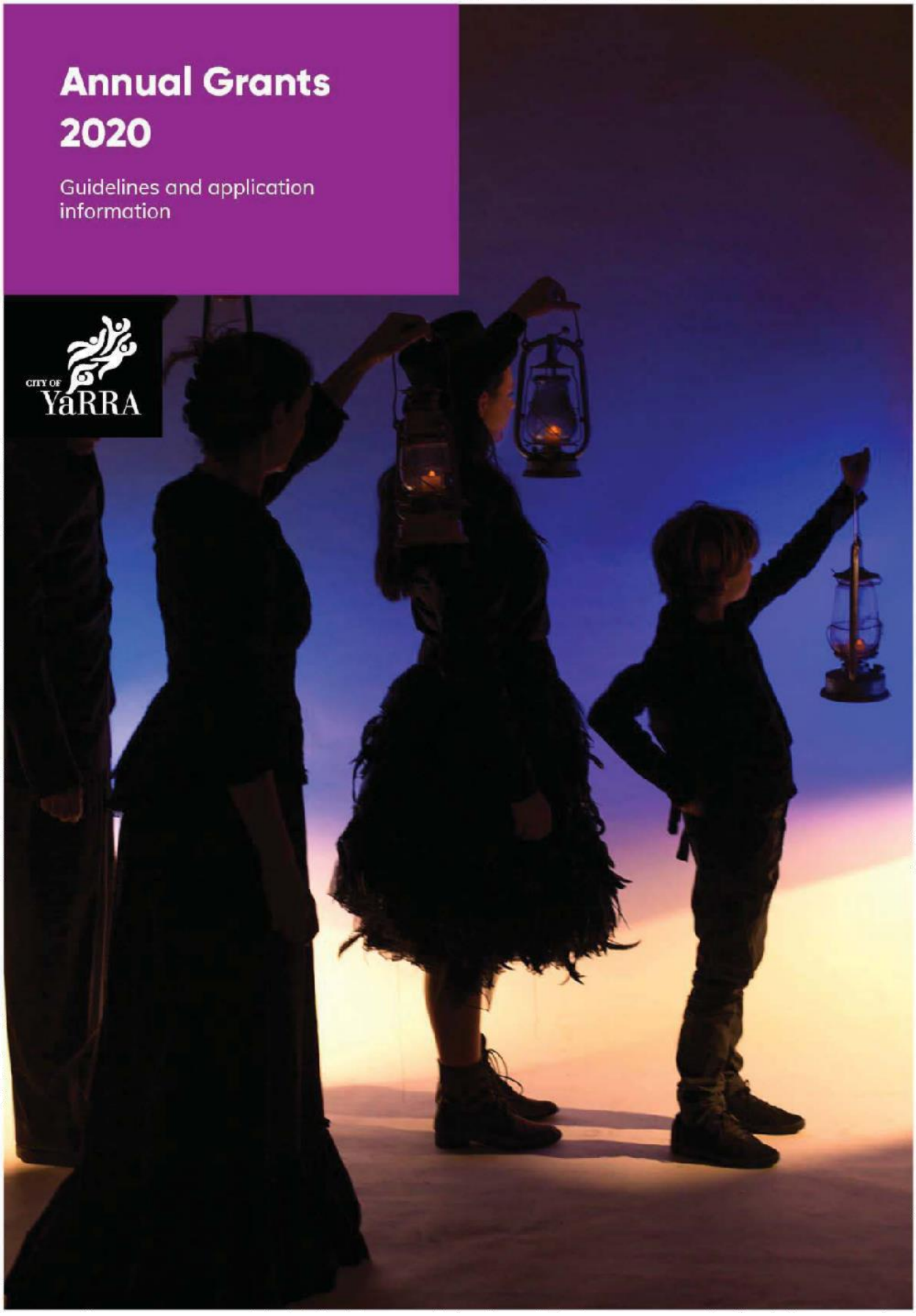
    (i) endorse the proposal to appoint community representatives to serve on each of the community grants assessment panels.

CONTACT OFFICER: **Michael Van Vliet**
TITLE: **Community Grants Team Leader**
TEL: **9205 5146**

Attachments

1⇩ Annual Grant Guidelines 2020
2⇩ Small Project Grant Guidelines 2019-20
3⇩ Room to Create Responsive Grant 2019-20 Guidelines

Attachment 1 - Annual Grant Guidelines 2020



Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Contents

Key dates for Annual Grants 2020 1
Annual Grants Streams and Categories 1
Eligibility Criteria 2
Annual Grants Assessment Criteria 4
Before Submitting your Application 4
- Information Sessions 4
- Having trouble writing your application? 4
- Auspiced Applications 4
- Speak to a Council Officer 5
- Last year's grants 5
- Accessibility 5
- Annual Grant Council Facility Subsidy - Venue Bookings 5
- Environmental Impact 5
- Aboriginal Consultation 5
- Prepare a Grant Application 6
- Prepare a Project Budget 6
- Why do we ask for a minimum grant amount? 6
- Choosing which stream and category to apply under 6

Attachments and Support Material 7
- Financial Statements 7
- Child Safe Standards 7
- Public Liability Insurance 8

Successful applications 8
- What will happen if your application is successful? 8
- What to do if your grant is not fully funded 8
- Acquittal 8

Small Project Grants 8
Submitting Your Application Online 9

Community Development Stream 10
Sustainability Stream 13
Youth-Led Grants 14
Family, Youth & Children's Stream 15
Sports and Recreation Stream 17
Arts and Culture Stream Fact Sheet 19
Community Housing Stream 21

Cover image:
Crow Family lanterns... Publicity photo for The Crow Family, by Maude Davey and Peter Farnan (2017)

Image courtesy of Maude Davey

Photographer: Ponch Hawkes

National Relay Service
TTY 133 677 then (03) 9205 5055

Languages 中文 9280 1937 Italiano 9280 1931 Tiếng Việt 9280 1939
العربية 9280 1930 Ελληνικά 9280 1934 Español 9280 1935 Other 9280 1940

Ref: 18321

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Why do we provide these grants?

The Community Grants Program is one of the major ways in which Council supports the strategies presented in the Council Plan. The Council Plan guides how Council will respond to the opportunities and challenges the municipality faces. The Council Plan can be found at:
https://www.yarracity.vic.gov.au/about-us/council-information/council-plan

The Community Grants Program aims to:

a) develop partnerships between Council and community groups to achieve Council's strategic directives;
b) direct resources to the emerging and specific needs of disadvantaged groups;
c) develop a positive approach to the resolution of local social issues;
d) support local groups, activities and community connectedness; and
e) support community organisations to develop skills and increase participation.

The annual grants provide funding to small to medium-sized projects that respond to the social, cultural, recreational, economic and sustainability needs of Yarra residents.

Key dates for Annual Grants 2020

Grants Information Session Richmond Town Hall Meeting Room 1	6-8pm, Tuesday, 11 June, 2019
Grants Information Session Bargoonga Nganjin North Fitzroy Library,	10-12pm, Thursday, 13 June, 2019
Grants Information Session Collingwood Library Meeting Room	12-2pm, Friday, 14 June, 2019
Youth-Led Grant Information Session Yarra Youth Services	5-7pm, Monday 17 June, 2019 Yarra Youth Centre 156 Napier Street, Fitzroy
Youth-Led Grant Information Session Yarra Youth Services	5-7pm, Monday 24 June, 2019 - Bargoonga Nganjin North Fitzroy Library, 182 St Georges Road, North Fitzroy
Grant round opens	**9am Monday 10 June 2019**
Applications close	**11:59pm Monday 22 July 2019**
Announcement of grant outcomes	November 2019
Funding agreements to be returned by successful applicants	From December 2019
Grants paid by Electronic Funds Transfer	From late December 2019
Projects commence	From 1 January 2020

Annual Grants Streams and Categories

The Annual Grants program has seven funding streams:

- Community Development;
- Community Housing;
- Arts and Culture;
- Family, Youth and Children;
- Youth-Led Grants;
- Sports and Recreation; and
- Sustainability.

Each stream has its own specific priorities and these are listed in the relevant fact sheets in these guidelines.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Eligibility Criteria

Applicants for Annual Grants **must** meet the following eligibility requirements. Ineligible applications will not be assessed.

Eligible Applicants

- Applicants must have an active ABN*.
    - Not-for-profit community groups that meet all other eligibility criteria but do not have an ABN can have their applications auspiced by an eligible incorporated organisation or neighbourhood house.
- Applicants must be a not-for-profit, incorporated community group (that is a group with a voluntary membership who come together to pursue a common goal)† **OR** meet one of the following specific exceptions:
    - be a registered charity, public benevolent institution or have DGR status;
    - be a state government entity seeking funding for activities beyond those considered the responsibility of State or Federal Government;
    - unincorporated not-for-profit community groups can have their applications auspiced by an eligible incorporated organisation or Neighbourhood House;
    - auspiced individual youths or auspiced youth-led organisations can apply to the Youth-Led stream;
    - individual artists or arts-related businesses operating under an active sole-trader ABN* can apply as individuals under the Arts Development or Community Arts categories in the Arts and Culture Stream;
    - Arts-related businesses with active ABNs* registered as other than sole-trader entities can apply under the Arts Development or Community Arts categories in the Arts and Culture Stream. These applications are contingent on successfully demonstrating that the project being funded will run on a not-for-profit basis. This will require detailed financial reporting;
    - Social enterprise businesses can apply to the Social Enterprise Category in the Community Development Stream.
- Applicants must have acquitted previous Council grants and have no outstanding debts to Yarra City Council.
- Applicants must provide a financial statement.
- Applicants must have public liability insurance with a suitable level of coverage, working with children checks, WorkCover and superannuation coverage.
- Relevant applicants must, as required by law, implement and adhere to the Victorian Child Safe Standards: https://ccyp.vic.gov.au/child-safety/being-a-child-safe-organisation/.
- Applicants must meet any other specific requirements outlined in the individual stream fact sheets.

*Applicant names must match the entity (legal) name for the ABN, or a registered business name or trading name associated with the ABN **and** the name on the bank account provided for payment. The ABN Entity name can be checked when entering your ABN into the application form.

† For further information on the kinds of groups we deem eligible please see the definition provided by the Fitzroy Legal Service at:
https://www.lawhandbook.org.au/2018_06_06_03_types_of_community_organisations/

Applicants that are not eligible

- Neighbourhood houses are funded through Council's Neighbourhood House Funding Program and are therefore are not eligible for Annual Grants.
    - As above, neighbourhood houses can act as an auspice for other community groups.
- Businesses or for-profit organisations, unless exempted above.
- Individuals and sole-traders, unless exempted above.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Eligible Projects

- Applicants must be locally based and/or applying for a program, service or activity that is of benefit to the Yarra community.
- Applicants can submit multiple applications for **different** projects; however only one application per project will be considered;
    - Do not submit applications for the same project to different categories/streams. If you believe your application crosses multiple streams, please contact the grants team for advice;
    - Do not submit applications for the same project from multiple organisations.
- All projects in the Arts and Culture Stream must have a public outcome in the City of Yarra
- Applications solely for the purchase of an approved Australian portable defibrillator are **only** eligible in the Community Support category, and the Sports and Recreation Stream. See the Community Development and Sports and Recreation Fact Sheets for more information.
- Applications solely for projects covering the cost of purchasing specific equipment are **only** eligible in the Sports and Recreation Stream.
    - Only 50% of equipment costs, up to $1,000, will be funded. See the Sport and Recreation Fact Sheet for further details.
- Groups can apply to cover the cost of training volunteers in club relevant skills. See the Sport and Recreation Fact Sheet for further details.
- Applications to the Sustainability Stream may include funding for the installation of permanent fixtures (e.g. water tanks, wall gardens), only when the fixture directly contributes to a broader program involving community engagement/education around targeted issues.
- Applications to the Community Strengthening Category addressing priorities of the Access and Inclusion Strategy may include funding for specialised equipment or materials that facilitate new and innovative accessibility programs. Renovation works or the upgrading of permanent fixtures remain ineligible.
- Projects must meet any other specific requirements outlined in the individual stream fact sheets.
- All questions marked 'response required' must be completed for the application to be eligible.
- Projects must be completed by 31 December 2020, unless otherwise agreed through a project variation.

Projects that are not eligible

- A program that is considered the responsibility of State or Federal Government, e.g. Core school curriculum activities.
- Activities that take place outside the City of Yarra (including touring costs), unless part of a larger project with a proven and public benefit to the Yarra community.
- Building, capital works* or facility maintenance works, unless exempted above.
- Ongoing staff salaries or administration costs not specific to the project.
- The purchase of equipment only, unless exempted above.
- Activities that are sponsored by gambling businesses or take place at inappropriate venues.
- Projects with the singular purpose of promoting religion or that may be perceived as for the purpose of proselytizing.
- Individual training, study or academic research in Australia or overseas, unless exempted above.
- Applications that are solely for attending forums, workshops and conferences.
- Competitions (other than one-off sporting events).
- Prize-events, award exhibitions or exclusively fundraising events.
- School fetes and other similar events.
- Covering the deposit or bond associated with hiring a Council Town Hall.
- Applications to fund projects retrospectively.

** Capital works are defined as projects undertaken to create a new permanent asset or space, or to permanently change the use, function or layout of an existing asset or space.*

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Annual Grants Assessment Criteria

All applications will be assessed against the following criteria:

- capacity of the applicant to deliver on project outcomes;
- clearly defined project aims;
- clearly identified target group;
- alignment with stream funding priorities;
- evidence of community need;
- well defined intended outcomes;
- clear evaluation methods;
- community participation and consultation where appropriate; and
- a complete, balanced, and realistic budget.

Before Submitting your Application

Information Sessions

Council is holding three information sessions (On the 11th, 13th, and 14th of June) for applicants seeking further information on this grant program and how to apply online. There is no need to RSVP to these sessions, however please let Council know if you require an interpreter for these sessions.

Council is also offering two training session on grant writing in general through our Skills and Training Program. These will be held on 9 May (morning session) and 20 May (evening session), 2019. For details and to register please visit https://www.yarracity.vic.gov.au/about-us/grants/community-training.

Having trouble writing your application?

The Grants Team are available to help all applicants with preparing their application. You can call us on 9205 5170 or 9205 5146 to talk about your project and your application. We can also help in person with completing your application form to submit it online. This needs to be **by appointment** (to make sure we are available) until 12 July. Interpreters can be booked if requested.

You can also speak to the Grants Team in person at the information sessions. These always include time for one-on-one discussions about your project.

Applicants should also call the Council Contact listed for the stream they are applying to.

Video pitches can be included as supporting documentation to your application. However, you will still need to complete the written application form. Please ensure any videos are kept short (to a maximum 5 minutes) as assessors have a large number of applications to review. SmartyGrants recommends keeping attachments to 5 MB, so you may need to provide a link to an external video-hosting site instead.

If you are having trouble accessing your SmartyGrants user account, please contact SmartyGrants directly on 03 9320 6888 or via service@smartygrants.com.au.

Auspiced Applications

Auspicing helps small or new organisations who are not incorporated or who do not have an ABN access grant funds.

An auspice organisation must be incorporated and have an ABN. They accept legal and financial responsibility for the grant if successful.

Applications can be submitted directly by groups being auspiced. However, the funding agreement for successful grants will be made between the auspice organisation and Council, and grant money will be paid directly to the auspice organisation. Be advised that you will need to provide information from the auspice organisation including: their contact details, ABN, and most recent financial report.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Speak to a Council Officer

Contact details of the Council Officers responsible for each Funding Stream are detailed in the Fact Sheets. ***It is important that you talk through your project ideas with the officer responsible for the Funding Stream before applying.*** The Council Officer can give you advice on how to shape your application to give it every chance of success.

Last year's grants

Applicants are encouraged to view last year's successful grants to see the range of projects funded and realistic grant allocation amounts. A list of successful grants is available at https://www.yarracity.vic.gov.au/about-us/grants/annual-grants.

Accessibility

All applicants are encouraged to consider how their organisation and project will be accessible and inclusive of people with a disability. For ideas on how to make your program, project, or event more flexible please see the Accessibility Guide on the Annual Grants website at: https://www.yarracity.vic.gov.au/about-us/grants/annual-grants. For more information contact Laurice Younge, Metro Access Project Officer on 9205 5439.

Annual Grant Council Facility Subsidy - Venue Bookings

If your project includes an event which will be held in one of Yarra's Town Hall Facilities, you may be eligible for the Annual Grant Council Facility Subsidy. If you apply for the Subsidy and your Annual Grant application is successful, Council may fully fund the cost of hiring the hall. Please contact Venues and Events on 9205 5577 to make a tentative booking **before** you submit your application. Venues and Events will provide a quote for your budget and a booking number which will need to be recorded in your application for you to be eligible for this Subsidy.

Please note: Applicants to the Arts Development Stream can also apply to receive this subsidy for events at the Richmond Theatrette. If you wish to use the Theatrette for your event, please contact Venues and Events on 9205 5577 to make a tentative booking **before** you submit your application. Venues and Events will provide a quote for your budget and a booking number which will need to be recorded in your application for you to be eligible for this Subsidy.

Environmental Impact

All applicants are encouraged to incorporate activities that improve the sustainable outcomes of their projects. For more information contact Kelly Heffer, Sustainability Engagement Officer, on 9205 5769.

Aboriginal Consultation

If your project relates to the local Aboriginal community, or you are planning on working with Aboriginal community, you should demonstrate that you have undertaken consultation in your grant application.

Council recognises the Wurundjeri people as the Traditional Owners of the land on which the City of Yarra now stands. Consultation and cultural requests such as cultural awareness training, Welcome to Country ceremonies or smoking ceremonies must be directed to the Wurundjeri Council. If your project relates to specific issues you may wish to consult with other Aboriginal organisations such as the Victorian Aboriginal Health Service or MAYSAR.

When planning a project relating to or with the Aboriginal community, consultation should happen at the beginning, when the project is being developed. Do not present your proposed plans or projects to the Aboriginal community when they are half and/or already complete.

You should also ensure you allow time for consultation processes. Many decisions require Aboriginal people to consult their Elders. Bear in mind that cultural knowledge and advice from Wurundjeri Council is in high demand and, like any specialised advice, may come at a fee.

The Wurundjeri Council can be reached at www.wurundjeri.com.au, or by phone on 9416 2905.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Prepare a Grant Application

When preparing your grant application, please consider the following:

- Begin your application as early as possible. We strongly recommended you submit your application before the due date. The grant round closes strictly at 11:59pm on Monday 23 July, and technical support will not be available after 5pm on the closing date. We are unable to accept late applications for any reason.
- Ensure that you state explicitly what your project is. Describe the event/activity/program, so that it is clear what you want to do, how you want to do it, and why it is worth doing.
- Bear in mind that the assessors change each year and presume that they are not familiar with your organisation or your previous projects. Assessors are not given access to your grant history.
- Be as precise as possible. The assessors are aware that your project may still be in the planning stage, and that definite plans are not always possible until funding is secured. However, you can still clearly state what your intentions are and, if needed, adjust the project plan through a project variation if your grant is successful.
- If your project involves partnering with another organisation, it is useful to show some evidence of that partnership, such as a letter of support.

Prepare a Project Budget

When preparing a budget for your project please consider the following:

- It is important that all costs are realistic and justified/explained within your application;
- Ensuring that your budget is as detailed as possible helps the assessors understand the amount requested and demonstrates what the impact of reduced funding might be;
- If you have applied for other funding for your project, please note this in your budget and ensure it is clear if the funding is confirmed or unconfirmed;
- If you have applied for the Annual Grant Council Facility Subsidy please make sure you include this as both a budget income and budget expenditure item. Do **not** include this additional subsidy as part of the total cash amount requested for the grant.

Why do we ask for a minimum grant amount?

With the Yarra Annual Grants, we strive to fund the grants to the amount requested, but with limited funds available that is not always possible. Sometimes, successful applicants are offered a lower amount than requested when the full funding is not available and the assessors believe the project will still be viable and worthwhile. This is why we ask what the minimum funding is required for the project to run, and give the space for you to describe the impact a lower funding amount would have on your project. We strongly encourage applicants to make use of these questions when appropriate, so that the assessors can make informed decisions.

If your project is successful but you did not receive the full amount of funding, the Grants Team will be happy to discuss any changes you may need to make to the project.

Choosing which stream and category to apply under

Only one application per project will be considered, therefore it is important to consider which stream and category is the best fit for your project. If your project covers a range of issues and you are not sure which category to apply under we suggest speaking to the Council Contacts for each of the different streams that you are considering so that you can make an informed decision.

Things to bear in mind when choosing which stream to apply under are:

- What is the primary outcome of this project: what is the main thing you are trying to do or achieve?
- Who are the primary beneficiaries: which group of people do you want to reach most of all?

The Grants Team reserves the right to move your application from one stream to another. If this occurs, you will be advised by email. Stream changes are only made to ensure applications are in the most appropriate category for their project and eligibility, and thus give applications the best chance at success.

In this competitive grant round, fitting in with the category priorities is essential to success. So choose your stream based on the priorities of your project rather than on the amount of funding available in any given stream.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Attachments and Support Material

You may wish to include supporting material with your application. Some items that might be appropriate include:

- letters of support from partner organisations, confirming their intention to work with you on this project;
- letters of support from organisations consulted;
- evaluations or assessments of previous programs or projects;
- Links to short videos about your project

If you are applying under the Arts and Culture Stream, please also see the Arts and Culture fact sheet for a list of specific support materials requested.

Please note, the maximum attachment size in SmartyGrants is 25MB. To avoid technical difficulties which may prevent you being able to submit your application, we recommend keeping files to a maximum of 5MB. Files can only be uploaded one at a time and upload speeds will vary depending on your computer's specifications, your internet connection and the amount of traffic on the SmartyGrants server. If you do have concerns or encounter any issues, consider providing links to specific website pages or online/cloud file transfer service in the space provided instead.

Financial Statements

All those applying as an organisation must upload a copy of the organisation's (or auspicing organisation's) most recent annual financial statement to their Annual Grant application. For most applicants, this will be the previous year's Financial Statement. Alternatively, you can upload the organisation's most recent profit and loss statement.

Applicants who do not provide a financial statement will be ineligible.

All incorporated organisations are required by Consumer Affairs to have a financial statement every year, and to present this to their AGM, even smaller organisations who are not required to send this to Consumer Affairs.

More information on financial statements can be found at www.consumer.vic.gov.au/clubs-and-fundraising/incorporated-associations/running-an-incorporated-association/annual-statement/financial-statements-and-auditing. If you need help with your financial statement, please contact the Grants Team.

Child Safe Standards

Victorian organisations that provide services or facilities for children (anyone under 18 years old) are required by law to implement Child Safe Standards to protect children from harm. Therefore, if you project/program will engage children as either participants or audience members you will be required to demonstrate that you are complying with the Child Safe Standards by uploading a copy of your organisation's Child Safe Policy or Statement of Commitment to Child Safety.

If your organisation does not yet have a Child Safe Policy or Statement of Commitment to Child Safety, a template document is available on the Small Project Grants website: https://www.yarracity.vic.gov.au/about-us/grants/small-project-grants. Tailor this document to suit your organisation and activities, then attach the document to your application as evidence. Remember to make sure a copy is distributed to your members.

Individual artists, will need to upload a copy of your current working with children check and/or your exhibition space's Child Safe Policy or Statement of Commitment to Child Safety.

For further information on the Child Safe Standards see: https://ccyp.vic.gov.au/child-safety/resources/

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Public Liability Insurance

Applicants are not required to include a copy of their public liability insurance with their Annual Grant application. However, if the application is successful, Council requires that all grant recipients provide evidence of public liability insurance, with an adequate coverage level, before payments can be processed. In most cases this will be a copy of your public liability insurance certificate of currency. If you do not have public liability insurance, you will need to provide a copy of the public liability insurance certificate of the venue where your project will take place. Organisations that are being auspiced may be covered by the auspice body's public liability insurance, and so will need to provide a copy of their certificate of currency.

Successful applications

What will happen if your application is successful?

If you are successful, a funding agreement which outlines the conditions of your grant will be sent to you (or your auspice organisation). You will need to sign and return **two original** copies of the funding agreement. You will also need to provide a copy of your organisation's bank statement showing the account number, BSB number and name. All payments will be made by electronic transfer.

What to do if your grant is not fully funded

If your application is successful but you did not receive the full amount of funding requested, and you would like to proceed with the grant, the Grants Team are happy to discuss any changes you need to make to the project. The Grants Team can also advise you whether you need to submit a project variation form outlining the changes being made.

Acquittal

Each grant recipient is required to submit an Acquittal Form within two months of completion of the project. The acquittal includes questions about how many people and Yarra residents participated in the event/program, what adjustments were made to the project as it unfolded, and whether the aims and objectives outlined in the application were met. The acquittal also includes a financial report, which shows how the funding was spent. You are required to keep accurate and up-to-date records including itemised receipts issued when funding is spent.

The required acquittal form is attached to each successful application. Links to the acquittal forms are listed under each application in the "My submissions" area of SmartyGrants. To access an acquittal form, please log onto https://cityofyarra.smartygrants.com.au/, click on the "My Submissions" tab and scroll down to the specific grant. You can then complete and submit the acquittal in the same way you submitted your grant application.

Please keep receipts for expenditure items over $200 to upload into your online acquittal.

To be eligible for a grant, organisations and/or individuals must have successfully acquitted all completed grants from Yarra City Council. Applications from applicants with outstanding acquittals will **not** be assessed.

Small Project Grants

If you require funding of $1,000 or less, you may wish to consider applying for a Small Project Grant (SPG) instead of an Annual Grant. SPGs allow grant recipients access to small amounts of funding quickly with the assessment process taking around four weeks. Applicants can apply for one Small Project Grant per financial year. Applications open in July each year and remain open until all funds are distributed. For more information see: https://www.yarracity.vic.gov.au/about-us/grants/small-project-grants.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Submitting Your Application Online

Applicants are encouraged to submit their application and supporting materials using the online grants form at cityofyarra.smartygrants.com.au.

A preview version of the application form will be available at this address from 3 June 2019.

Please note that applications are not submitted online until you hit the **submit** button. After submitting your application you will receive an email acknowledging receipt of your application – it will have a PDF copy of your application attached for your records. This will be sent to the email address you used to register. *If you do not receive this email your application has not been submitted.* City of Yarra staff cannot view applications that have not been submitted.

Applications and all supporting material are due by **11:59pm on Monday 22 July 2019** and any additional information or materials will **not** be accepted after this time.

If you cannot access the online application form, Council will accept handwritten applications. Please contact the Grants Team on 9205 5170 to request a printed version of the application form. Typed, emailed or faxed applications will not be accepted.

For further information please call Community Grants on 9205 5170 or email yarragrants@yarracity.vic.gov.au.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Stream Fact Sheets:

Community Development Stream 10
Sustainability Stream 13
Youth-Led Grants 14
Family, Youth & Children's Stream 15
Sports and Recreation Stream 17
Arts and Culture Stream Fact Sheet 19
Community Housing Stream 21

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Community Development Stream (Page 1 of 2)

The Community Development Stream is designed to strengthen the social and cultural diversity of the City of Yarra, and encourage people from all backgrounds to participate in community life.

This stream supports the valuable work undertaken by the diverse range of not-for-profit organisations and community groups in Yarra who run projects building social inclusion, supporting social justice and strengthening our local communities.

This stream primarily focuses on projects that address strategies from the Council Plans listed in the table below. There are three categories to choose from:

Community Strengthening

The Community Strengthening Category will suit local community-run groups seeking to hold activities in Yarra which will address the following priority areas:

- develop partnerships between Council and community groups to achieve shared strategic outcomes;
- direct resources to the emerging and specific needs of disadvantaged groups;
- develop a positive approach to the resolution of local social issues;
- foster the increased connectedness of people by supporting local groups and activities;
- reduce social isolation in multi-unit housing developments;
- foster the development of healthy and respectful relationships within communities;
- support and strengthen community organisations;
- develop skills and increase participation in the community.

Maximum grant: $4,000. Thirty-two projects were funded for 2019 and the average grant was $3,106.

Community Support

The Community Support Category will suit non-profit organisations offering services and programs for the benefit of the Yarra community and will address the following priority areas:

- develop partnerships between Council and professional organisations working within the Yarra community to achieve shared strategic outcomes;
- direct specialised resources to the emerging and specific needs of disadvantaged groups;
- develop a positive approach to the resolution of local social issues;
- foster the development of healthy and respectful relationships within communities;
- develop skills and increase participation in the community:
- the purchase of a defibrillator.

Maximum grant: $10,000. Twenty-eight projects were funded for 2019 and the average grant was $6,062.

Community Celebrations

The Community Celebrations Category supports a diverse range of smaller events that showcase, celebrate and support Yarra's diverse communities and build community connectedness. Applications for multicultural celebrations are encouraged to apply here.

Maximum grant: $3,000. Twelve events were funded for 2019 and the average grant was $2,704.

Social Enterprise

The Social Enterprise Category supports not-for-profit organisations and businesses build or establish innovative revenue generating projects, while also creating community benefits. Priority will be given to social business with a mission aimed at the creation of employment opportunities for people facing barriers to workforce participation. Funds should be directed towards building employment opportunities and not primarily to wages. In addition, priority will be given to applications which provide a service or product that addresses an identified social, environmental or cultural need that is not being met by the commercial market, and/or develop income streams that allow social businesses to become self-sustaining and independent.

Maximum grant: $15,000. Three projects were funded for 2019 and the average grant was $12,612.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Community Development Stream (Page 2 of 2)

Is your project:	Contact Council Officer:
Relating to the Aboriginal Partnerships Plan: • From the local Aboriginal community • For services targeted to the Aboriginal Community • Recognising the local Aboriginal Community • Responding to the needs and addressing emerging issues from the Aboriginal community in Yarra	**Colin Hunter** (Community Planner - Aboriginal Partnerships) 9205 5014 Colin.Hunter@yarracity.vic.gov.au or **Daniel Ducrou** (Special Projects Officer) 9205 5107 Daniel.Ducrou@yarracity.vic.gov.au
Relating to the Access and Inclusion Plan: • Supporting people with disabilities • Increasing the representation and/or participation of people with disabilities in the community • Responding to the needs and addressing emerging issues of people with disabilities in Yarra	**Laurice Younge** (Metro Access Project Officer) 9205 5414 Laurice.Younge@yarracity.vic.gov.au
Relating to the Multicultural Partnerships Plan: • Creating opportunities for people from multicultural backgrounds to make connections and share traditions • Providing opportunities for cultural exchange between community groups • Responding to the needs and addressing emerging issues from multicultural communities in Yarra • Addressing racism in the community	**Kathy Vrettas** (Community Planner - Multicultural Affairs & Neighbourhood Houses) 9205 1889 Katherine.Vrettas@yarracity.vic.gov.au or **Cristina Del Frate** (Community Partnerships Team Leader) 9205 5174 Cristina.DelFrate@yarracity.vic.gov.au
Relating to Council Priority 1 A Healthy Yarra: • Addressing health and safety issues in Yarra • Promoting mental health and wellbeing • Reducing the Harm from alcohol, tobacco and other drugs	**Julia Bennett-Mitrovski** (Senior Planner - Community Health and Safety) 9205 5093 Julia.Bennett-Mitrovski@yarracity.vic.gov.au
• Addressing issues of women's health • Targeting the prevention of violence against women and children • Responding to the needs and addressing emerging issues from women in Yarra	**Kerrie Loveless** (Workforce Diversity and Inclusion Coordinator) 9205 5135 Kerrie.Loveless@yarracity.vic.gov.au
• From and/or supporting the GLBTIQ (Gay, Lesbian, Bisexual, Transgender, Intersex and Queer) community • Responding to the needs and addressing emerging issues of the GLBTIQ community in Yarra • Increasing the representation and/or participation of the GLBTIQ community	**Sarah Jaggard** (Community Advocacy Team Leader) 9205 5160 Sarah.Jaggard@yarracity.vic.gov.au
Relating to the River of Life Positive Ageing Strategy: • Providing accessible and inclusive recreational and social activities • Increasing the representation and/or participation of older people in the community • Responding to the needs and addressing emerging issues of older people in Yarra	**Fran Moloney** (Community Development Coordinator) 9205 5595 Frances.Moloney@yarracity.vic.gov.au
Relating to the Yarra Gaming Strategy: • Providing education on the risks of poker machine gambling for Yarra residents, businesses and visitors	**Julia Bennett-Mitrovski** (Senior Planner - Community Health and Safety) 9205 5093 Julia.Bennett-Mitrovski@yarracity.vic.gov.au
• Developing a local social enterprise in Yarra (applicants to the Social Enterprise category)	**Michael van Vliet** (Community Grants Team Leader) 9205 5146 Michael.VanVliet@yarracity.vic.gov.au

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Sustainability Stream

The Sustainability Stream seeks to support initiatives that engage and empower the community to take environmental action at a local level. This is in line with Council's Yarra Environment Strategy and other sustainability commitments.

In recognition of the current climate crisis, Council has committed to urgent action to respond to the global climate emergency. Council has also adopted a vision to become a sustainable city of conscious consumers who actively avoid and reduce waste and preserve the availability of resources for current and future generations (*Waste and Resource Recovery Strategy 2018 – 2022*).

Council encourages grant applications that seek to address these climate, waste and resource use priorities. Council also has commitments and programs to enhance urban agriculture, sustainable transport and biodiversity and welcomes applications that respond to these areas. Prior to submission, applicants are encouraged to discuss their proposed sustainability projects with the relevant council officers (see below).

There are two project categories: *Partnering for Sustainability* and *General Sustainability Grant*.

General Sustainability Grant

The General Sustainability Grant supports a diverse range of smaller projects to deliver sustainability outcomes. Projects may be broad and holistic or may focus on any particular aspect of environmental sustainability. Project management, promotional, on-ground and capacity building activities are all eligible. Infrastructure and equipment may be funded as long as they are part of a holistic project that benefits and engages the community (see more in the **Eligibility Criteria** section of these guidelines). If you have an idea that will contribute to sustainability in your local community, we'd love to discuss it with you – see contact details below.

Maximum grant: $4,000. In 2019 the average grant was $3,400.

Partnering for Sustainability

This category seeks to support community projects that are larger and more complex in nature. Bearing in mind the assessment criteria listed on page 6 for all grants applications, the priorities for this funding stream are:

- Partnerships – what partnerships will be built or enhanced through this project, and how will that add value to the outcomes and the ongoing work of the partners?
- Legacy – how will the project lead to long-lasting change? What capacity building outcomes will live on after the project? Can it be replicated, scaled up or expanded?
- Reach – will you engage with new audiences or deepen engagement with existing audiences? How will diverse sectors of the community be empowered through the project? How many people will you reach?
- Innovation – will you be trialling an approach that is new to Yarra or to you? How will the learning from this project be shared?

Maximum grant: $15,000. In 2019 the average grant was $8,588.

If a scaled-back version of your project could be implemented within the $4,000 limit of the general Sustainability Stream grants, **please indicate this in the Project Budget Summary section of the Smarty Grants online form**. If your project is scalable, please also indicate what you could do at different levels of funding (e.g. $4,000/$10,000/$15,000).

It is a requirement that you discuss your proposal with the relevant Council representative:	
General sustainability including climate and energy	Kelly Heffer (9205 5769): Kelly.Heffer@yarracity.vic.gov.au
Urban agriculture	Eloise Lobsey (9205 5137): Eloise.Lobsey@yarracity.vic.gov.au
Waste and Resource Recovery	Lisa Coffa (9205 5793): Lisa.Coffa@yarracity.vic.gov.au
Sustainable transport	Julian Wearne (9205 5734): Julian.Wearne@yarracity.vic.gov.au
Biodiversity and urban greening	Craig McGrath (9205 5787): Craig.McGrath@yarracity.vic.gov.au

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Youth-Led Grants

These grants provide an opportunity for a young person or group of young people aged 16-25 who live, work, study or have a strong connection to the City of Yarra, to apply for a grant of up to $3000 to plan, drive and deliver a project or event by young people for young people within Yarra. Applicants will need to be auspiced and mentored by an incorporated organisation or school.

Interested applicants are strongly encouraged to attend at least one of the workshopping sessions to get planning advice, application support or help finding an auspice organisation.

The sessions will be held on:

- Monday 17 June, 5pm-7pm, Yarra Youth Centre (156 Napier Street, Fitzroy) and
- Monday 24 June, 5pm-7pm, Seminar Room 2, Bargoonga Nganjin (North Fitzroy Library, 182 St Georges Road, North Fitzroy)

These grants will be assessed by a panel of young people and Council Officers.

Priority will be given to projects, activities or events that support the key priorities in Council's 0 – 25 Years Plan for children, young people and their families. Particular consideration will be given to initiatives that provide opportunities for young people to:

- connect with or learn from, their peers, family and community;
- showcase their talents, identity, and culture;
- get involved and have a say in matters affecting them locally;
- learn about and address emerging themes for young people (such as health, safety, bullying, discrimination, and environmental awareness and sustainability); and
- get involved in inter-generational activities and opportunities.

Maximum grant: $3,000. Three projects were funded for 2019, and the average grant was $3,000.

There is a total funding pool of $12,000 in the Youth Services Category grants available for 2019.

Applications in the Youth Services Category from young people aged 16-17 years must be for projects based in an education setting; these projects must be driven by young people but supported by an education organisation/school.

To discuss how your project supports the relevant Council Plan or Policy, and to meet application requirements please contact the relevant Council Officer	
Youth-led Grants	Rupert North– 9426 1455 Rupert.North@yarracity.vic.gov.au

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Family, Youth & Children's Stream (Page 1 of 2)

The Family, Youth & Children Stream is aligned to Council's 0 – 25 Years Plan for children, young people and their families. Our vision is that *"all children and young people are loved and safe, have material basics, are healthy, are learning and participating, and have a strong sense of culture and identity"*. This stream applies to projects that support families, children and young people from all backgrounds who live, work, study, or have a strong connection to Yarra, with a particular focus on:

- Vulnerable families, children and young people;
- Aboriginal and Torres Strait Islanders families, children and young people;
- Culturally and linguistically diverse families, children and young people;
- Socioeconomically diverse families, children and young people; and
- Gender diverse families, children and young people.

There are two categories within the Family, Youth & Children Stream: the Family & Early Years Category, and the Youth & Middle Years Category.

Family & Early Years Category and Funding Priorities

Aligned to Council's 0 – 25 Years Plan for children, young people and their families, this category is for evidence-based or innovative programs that support children from birth to 8 years and their families. Proposed projects need to clearly articulate the need; demonstrate strong community engagement and support (including the voices of children); and highlight how they will positively impact the local community. Funding priorities include:

- Prevention and early intervention programs that respond to identified needs, particularly focused on early learning and attachment (e.g. playgroups, toy libraries, homework clubs)
- Evidence based information and support for parents (e.g. parenting sessions and programs)
- Adventurous play, physical activity and health development (e.g. recreational programs)
- Specialist services or programs that met a high risk need (e.g. family and domestic violence support, child safety)
- Projects or programs that create opportunities to enhance parental engagement
- Research or evaluation or consultation that investigates barriers and potential innovative options for families or young children experiencing disadvantage and vulnerability regarding active participation, engagement and leadership

Maximum grant: $10,000. Eight projects were funded for 2019, and the average grant was $7,396

To discuss how your project supports the relevant Council Plan or Policy, and to meet application requirements please contact the relevant Council Officer	
Family & Early Years 0 – 8 years	*Melissa Eastwood - 9205 5411*

Continued overleaf…

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Family, Youth & Children's Stream (Page 2 of 2)

Youth & Middle Years Category and Funding Priorities

Aligned to Council's 0 – 25 Years Plan for children, young people and their families, this category is for evidence-based or innovative programs that support children and young people aged 8 – 12 years (middle years) and 12 – 25 years (youth). Proposed projects need to clearly articulate the need; demonstrate strong community engagement and support (including youth participation); and highlight how they will positively impact the local community. Funding priorities include:

Middle Years funding priorities:

- to support and enhance the safety, health and wellbeing of middle years children and young people, and their families;
- to support the development and delivery of activities, programs, and events that meet the diverse needs and interests of middle years children and young people;
- to plan and deliver targeted engagement programs that provide positive role models and enhance connections to peers, families and communities; and
- to strengthen school and community connectedness, increase student aspiration and enhance parent engagement in all aspects of learning.

Youth funding priorities:

- to develop targeted prevention and early intervention programs in response to emerging themes for young people such as alcohol and other drugs, sexual health, mental health, safety, bullying, racism and discrimination;
- to provide opportunities for young people to lead programs, activities and events in their community;
- to support young people to access appropriate education, training and/or employment pathways responsive to their needs;
- to work with young people and media outlets to provide proactive and positive media representations that showcase talents, culture and identity of young people; and
- to undertake research and develop tools that enable the measurement and evaluation of service and program outcomes and impacts for young people and their families.

Maximum grant: $10,000. Twelve projects were funded for 2019, and the average grant was $8,486

To discuss how your project supports the relevant Council Plan or Policy, and to meet application requirements please contact the relevant Council Officer	
Middle Years 8 - 12 years	Rupert North – 9426 1544 Rupert.North@yarracity.vic.gov.au
Young People 12 - 25 years	Rupert North – 9426 1544 Rupert.North@yarracity.vic.gov.au

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Sports and Recreation Stream (Page 1 of 2)

The City of Yarra recognises the value of participation in sport, physical activity and recreation, and the related health benefits to the individual, and the Yarra community. The Sport and Recreation Funding Stream supports a wide range of accessible opportunities for the diverse Yarra community. Projects will be looked upon favourably if they cater for any of the following priority populations:

- Social Housing / CALD communities
- People with a disability
- Indigenous communities
- Seniors / Over 65's
- LGBTIQ+ communities

Funding Priorities

1. Participation Initiatives

Council is seeking to fund programs and initiatives that increase inclusion and access to sport, recreation and health opportunities. Programs should address local community needs, be environmentally sustainable, enhance local neighbourhoods, and contribute to community health and wellbeing outcomes. Priority will be given to projects which promote the long term sustainability of local clubs and community organisations. New initiatives will be given priority over programs that have received funding previously.

Examples of sports club initiatives may include:

- Initiatives/programs beyond the core club business that are innovative or new to the club environment e.g. parent fitness classes during junior training
- Programs targeted at priority population participation e.g. programs for people with disabilities, social housing scholarships
- Programs promoting LGBTIQ+ inclusion at your club
- Programs that enhance the club's capacity to provide ongoing opportunities for participation e.g. starting a women's fitness program that develops into a new sports team

Examples of community group initiatives may include:

- Partnerships between local community groups and physical activity providers
- Alternative recreation activities that do not have a big representation in Yarra e.g. inclusive roller derby programs

Please contact the Recreation team to discuss other participation initiative ideas.

2. Sport and Recreation Equipment Grants

Groups can apply for:

- Up to 75% of the total cost of an approved Australian portable defibrillator, specifically for clubs who use venues which do not contain defibrillators. Funding may include training in the use of equipment. Council recommends Defib for Life or St John's Ambulance as suppliers.
- Up to 50% of the total cost (maximum of $1,000) towards specific equipment to enable or enhance the participation of priority populations. Equipment can be for club based activities beyond the normal core business of the club or community programs run by not-for-profit groups. The make and model of equipment must be identified in your application. Examples of equipment can include specialised first aid equipment, portable access ramps, modified equipment, equipment to assist getting a new priority population program up and running.
- Up to 50% of the total cost (maximum of $2,000) for the purchase of portable soccer goals that conform to Australian Standard AS 4866.1-2007.
- Up to 50% of the total cost (maximum of $2,000) for the purchase of cricket roll out synthetic pitches to assist with junior participation on grounds.

Please contact the Recreation team to discuss other equipment that may be funded and suitable storage spaces.

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Sport and Recreation Stream (Page 2 of 2)

3. Coach/ Volunteer Training & Education
To increase the skills, knowledge and understanding of club volunteers including coaches, committee members, parents, team managers etc. around general club operations and governance. The training and education should promote and support leadership and skill development within the club. Examples may include:

- Up to 50% of the total cost of coach development and training for new and established coaches, for Grassroots, Junior Accreditation, female specific coaching programs, coaching athletes with a disability and coaching people from culturally and linguistically diverse communities (CALD).
- Up to 75% of the total cost (maximum $1,000 per organisation) of training required to deliver or support physical activity classes for a community group or not-for-profit organisation e.g. yoga / group fitness instructing.
- Up to 75% of the total cost (maximum of $1,000 per club) for Sports Community membership and training. Examples of training can include: accredited skill or mentor training programs for existing or new committee members.
- Up to 50% of the total cost (maximum of $1,000) for Club volunteers to undertake practical training such as:
    - Food Handling Certificate
    - First Aid
    - Concussion Awareness Training
    - Responsible Service of Alcohol

Funding Restrictions

The following will **NOT** be funded:

- Ongoing funding for club core business e.g. coaching fees, social events & activities, mandatory equipment, uniforms, travel expenses to matches, club functions, membership drives and promotional activities for the purpose of attracting and retaining members. Membership subsidies, concession fees, and team registrations are considered core business unless part of an initiative targeting a priority population as outlined above.
- Equipment: Standard team and individual equipment e.g. balls, bats, first aid kits, coaches boards, stretchers, uniforms, tracksuits, hoodies, specialised equipment that is for the sole use of individual athletes (equipment may be funded if it relates to a priority population as outlined above).
- Portable score boards, timers, stop watches, massage tables.
- Specific higher level coach licenses and courses including: FFA/AFC Advanced Coaching Courses, AFL Level 3, Cricket Victoria Level 3, Swimming Silver Licence or equivalent in other sports.

All funding applications will be assessed on applicants demonstrated need basis including clubs financial statements and ability to self-fund activities.

Maximum grant: $5,000. Thirteen projects were funded for 2019 and the average grant was $3,770.

To discuss how your project supports the relevant Council Plan or Policy, and to meet application requirements please contact the relevant Council Officer	
Sports Administration Officer	Steven Johnston 9205 5779
Sports Development Officer	Trent Carpenter 9205 5735
Recreation Development & Planning Officer	Peter Mitten 9205 5756

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Arts and Culture Stream Fact Sheet (Page 1 of 2)

This Stream supports the creation and presentation of arts and cultural projects, activities and works within the City of Yarra. Our vision is for arts and culture to be integrated into our City so that it can be an everyday experience and be enjoyed by all of our community, whether as makers, audience members or participants. Creativity can exist anywhere and its pursuit is open to everyone.

Funding Categories

There are three different categories of funding available in the Arts and Culture stream.

It is advised that you discuss your project with the relevant project officer for the category in which you intend to apply before submitting your application.

Funding Categories	Total Funding Pool	Contact Details
Arts Development	$ 70,000	Brona Keenan 9205 5212 Louisa Marks 9205 5029
Festivals & Events	$100,000	Penny Kyprianou 9205 5109
Community Arts	$ 50,000	Olivia Allen 9205 5038

Arts Development supports professional artists and art organisations to produce and present new work in any medium.

Funding priorities for this category are:

- high artistic merit;
- innovative and contemporary approaches to the production and presentation of the art form and the project;
- attracts new audiences;
- creative use of public spaces and places in the municipality.

Nine projects were funded for 2019 and the average Arts Development grant was $8,772

Festivals & Events supports activities taking place in Yarra that showcase, celebrate and promote creativity, culture, people, places and the arts. Within Festivals & Events there are two sub-categories:

Festivals and Events - Arts

Funding priorities for this category are:

- high artistic and/or cultural merit;
- showcase arts practice;
- attracts new audiences;
- creates new presentation opportunities for artists;
- creative use of public spaces and places in the municipality.

Festivals & Events – Community Participation

Funding priorities for this category are:

- events with a strong arts and/or cultural focus;
- showcases local arts and/or cultural practice;
- increases community participation in arts and culture;
- celebrates local communities, places, history and/or neighbourhoods;
- promotes partnerships between organisations and communities; and
- creative use of public spaces and places in the municipality

Seven events were funded for 2019 and the average Festivals & Events grant was $13,761

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Arts and Culture Stream Fact Sheet (Page 2 of 2)

Community Arts supports projects that enhance community participation and engagement in arts and culture within Yarra.

Funding priorities for this category are:

- high artistic merit;
- celebrate diversity and/or address contemporary issues;
- increase awareness, appreciation and participation in arts;
- engages new audiences;
- includes authentic partnerships between community members, artists and arts organisations;
- develop community and connectedness; and
- creative use of public spaces and places in the municipality.

Four projects were funded for 2019 and the average Community Arts grant was $9,681

All Arts and Culture Stream applicants are encouraged to submit the following materials:

- resume or short biography of applicant/s (maximum 3 pages);
- examples of previous projects – this could be images (maximum of 10), or website links to specific projects or sites. If submitting electronically all files must be Windows compatible.
- letters of support – if your project requires the support of another organisation to develop or proceed then a letter acknowledging this support is recommended;
- confirmation of venue booking (if applicable).

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

Community Housing Stream

The City of Yarra is home to a high proportion of residents living with socio-economic disadvantage in what is otherwise a relatively affluent municipality. The distribution of household earnings in Yarra shows great disparity between high and low income households. This brings specific challenges for inclusion and participation.

Through the Community Housing Stream, Council seeks to promote those initiatives that help sustain tenancies, build more cohesive and resilient communities, and address social and cultural impacts for tenants of community housing and those at risk of homelessness in Yarra.

While the maximum grant available is $50,000, we would welcome both large and small scale projects being submitted for consideration.

Funding Priorities

The program objectives are to:

- maintain community diversity;
- increase stability of community housing tenancies; and
- build resilience and local connectedness for community housing tenants.

Eligible initiatives include, but are not limited to those that:

- address the impacts of complex multiple issues on vulnerable tenants;
- sustain tenancies of low income households that are at risk of homelessness;
- explore development of packages that support new community housing tenancies to access local supports; and
- explore local partnerships that increase the resilience and connectedness of community housing tenants

Funds available: $50,000. Maximum grant: $50,000. One project was funded for 2019 with a grant of $50,000.

Please note
The Community Housing Stream has the following additional eligibility requirements:

To be eligible applicants must:

- be a private or non-government organisation whose operations either directly or indirectly improve the availability, quality and security of affordable rental tenancies for households on income support from Centrelink or for people on low incomes. Affordable rental rates are defined as rents fixed at a rate no greater than 30 per cent of household income. Low income households are defined as at the bottom 40 per cent of the income range.

Applications will also be ineligible if funding is intended for:

- reducing ongoing operating costs; and
- paying for standard maintenance of current residential stock.

To discuss how your project supports the relevant Council Plan or Policy, and to meet application requirements please contact the relevant Council Officer	
Policy Advisor - Housing and Homelessness	Anne Barton 9205 5094

Attachment 1 - Annual Grant Guidelines 2020

Annual Grants 2020 - Guidelines

National Relay Service
TTY 133 677 then (03) 9205 5055

Languages 中文 9280 1937 Italiano 9280 1931 Tiếng Việt 9280 1939
العربية 9280 1930 Ελληνικά 9280 1934 Español 9280 1935 Other 9280 1940

Ref: 18321

Attachment 2 - Small Project Grant Guidelines 2019-20

Attachment 2 - Small Project Grant Guidelines 2019-20

Contents

Community Projects 1
Arts & Culture Projects 1
Program Objectives 1
Eligibility Criteria 2
Assessment 3
Assessment Criteria 3
Assessment Process 3
Timelines 3
Auspiced Applications 4
Attachments 4
Having trouble writing your application? 5
Successful applications 5
Acquittal 5
Submitting Your Application 5

Cover image:
Aboriginal Housing Victoria hosted their 19th NAIDOC Family Day at the Farm Event at Collingwood Children's Farm. This free event continues to be a family friendly day out inclusive for everyone to come together to celebrate the history culture and achievements of Aboriginal and Torres Strait Peoples. in 2018, this included face painting, jewellery making, colouring in, emu feather crafts, boomerang painting, football clinic, jumping castle, and bush animal weaving, as well as the Indigenous Hip Hop Project performers and PATSI Dance Group to use the energy and enthusiasm of music, dance and safe talk to enable young people to make their own healthy life choices and maximise educational and economic opportunities.

Image courtesy of Aboriginal Housing Victoria

National Relay Service
TTY 133 677 then (03) 9205 5055

Languages 中文 9280 1937 Italiano 9280 1931 Tiếng Việt 9280 1939
العربية 9280 1930 Ελληνικά 9280 1934 Español 9280 1935 Other 9280 1940

Ref: 18322

Attachment 2 - Small Project Grant Guidelines 2019-20

Small Project Grant Guidelines 2019/2020

The Small Project Grants (SPG) responds to funding requests throughout the year, providing an opportunity for new applicants to engage with Council and gain an understanding of the grants process. The grants allow organisations and individual artists to access small amounts of funding quickly (usually within four weeks from the time of submission).

There are two categories in the SPG program: Community Projects and Arts & Culture Projects.

Community Projects is a broad category encompassing the many programs and events run by not-for-profit community groups within Yarra. Eligible community projects include cultural celebrations, sporting events and programs which promote and support, such as social involvement, community connectedness, environmental sustainability, health, well-being and cultural diversity.

Only incorporated not-for-profit community groups are eligible to apply for grants under this category. However, community groups that are not incorporated or do not have their own ABN can be auspiced by an eligible incorporated organisation. Individuals are unable to apply.

Arts & Culture Projects funds projects and events run by professional artists, arts organisations and community groups. Eligible arts and culture projects include the development, production and showing of new art works or performances; and the organisation of community arts festivals, events or arts projects.

A variety of applicants are eligible to apply for grants under the Arts and Culture Projects category. Eligible applicants may be: individual artists with an ABN, incorporated not-for-profit artistic groups and organisations, and commercial galleries running not-for-profit events. Individual artists without an ABN may have their application auspiced by an eligible incorporated organisation.

It is strongly recommended that applicants for the Arts and Culture Projects category provide additional supporting documentation as part of their application. This can be uploaded through the online application form.

SPG rounds open each year on 1 July.
Applications for SPG 2019/2020 will be accepted from 1 July 2019 until 31 May 2020 or until the funding pool for the relevant category is exhausted.

If you have not previously applied for a grant from Yarra City Council we recommend applying for a SPG first. This grant program provides an opportunity for new applicants to gain an understanding of the grants process.

If you have previously had a grant from Yarra City Council for a project which is now complete, this grant must be acquitted before any new applications can be assessed. Acquittals can be submitted via: https://cityofyarra.smartygrants.com.au.

Program Objectives

Each project/activity funded as part of the SPG Program is expected to address one or more of Council's strategic objectives as stated in the current Council Plan. These are:

1. A HEALTHY YARRA: Focus on community health, safety and wellbeing;
2. AN INCLUSIVE YARRA: Supporting and celebrating inclusion, diversity and uniqueness;
3. A SUSTAINABLE YARRA: leading sustainability and protecting and enhancing the natural environment;
4. A LIVEABLE YARRA: Maintain and enhance the character of the city;
5. A PROSPEROUS YARRA: Helping creative communities thrive;
6. A LEADING YARRA: Enhancing and facilitating community participation.

Attachment 2 - Small Project Grant Guidelines 2019-20

Eligibility Criteria

Eligible Applicants

- Applicants must have an active ABN*.
  - Not-for-profit community groups that meet all other eligibility criteria but do not have an ABN can have their applications auspiced by an eligible incorporated organisation or Neighbourhood House.
- Applicants must be a not-for-profit, incorporated community group (that is a group with a voluntary membership who come together to pursue a common goal)† **OR** meet one of the following specific exceptions:
  - be a registered charity, public benevolent institution or have DGR status;
  - be a state government entity seeking funding for activities beyond those considered the responsibility of State or Federal Government;
  - unincorporated not-for-profit community groups can have their applications auspiced by an eligible incorporated organisation or Neighbourhood House;
  - individual artists or Arts-related businesses operating under an active sole-trader ABN* can apply as individuals under the Arts and Cultural Projects Category;
  - Arts-related businesses with active ABNs* registered as other than sole-trader entities can apply under the Arts and Cultural Projects Category. These applications are contingent on successfully demonstrating that the project being funded will run on a not-for-profit basis. This will require detailed financial reporting.
- Applicants can only receive one SPG per financial year and each grant is limited from $100 to $1,000 per application.
- Applicants must have acquitted previous Council grants and have no outstanding debts to Yarra City Council.
- Applicants must have public liability insurance with a suitable level of coverage, working with children checks, WorkCover and superannuation coverage are required to be held by recipients of funding.
- Relevant applicants must, as required by law, implement and adhere to the Victorian Child Safe Standards. https://ccyp.vic.gov.au/child-safety/being-a-child-safe-organisation/.

*The applicant names must match the entity (legal) name for the ABN, or a registered business name associated with the ABN **and** the name on the bank account provided for payment. The ABN Entity name can be checked when entering your ABN into the application form.

† For further information on the kinds of groups we deem eligible please see the definition provided by the Fitzroy Legal Service at:
https://www.lawhandbook.org.au/2018_06_06_03_types_of_community_organisations/.

Eligible Projects

- Council will support a maximum of three exhibitions per grant round at any one art gallery.
- All applicants must be locally based and/or be applying for a program, service or activity that is of benefit to the Yarra community.
- Projects must have a public outcome within the City of Yarra boundaries.
- Projects and programs will only be eligible for both SPG and Annual Grants if applications are for distinct activities or stages of development.
- Sport and Recreation groups can apply for the purchase of specialised equipment.
- Eligible organisations can apply for the purchase of defibrillators.
- Applications to the Community Strengthening category addressing priorities of the Access and Inclusion Strategy may include funding for specialised equipment or materials that facilitate new and innovative accessibility programs. Renovation works or the upgrading of permanent fixtures remain ineligible.
- All questions marked 'response required' must be completed for the application to be eligible.

Applicants that are not eligible

- Neighbourhood Houses are funded through Council's Neighbourhood House Funding Program and are therefore are not eligible for SPGs.
  - As above, Neighbourhood Houses can act as an auspice for other community groups;
- Businesses or for-profit organisations, unless exempted above.
- Individuals, unless exempted above.
- Previous grant recipients with overdue acquittals.
- Applicants who have already received an SPG in the current round.

Projects that are not eligible

- A program that is considered the responsibility of State or Federal Government e.g. core school curriculum activities.
- Activities that take place outside the City of Yarra (including touring costs), unless part of a larger project with a proven and public benefit to the Yarra community.
- A new building, capital works or facility maintenance works.
- Ongoing staff salaries or administration costs not specific to the project.
- The purchase of equipment only, unless exempted above.
- Projects with the singular purpose of promoting religion or that may be perceived as for the purpose of proselytizing.
- Training, study or academic research in Australia or overseas.
- A project that will be offered for assessment in the above training courses.
- Applications that are solely for attending forums, workshops and conferences.
- Competitions (excluding one-off sporting events).
- Prizes and award exhibitions or exclusively fundraising events.
- School fetes and other similar events.
- Covering the deposit or bond associated with hiring a Council Town Hall.
- Applications to fund projects retrospectively.

Assessment

Assessment Criteria

All applications will be assessed on the following criteria:

- Does the project have clearly defined aims?
- Does the project clearly meet the program objectives?
- Does the local community benefit from this project?
- Does the organisation have the capacity to successfully complete the project?
- Is the budget for this project realistic, balanced and complete?
- Arts and Cultural Projects – Does the project have high artistic merit?

Assessment Process

Small Grants are assessed on a competitive basis. Being successful one year does not automatically mean success in subsequent years. Small Grant applications are checked for eligibility, internally assessed by two Council Officers and then the recommendations are reported to Council on a quarterly basis.

Timelines

Applications should be received a minimum of 4 weeks before a project starts. Applications for projects that have already taken place will not be assessed.

Assessment and payment of grants usually takes 4-6 weeks. Payment cannot occur until all required paperwork has been returned, and may occur several weeks after this happens.

Auspiced Applications

Auspicing helps small or new organisations who are not incorporated or who do not have an ABN access grant funds.

An auspice organisation must be incorporated and have an ABN. They accept legal and financial responsibility for the grant if successful.

Applications can be submitted directly by groups being auspiced. However, the funding agreement for successful grants will be made between the auspice organisation and Council, and grant money will be paid directly to the auspice organisation. Be advised that you will need to provide information from the auspice organisation including: their contact details, ABN, and most recent financial report.

What you need for your application

Public Liability Insurance

All applicants need to provide a certificate of currency for the public liability insurance policy that will cover the funded project. Depending the nature of the funded activities, the relevant policy may be in the applicant's name, the auspicing organisation's name or the activities may be covered by the public liability insurance of the venue being used.

Financial Statements

All those applying as an organisation must upload a copy of the organisation's (or auspicing organisation's) most recent annual financial statement to their Small Project Grant application. For most applicants, this will be the previous year's Financial Statement. Alternatively, you can upload the organisation's most recent profit and loss statement.

Applicants who do not provide a financial statement will be ineligible.

All incorporated organisations are required by Consumer Affairs to have a financial statement every year, and to present this to their AGM, even smaller organisations who are not required to send this to Consumer Affairs.

More information on financial statements can be found at www.consumer.vic.gov.au/clubs-and-fundraising/incorporated-associations/running-an-incorporated-association/annual-statement/financial-statements-and-auditing. If you need help with your financial statement, please contact the Grants Team.

Child Safe Standards

Victorian organisations that provide services or facilities for children (anyone under 18 years old) are required by law to implement Child Safe Standards to protect children from harm. Therefore, if you project/program will engage children as either participants or audience members you will be required to demonstrate that you are complying with the Child Safe Standards by uploading a copy of your organisation's Child Safe Policy or Statement of Commitment to Child Safety.

If your organisation does not yet have a Child Safe Policy or Statement of Commitment to Child Safety, a template document is available on the Small Project Grants website: https://www.yarracity.vic.gov.au/about-us/grants/small-project-grants. Tailor this document to suit your organisation and activities, then attach the document to your application as evidence. Remember to make sure a copy is distributed to your members.

Individual artists, will need to upload a copy of your current working with children check and/or your exhibition space's Child Safe Policy or Statement of Commitment to Child Safety.

For further information on the Child Safe Standards see: https://ccyp.vic.gov.au/child-safety/resources/

Arts & Culture applicants

Arts & Culture applicants should also provide a CV and relevant artistic documentation.

Having trouble writing your application?

The Grants Team are available to help all applicants with preparing their application. Call us on 9205 5170 or 9205 5146 to talk about your project and application. or to make an appointment for help submitting your application online. Interpreters can be booked if requested.

Video pitches can be included as supporting documentation to your application. However, you will still need to complete the written application form. Please ensure any videos are kept short (to a maximum 5 minutes) as assessors have a large number of applications to review. SmartyGrants recommends keeping attachments to 5 MB, so you may need to provide a link to an external video-hosting site instead.

If you are having trouble accessing your SmartyGrants user account, please contact SmartyGrants directly on 03 9320 6888 or via service@smartygrants.com.au.

Successful applications

What will happen if your application is successful?

If you are successful, a funding agreement which outlines the conditions of your grant will be sent to you (or your auspice organisation). You will need to sign and return **two original** copies of the funding agreement. You will also need to provide a copy of your organisation's bank statement showing the account number, BSB number and name. All payments will be made by electronic transfer.

Acquittal

Each grant recipient is required to submit an acquittal form within two months of completion of the project. The acquittal includes questions about how many people and Yarra residents participated in the event/program, what adjustments were made to the project as it unfolded, and whether the aims and objectives outlined in the application were met. The acquittal also includes a financial report in which you are required to demonstrate that the funds were spent in accordance with the budget submitted. You are required to keep accurate, up-to-date records in relation to the project including, but not limited to, itemised receipts issued when funding is spent. We request that you include receipts for items/services over $200 in your acquittal.

The required acquittal form will be linked to your application in the My Submissions area of SmartyGrants. When you are ready to submit the acquittal form please log onto https://cityofyarra.smartygrants.com.au and submit it in the same way you submitted your grant application. Applications from past grant recipients will not be considered while they have overdue acquittals.

Council may also require organisations to fully participate in any audit of the program/activity by making readily available all income/expenditure records, correspondence, meeting notes, promotional material, and any other document relating to the funded program/activity. This may include site visits and the collection of documents relating to the funded program/activity.

Submitting Your Application

SPG applications will be accepted at any time until 31 May 2018 or until the funding for each category has been exhausted. Funding is renewed each financial year on 1 July.

Applicants are required to submit their application and supporting documentation using the online form on https://cityofyarra.smartygrants.com.au/.

Attachment 2 - Small Project Grant Guidelines 2019-20

National Relay Service
TTY 133 677 then (03) 9205 5055

Languages 中文 9280 1937 Italiano 9280 1931 Tiếng Việt 9280 1939
العربية 9280 1930 Ελληνικά 9280 1934 Español 9280 1935 Other 9280 1940

Ref: 18322

Attachment 3 - Room to Create Responsive Grant 2019-20 Guidelines

Attachment 3 - Room to Create Responsive Grant 2019-20 Guidelines

Cover image:
SK!N by TerryandTheCuz was a contemporary performance based around true stories about human trafficking, forced migration and asylum seeking. The work was developed in collaboration with Australian artist Ashley Dyer and human rights NGO TENAGANITA. The season in Melbourne was presented at The Abbotsford Convent.

Image courtesy of Govin Ruben.

Photographer: ThoughtShots Photography

National Relay Service
TTY 133 677 then (03) 9205 5055

Languages 中文 9280 1937 Italiano 9280 1931 Tiếng Việt 9280 1939
العربية 9280 1930 Ελληνικά 9280 1934 Español 9280 1935 Other 9280 1940

Ref: 18323

Attachment 3 - Room to Create Responsive Grant 2019-20 Guidelines

City of Yarra Grant Guidelines
Room to Create Responsive Grant Program

BACKGROUND

Yarra is often referred to as an 'engine room' for the arts because of the many small to medium sized arts organisations that make up much of our creative footprint. There are over 50 live music venues, more than 60 galleries and artist run spaces, and numerous creative hubs and studios. The creative sector has been identified as an important, emerging industry which is associated with innovation and facilitating economic growth.

The Room to Create Responsive Grant Program is a Council initiative that is intended to help creative spaces and live music venues stay in Yarra. The program is incentivized and designed to be quick response.

The program pool is $25,000 per annum and funding is capped at $2,000 for a standalone grant or at $5,000 for a matching grant – when the applicant is able to make a matching contribution towards the project.

The funds may be used for goods and/or services that will assist the creative space to operate in Yarra. For example, funds can be used for:

- infrastructure works (such as fit out of a studio) and purchase of built-in equipment (such as data projectors, lighting, built-in speakers);
- acoustic treatment or related works (such as installing insulation, air locks, sound absorbing materials, gap seals etc);
- town planning consultants to obtain advice relevant to maintaining a creative space in Yarra, including advocacy where a nearby development is proposed;
- consultant fees related to improving accessibility of the space;
- acoustic consultant fees and measuring devices/equipment;
- building surveyors fees related to assessment of an existing building;
- other materials and/or services that may assist with the venue's management of noise and patron behavior related complaints.

TIMELINES

Applications open on 1 July 2019 and remain open until 11:59 pm 31 May 2020, or until the funding pool is exhausted.

Applicants should expect to be notified of the outcome within three weeks. If you are successful, you (or your auspice organisation) will be sent a funding agreement. Once you have returned this, along with any other required paperwork such as a bank statement, we aim to have the grant paid within two weeks of receipt of the necessary documents.

ASSESSMENT CRITERIA

- Does the project have clearly defined aims?
- Does the project clearly meet the intention of the program to help creative spaces and live music venues operate in Yarra?
- Does the local community benefit from this project?
- Does the organisation have the capacity to successfully complete the project?
- Can the organisation demonstrate an ongoing viability?
- Is the budget for this project realistic?

Attachment 3 - Room to Create Responsive Grant 2019-20 Guidelines

ELIGIBLITY

Eligible Applicants

Room to Create Responsive Grant Applicants must:

- Have an active ABN*
- Be an incorporated organisation or business entity managing and/or occupying a creative space (eg. gallery, performance venue, artist studio, live music venue) that is located in the City of Yarra; **OR** meet one of the following specific exceptions:
    - An individual applicant who can demonstrate that the space is a dedicated creative space that contributes to the creative footprint of Yarra;
    - An individual applicant operating as a business entity that occupies or manages a creative space in Yarra;
    - An unincorporated not-for-profit community group managing a space in Yarra, auspiced by an eligible incorporated organisation or Neighbourhood House for this application;
- Have acquitted previous Council grants and have no outstanding debts to Yarra City Council;
- Have adequate public liability insurance, working with children checks, WorkCover and superannuation coverage;
- If the application is a live music venue, the applicant must agree to adopt the Best Practice Guidelines for Live Music Venues developed by the Live Music Roundtable with the Victorian Government. Download the guidelines here: https://www.musicvictoria.com.au/reports/best-practice-guidelines#article546
- Relevant applicants must, as required by law, implement and adhere to the Victorian Child Safe Standards. https://ccyp.vic.gov.au/child-safety/being-a-child-safe-organisation/

*The applicant names must match the entity (legal) name for the ABN, or a registered business name associated with the ABN **and** the name on the bank account provided for payment. The ABN Entity name can be checked when entering your ABN into the application form.

Applicants that are not eligible

- Neighbourhood Houses are funded through Council's Neighbourhood House Funding Program and are therefore are not eligible for the Room to Create Responsive Grant Program.
    - As above, Neighbourhood Houses can act as an auspice for other community groups;
- Individuals and sole-traders who do not meet the requirements listed above.
- Individuals or organisations who have already received a Room to Create Responsive Grant within the annual cycle.

Eligible Projects

- Applications must be for creative spaces or live music venues in Yarra;
- Applications cannot be submitted for the same project from multiple tenants/organisations.

Projects that are not eligible

- Activities that are part of the creative output of the applicant such as exhibitions, performances, workshops, events or other creative projects;
- Applications to fund projects retrospectively, for works that have already been completed;
- A studio space in a private dwelling/home;
- Expenses that are clearly related to the daily operations of the business including rent,

furniture, ongoing staff salaries, or administration costs not specific to the project;

- Works that would be the responsibility of the property owner if the space/building is leased;
- A program that is considered the responsibility of State or Federal Government;
- Activities that are sponsored by gambling businesses or take place at inappropriate venues;
- Projects with the singular purpose of promoting religion or that may be perceived as for the purpose of proselytizing;
- Individual training, study or academic research in Australia or overseas;
- A project that will be offered for assessment in the above training courses;
- Applications that are solely for attending forums, workshops and conferences;
- School fetes and other similar events;
- Competitions (other than one-off sporting events);
- Prize-events, award exhibitions or exclusively fundraising events;

HOW TO APPLY

Applications can be made online through Council's website, at cityofyarra.smartygrants.com.au.

Please note that applications are not submitted online until you hit the submit button. After submitting your application you will receive an email acknowledging receipt of your application which will include a PDF copy for your records. This will be sent to the email address you used to register on SmartyGrants. If you do not receive this email your application has not been submitted successfully. City of Yarra staff cannot view applications that have not been submitted, so please make sure you hit the submit button at the end of the application process.

ATTACHMENTS AND SUPPORT MATERIAL

- Applicants are required to include a quote/s for the proposed works in this application.
- Applicants are encouraged to provide further information about the venue and activities undertaken by the applicant.
- All those applying as an organisation must upload a copy of the organisation's most recent annual financial statement to their Room to Create Responsive Grant application. This could be the Financial Statement that all incorporated organisations are required to send to Consumer Affairs Victoria, or the organisation's most recent profit and loss statement. Please do not send your full Annual Report.
- All applicants need to provide a certificate of currency for the public liability insurance policy that will cover the funded project. Depending the nature of the funded activities, the relevant policy may be in the applicant's name, the auspicing organisation's name or the activities may be covered by the public liability insurance of the venue being used.
- Applicants can also include any other support material that may be required to support their project.

Please note, the maximum attachment size in SmartyGrants is 25MB. To avoid technical difficulties which may prevent you being able to submit your application, we recommend keeping files to a maximum of 5MB. Files can only be uploaded one at a time and upload speeds will vary depending on your computer's specifications, your internet connection and the amount of traffic on the SmartyGrants server. If you do have concerns or encounter any issues, consider providing links to specific website pages or online/cloud file transfer service in the space provided instead.

CHILD SAFE STANDARDS

Victorian organisations that provide services or facilities for children (anyone under 18 years old) are required by law to implement Child Safe Standards to protect children from harm. Therefore, if you project/program will engage children as either participants or audience members you will be required to demonstrate that you are complying with the Child Safe Standards by uploading a copy of your organisation's Child Safe Policy or Statement of Commitment to Child Safety.

If your organisation does not yet have a Child Safe Policy or Statement of Commitment to Child Safety, a template document is available on the Room to Create Responsive Grants website: https://www.yarracity.vic.gov.au/about-us/grants/room-to-create-responsive-grants. Tailor this document to suit your organisation and activities, then attach the document to your application as evidence. Remember to make sure a copy is distributed to your members.

Individual artists, will need to upload a copy of your current working with children check and/or your exhibition space's Child Safe Policy or Statement of Commitment to Child Safety.

For further information on the Child Safe Standards see:
https://ccyp.vic.gov.au/child-safety/resources/.

ACQUITTAL

Each grant recipient is required to submit an Acquittal Form and financial report within two months of completion of the project. Throughout the project funds must be spent in accordance with the budget submitted. You are required to keep accurate, up-to-date records in relation to the project including, but not limited to, itemised receipts issued when funding is spent and relevant account records to submit as part of the acquittal.

The required acquittal form will be linked to your Room to Create Responsive Grant application, when you are ready to submit the acquittal form please log onto cityofyarra.smartygrants.com.au and submit it in the same way you submitted your grant application.

Please keep receipts for expenditure items over $200 to upload into your online acquittal.

FOR MORE INFORMATION

Contact Arts and Culture on 9205 5089 debra.kunda@yarracity.vic.gov.au or 9205 5212 brona.keenan@yarracity.vic.gov.au

For issues with the application form, or administrative questions, contact the Grants Team on 9205 5170 and 9205 5146, or email yarragrants@yarracity.vic.gov.au.

11.6 Children's Services Priority of Access Policy Review

Trim Record Number: D19/59359
Responsible Officer: Director Community Wellbeing

Purpose

1. The purpose of this report is to seek Council endorsement of the draft Priority of Access Policy 2019, following community consultation.

Background

2. A Yarra *Priority of Access Policy* was established in 2006 and an administrative review of the Policy was undertaken in 2016. The 2016 Review ensured that the policy met State and Federal Government guidelines for Council services receiving subsidies.
3. *Priority of Access Policy* applies to all City of Yarra Children's Services and Children's Services that are operated from council owned buildings. This includes Long Day Care, Kindergarten, Outside School Hours Care and Occasional Care.
4. In July 2018, a new Child Care Subsidy (CCS) was introduced by the Commonwealth Government. In the Child Care Provider Handbook 2018, the Government requests that in the absence of a mandatory Priority of Access, that services consider prioritising children who are:
   (a) At risk of serious abuse or neglect; and
   (b) A child of a sole parent who satisfies, or parents who both satisfy, the activity test through paid employment.
5. This is a change from the pre-July 2018 legislation that set out the following mandatory structure, which is reflected in Council's current Priority of Access Policy (attachment 1).
6. Although the mandatory priority of access guidelines are removed from the Child Care Subsidy funding arrangement, the legislation allows scope for Council to implement a Priority of Access Policy that reflects the needs of the community. This creates the opportunity to review the current Priority of Access Policy.
7. Requirements set by the Victorian Government for allocating funded kindergarten places remain unchanged.
8. At its meeting held on the 13 November 2018 Council endorsed a draft Priority of Access Policy for community consultation.

External Consultation

9. External consultations were carried out in accordance with the Consultation Plan contained in the report presented to Council on 13 November 2018.
10. Due to timing and availability of resources, consultations with service providers were conducted in November 2018 and the 4-week community consultation period conducted from 20 February 2019 to 20 March 2019.
11. Community members were encouraged to consider the draft Priority of Access Policy and to provide feedback through a variety of methods including:
    (a) Council's website (Have Your Say page);
    (b) Council's social media promotion of Have Your Say page (twitter and Facebook);
    (c) Communication sent directly to parents and guardians with children enrolled in Council's licensed education and care and children's services (occasional care, long day care including casual care, kindergartens, after school care and vacation care) and to families on the central waitlist for child care and kindergarten;

(d) Promotion of draft Policy was circulated through Maternal and Child Health centres, community and supported playgroups;

(e) Promotion of the draft Policy and/or opportunity to discuss the draft Policy was circulated to relevant Advisory Committees including the Early Years Reference Group, Yarra Multicultural Advisory Group, Aboriginal Advisory Group and Disability Advisory Group;

(f) The Family Partnerships Committee was not convened during the consultation period due to members' commitments but members were encouraged to provide feedback;

(g) Two group consultations with culturally and linguistically diverse parents were conducted in community programs at the Connie Benn Centre; and

(h) Informal discussions with parents and guardians about the draft Policy.

12. 96 individual responses were received on the Have Your Say page, largely from parents with children enrolled in a Council service or on the waitlist for a place. Respondents were invited to rate their level of support for the draft Policy:

(a) 45 of the 96 respondents highly supported the draft Policy;

(b) 34 of the 96 respondents moderately supported the draft Policy; and

(c) 17 of the 96 respondents didn't support the draft Policy.

13. Overall the community feedback received was largely positive with suggestions to improve the draft Policy clearly presented. A summary report of the consultation results is contained in (attachment 2).

14. Common themes to improve the draft Policy include:

(a) Concern about existing clients being asked to make way for children with greater need;

(b) Families in which all parents work should receive higher priority;

(c) Yarra locals should be given higher priority; and

(d) Support for more childcare places overall.

Internal Consultation (One Yarra)

15. The consultation sessions included Yarra staff managing education and care services.

Financial Implications

16. There are no financial considerations for this report.

Economic Implications

17. The Commonwealth Government's Child Care Package is focused upon provision of a child care subsidy to assist parents and guardians to engage in work, study or volunteering.

18. 90% of families currently engaged in Council operated children's services satisfy the Commonwealth activity test.

19. Access to childcare enables many parents to work or study.

Sustainability Implications

20. There are no sustainability implications for this report.

Social Implications

21. Council is committed to providing quality care and educational settings for children, especially for children and families who are vulnerable or disadvantaged. Children's services provide an important role in identifying children and families that may be vulnerable and delivering services that meet their needs.

22. The draft Policy aims to ensure that there are clear and transparent processes for the community to reference regarding allocation of places in Council children's services.

Human Rights Implications

23. The purpose of the policy is to ensure Council is meeting the needs of the community, including those families with vulnerabilities to support their access to education and care services provided by Council or provided in Council buildings.

24. By the nature of the policy, distributing allocations equitably means that families with less vulnerable circumstance may be disadvantaged in the allocation process.

Communications with CALD Communities Implications

25. Culturally and linguistically diverse families in Council services were encouraged and supported to provide feedback on the draft Policy via consultation sessions held at the Connie Benn Centre.

Council Plan, Strategy and Policy Implications

26. Council endorsed a Priority of Access Policy in 2006.

27. The proposed draft Policy links to the Council Plan's Key objective - Inclusion, diversity and uniqueness are welcomed, respected and celebrated and Strategy 2.2 that Yarra will remain a highly inclusive municipality, proactive in advancing and advocating for the rights and interests of specific groups in the community and community issues.

28. Strategies in the Yarra 0-25 Plan for children, young people and their families supports the provision of an allocative policy to enable access to children's services.

Legal Implications

29. Previous Child Care Benefit funding requirements included the implementation of the Commonwealth Priority of Access guidelines. The new Commonwealth Child Care Package does not require this.

30. As an approved provider of kindergarten programs, Council must implement Priority of Access in accordance with State Government funding guidelines.

31. The draft Priority of Access Policy continues to ensure Council's relevant legal and funding responsibilities are met.

Other Issues

32. The proposed changes to the draft Priority of Access Policies are intended to remove ambiguities, overcome gaps and to specify the circumstances by which families may be given priority to the next available place in a service.

33. Whilst the current Priority of Access Policy sets out categories and subcategories to enable access to education and care for vulnerable families, there are categories that are considered ambiguous in their meaning, such as socially isolated families or families from a non-English speaking background; or too narrow in their scope, such a family which include a disabled person.

34. The proposed changes to the draft Priority of Access Policy, prior to community consultation included:

    (a) Inclusion of the following additional priority categories:

        (i) a child in need of priority care due to sudden change of circumstances ' (e.g. death of an immediate family member, loss of accommodation due to fire/natural disaster);

        (ii) Families in which a primary carer is a person who has a diagnosis of a chronic or serious health issue;

        (iii) children with additional needs, defined as children who: require additional assistance in order to fully participate in education and care service; require a combination of services which are individually planned; have an identified specific disability or developmental delay;

(iv) families which include a person with a disability diagnosis;

(v) Families in which a primary carer is a person who has a diagnosis of a chronic or serious health issue; and

(vi) Asylum seeker and refugee children.

(b) Removal of the following categories:

(i) families from a non-English speaking background;

(ii) Socially isolated families; and

(iii) families which include a disabled person.

35. Following the community consultation, additional changes to the draft policy have been updated.

(a) Priority 1 has been changed to include an expanded definition from “A child at risk of serious abuse or neglect including those in receipt of additional childcare benefit” has been altered to include:

(i) A child at risk of serious abuse or neglect including:

- children in receipt of additional childcare benefit;
- children in Out of Home Care; and
- children in situations of family violence.

(b) Priority 2 has changed from “a sudden change of circumstances” to a “serious change of circumstances” to include families that have a change of circumstances that takes time to resolve. Examples of this include court hearings and cancer treatment”. The examples in the priority have been extended to include these;

(c) The advice “Families that are meeting priority 1 and priority 2 and encouraged to contact children’s services to discuss assistance directly with the team. “ has been inserted into the policy to ensure the family is assisted as quickly as possible;

(d) The secondary priority categories have been broken up into “tiers” to better reflect the weighting assigned;

(e) Additional priority added “Children whose family work or study in Yarra”;

(f) Removal of the caveat:

“A child care service may require a Priority 4 child to vacate a place to make room for a child in a higher priority group. They can only do so if the parents are:

(i) notified when their child first entered care that the service follows this policy

(ii) given at least 14 days’ notice of the need for their child to vacate”;

(g) The kindergarten priority sub category of “Children whose family or carer” resides in Yarra has had carer removed to ensure that residents are prioritised over non-residents; and

(h) Adding to the Kindergarten Priority of Access sub category “Children who have engaged in a Yarra pre-kindergarten program or long day care in the year before kindergarten”.

36. Community feedback illustrates the importance of explaining the how the policy works and how it is implemented. Work has already commenced on this including:

(a) A cumulative weighting system to ensure the total of the lower scored priority categories cannot total more than the next highest category (category 3). The weighting scored will be used to allocate places to children on the registration list. The weightings will provide a clear scoring system allocating places to families in order of priority;

(b) Recommendation in the policy and promotion that families in priority categories 1 & 2 should contact Children's Services for support fast-tracking the application process;

(c) A roll out of a parent portal to compliment the central registration system;

(d) A review of the administration processes to:

(i) reduce lag time between a vacancy and allocation;

(ii) keep families better informed of how their application is progressing; and

(iii) better promote and explain how the Priority of Access works.

Conclusion

37. Changes to the Child Care Subsidy and guidelines for allocation of places in child care provide an opportunity to review the relevance of Council's current Priority of Access Policy to meet the needs of the community and to strengthen the communication of place allocation to the community.

38. The Priority of Access Policy is intended to ensure equitable allocation of education and care places according to Council's objectives for community wellbeing, whilst continuing to meet funding requirements set by other levels of government.

39. Feedback from 82% (72 of 88) of respondents on "Have Your Say" have been in High or moderate support of the draft Priority of Access Policy.

RECOMMENDATION

1. That Council:

(a) note the feedback from the community consultation which has informed the final draft Priority of Access Policy 2019;

(b) endorse the Priority of Access Policy 2019; and

(c) note that officers will prepare and publish a plain English version of the policy and 'Frequently Asked Questions' to assist and support families in their understanding of the policy.

CONTACT OFFICER: **Deanne Halpin**
TITLE: **Coordinator Children's Services**
TEL: **9205 5476**

Attachments

1⇩ Attachment 1 - Draft Priority of Access Policy 2019
2⇩ Attachment 2 - Help keep childcare fair - feedback summary (2)
3⇩ Attachment 3 - Priority of Access Policy 2006 - Family and Children's Services

Attachment 1 - Attachment 1 - Draft Priority of Access Policy 2019

Priority of Access Policy

Title	**Priority of Access Policy**
Description	The Priority of Access is developed to ensure that there is a clear and transparent process for offers in children's services.
Category	
Type	
Approval authority	
Responsible officer	
Approval date	
Review cycle	
Review date	
Document Reference (Trim)	
Human Rights compatibility	This policy has been assessed and is compatible with the Victorian Charter of Human Rights of Responsibilities

1. Purpose

The Priority of Access is to ensure that there is a clear and transparent process for the allocation of places in Yarra City Council operated children's services and in council buildings were children's services operate.

The Priority of Access Policy reflects the Australian Government's intention to help families who need it most and supports the safety and wellbeing of children at risk in accordance with the Framework for Protecting Australia's children.

In 2006 Council committed to the development and implementation of a Priority of Access Policy for Council. In 2018, Council developed a 0 – 25 Plan which identified the importance for Yarra residents to have access to services they need including early childhood education and care. Council's Strategic Priorities in the 0 – 25 Plan include increased opportunities for Aboriginal and Torres Strait Islander children; responsiveness to culturally and linguistically diverse children and families; and promoting and supporting family engagement in learning for young children.

2. Policy

PRIORITY OF ACCESS

Priority of access is applicable to kindergarten, outside school hours care, occasional care and child care. Kindergarten is prioritised in accordance with the State Government funding requirements. Outside school hours care (OSHC) and childcare in consideration of Commonwealth Government recommendations.

Scope

This policy applies to:

- Council managed centre-based children's services.

- Service operating from a City of Yarra building

2.1 Childcare, Outside School Hours Care and Occasional Care Priority of Access

1. A child at risk of serious abuse or neglect including:
    a. children in receipt of additional childcare benefit;
    b. children in Out of Home Care
    c. children in situations of family violence
2. A child in need of priority care due to serious change of circumstances (e.g. death of an immediate family member, cancer treatment, loss of accommodation due to fire/natural disaster, court hearings)
3. A child of a single parent who satisfies, or of both parents who satisfy, the Child Care Subsidy activity test through work, training, volunteer and/or study.
4. Any other child.

Families that are meeting priority 1 and priority 2 and encouraged to contact children's services to discuss assistance directly with the team.

It should be noted that within each category priority will be given to the following children:

Tier 1:
- Aboriginal and/or Torres Strait Islander children

Tier 2:
- Children with additional needs, defined as children who: require additional assistance in order to fully participate in kindergarten; require a combination of services which are individually planned; have an identified specific disability or developmental delay

Tier 3:
- Families which include a person with a disability diagnosis.
- Families which include a person who has a diagnosis of a chronic or serious health issue.

Tier 4:

- Children of single parents
- Families on low incomes as defined by the Child Care Subsidy highest subsidy threshold
- Asylum seeker and refugee children

Tier 5:

- Children whose family resides in Yarra
- Siblings of children enrolled in the same Yarra Children's Service

Tier 6:

- Children whose family work or study in Yarra

2.2 Priority of Access for funded kindergarten places:

Placement in a funded year of kindergarten (in a program that is not eligible for Childcare Subsidy) must be allocated in line with the State Government Priority of Access Procedure.

Priority of Access Policy

Priority One:

- Children at risk of abuse or neglect, including children in out of home care
- Aboriginal and/or Torres Strait Islander children
- Children eligible for the Kindergarten Fee Subsidy
- Children with additional needs, defined as children who: require additional assistance in order to fully participate in kindergarten; require a combination of services which are individually planned; have an identified specific disability or developmental delay
- Asylum seeker and refugee children

Having satisfied the requirements of State Priority of Access Guidelines, remaining places will be allocated applying the following Yarra City Council Priority of Access guidelines:

- Siblings of children enrolled in the same Yarra Children's Service
- Children whose family resides in Yarra
- Children whose family work or study in Yarra
- Children who have engaged in a Yarra pre-kindergarten program or long day care in the year before kindergarten.

3. Related Documents

- Family Youth and Children's 0 – 25 plan
- Child Care Provider Handbook
- DET Kindergarten funding guidelines.

DRAFT

Attachment 2 - Attachment 2 - Help keep childcare fair - feedback summary (2)

Help us keep childcare fair

COMMUNITY FEEDBACK SUMMARY – MAR 2019

We are updating our Priority of Access Policy, which helps ensure that our childcare places are offered to families with the greatest need. We recently asked our community to review the updated draft and provide feedback.

Level of engagement

504	96	2
visitors to the project page	survey responses	feedback sessions

Level of support for draft policy

47%	35%	18%
highly supportive	moderately supportive	Unsupportive

Four most commonly raised issues

13 mentions	7 mentions	6 mentions	6 mentions
Concern about existing clients being asked to make way for children with greater need	Families in which all parents work should receive higher priority	Yarra locals should be given higher priority	Support for more childcare places overall

Selected quotes

"Changes that support local parents are fabulous."	*"I understand that I need these services less desperately than others…"*	*"I would be extremely unhappy if… our child was asked to leave…"*	*"Nice to see further thought and definitions applied."*

Attachment 3 - Attachment 3 - Priority of Access Policy 2006 - Family and Children's Services

Priority of Access
(Family and Children's Services) POLICY

Purpose
To ensure Council managed and Council subsidised childcare and preschool services are accessible to Yarra residents[1] and maintain compliance with Commonwealth Priority of Access guidelines and State Government Service funding requirements.

Scope
This policy applies to:
- Council managed centre-based long day care, family day care, occasional child care, preschool and outside school hours care services;
- Community managed child care, preschool and occasional child care services which are provided in Council owned or leased buildings.

Council Policy
The Municipal Early Years Plan (MEYP) 2005-2007 identified frustrations for Yarra residents endeavouring to secure child care places for their children.

A key strategy within the MEYP committed Council to the development and implementation of a Priority of Access Policy for Council sponsored services. This action was also reflected in the Council Plan 2006- 2009.

Priority of Access
It is a funding requirement that Commonwealth Priority of Access Guidelines be applied to the allocation of places within centre-based long day care, family day care and outside school hours care services.

In accordance with the Commonwealth Priority of Access Guidelines, places will be allocated utilising the following criteria:

Priority 1 – Resident child at risk of serious abuse or neglect;

Priority 2 – Non resident child at risk of serious abuse or neglect;

Priority 3 – Resident child of a single parent who satisfies, or of parents who both satisfy, the work/training/study test under section 14 of the Family Assistance Act; and

Priority 4 – Non resident child of a single parent who satisfies, or of parents who both satisfy, the work/training/study test under section 14 of the Family Assistance Act.

[1]A resident is a person whose primary place of residence is within the boundaries of the municipality of Yarra. Under special circumstances the definition may be extended to include persons current close family links with the municipality

Responsible officer	Document No.	Approval date	Page
Manager Family and Children's Services	comhth.pol.00255	Approved: Cnl 20 June 2006 Revised: Cnl 19 Dec 2006	1 of 2

Attachment 3 - Attachment 3 - Priority of Access Policy 2006 - Family and Children's Services

Having satisfied the requirements of Commonwealth Priority of Access Guidelines, remaining places will be allocated utilising the following Yarra City Council Priority of Access guidelines:

Priority 1 - Siblings of children already enrolled in a subsidised Yarra children's service and who reside in Yarra;

Priority 2 – Non-resident siblings of children already enrolled in subsidised Yarra children's service

Priority 3 - Other children whose family or carer resides in Yarra;

Priority 4 – Non-resident children whose family or carer works or studies in Yarra;

Priority 5 – All other non-resident children allocated in the order of closest residential proximity to the Centre.

It should be noted that within all categories priority will be given to the following children:

- children in Aboriginal and Torres Strait Islander families;
- children with a disability or in families which include a disabled person;
- children in families on lower incomes;
- children in families with a non-English speaking background;
- children in socially isolated families;
- children of single parents.

As Occasional Child Care and Pre school services are not funded by the Commonwealth Government, they are not subject to compliance with Commonwealth Priority of Access Guidelines. Priority will be given in accordance with Yarra City Council Priority of Access Guidelines, whilst meeting State Government service funding requirements.

Consultation

This policy reflects the Council and community consultation undertaken in the development of the City of Yarra Municipal Early Years Plan 2005-2007. It was considered by the City of Yarra Early Years Reference Group in April 2006.

The draft Priority of Access Policy was endorsed by Council for the purposes of community consultation on April 18 2006. The consultation drew more than 200 responses.

Related documents

City of Yarra Municipal Early Years Plan 2005-2007

Yarra City Council Plan 2006 – 2009

Department of Family and Community Services - Priority of Access Guidelines

DHS Kindergarten Funding Guidelines

Responsible officer	Document No.	Approval date	Page
Manager Family and Children's Services	comhth.pol.00255	Approved: Cnl 20 June 2006 Revised: Cnl 19 Dec 2006	2 of 2

11.7 Living Melbourne: Our Metropolitan Urban Forest

Trim Record Number: D19/59624
Responsible Officer: Director Planning and Place Making

Purpose

1. The purpose of this report is to provide Council with the *Living Melbourne: our metropolitan urban forest* strategy developed by *Resilient Melbourne* with input from metropolitan councils, the Victorian government, statutory authorities, academics and others.

2. Endorsement of *Living Melbourne* would provide support for *Living Melbourne's* Vision, Goals and Actions and a commitment to work in partnership with the other endorsing organisations towards its implementation.

Background

3. *Resilient Melbourne* was instigated by the 100 Resilient Cities (100RC) initiative, pioneered by The Rockefeller Foundation in 2015. This global initiative aims to help cities around the world become more resilient to the physical, social and economic challenges that are a growing part of the 21st century. Melbourne was selected from 372 applicant cities around the world to be in the first wave of 33 cities to join the network.

4. Following significant engagement across metropolitan Melbourne, including all local councils, Victorian government, and many other stakeholders, the *Resilient Melbourne* strategy was released in May 2016 – the first ever metropolitan-wide strategy led by local government. While still part of the 100RC network, *Resilient Melbourne* is 100% locally owned and funded.

5. 100 Resilient Cities – pioneered by the Rockefeller Foundation, has invested significantly in the development of *Living Melbourne* by facilitating pro-bono services to the project, including project partner *The Nature Conservancy*, satellite imagery from Digital Globe, and data analysis and software provided by Trimble.

6. Urban forest initiatives have been established by several metropolitan Melbourne local governments (including Yarra City Council), the Victorian government, non-governmental and community organisations, private land owners and others to protect and enhance Melbourne's metropolitan urban forest.

7. What has been missing until now is a way for this work to be coordinated and supported at a metropolitan scale. The purpose of *Living Melbourne* is to galvanise support for a collaborative effort across sectors and organisations, jurisdictions and land tenures.

8. *Living Melbourne: our metropolitan urban forest* strategy is supported by *Living Melbourne: Technical report*. This report provides the strategy and the technical evidence underpinning the strategy - both are intended to be read as standalone documents (see attachments).

Key issues

9. As a flagship action of the *Resilient Melbourne* strategy, *Living Melbourne* provides a business case for nature as a driver of urban resilience and liveability. Its proposed framework aims to assist metropolitan Melbourne, and its communities, adapt, survive and thrive in the face of acute shocks and chronic stresses challenging our city, both now and in the future.

10. The *Living Melbourne* strategic framework includes:

   (a) a vision; our *thriving communities are resilient and connected through nature*;

   (b) three goals; *healthy people, abundant nature and natural infrastructure*; and

   (c) six key actions;

(i) protect, restore species habitat and enhance connectivity,

(ii) set targets and track progress;

(iii) scale up greening the private realm;

(iv) collaborate across sectors and regions;

(v) build a toolkit of resources to underpin implementation; and

(vi) fund the protection and enhancement of the urban forest.

11. Endorsement of the strategy supports Yarra City Council's Vision, Council Plan objectives and Yarra City Council "Urban Forest Strategy".

12. Benefits for endorsing organisations include the following:

    (a) licence to host mapping derivatives on website;

    (b) use of satellite imagery for internal use;

    (c) co-branding plus logo placement in final designed version of Living Melbourne;

    (d) access to future financial investment for actions and aligned media opportunities;

    (e) opportunity to demonstrate collective leadership regarding Melbourne's future liveability; and

    (f) opportunity to leverage collective metropolitan support to extend existing work.

13. *Living Melbourne* has been developed with the assistance of a broad range of stakeholders, coupled with advice from a Senior Reference Group and a Technical Advisory Group. Extensive consultation on the document occurred from December 2018 to March 2019, with 36 organisations providing feedback in Round One and 18 providing feedback in Round Two.

External Consultation

14. The Senior Reference Group included: Department Environment Land Water and Planning, City of Brimbank, The Nature Conservancy, Melbourne Water, City of Monash, City of Stonnington, Resilient Melbourne, City of Frankston, City of Melbourne, Parks Victoria and City of Hume.

15. Stakeholder involvement included a series of workshops to guide development of the strategy, incorporate stakeholder perspectives and review the strategy as it progressed and was finalised. The four major workshops focused on:

    (a) establishing the baseline and setting the initial vision;

    (b) developing the strategic foundation;

    (c) technical evidence to guide the strategy; and

    (d) draft strategy framing and development.

16. Stakeholders who contributed to the development of *Living Melbourne* include metropolitan Melbourne local government authorities, Victorian Government departments and statutory agencies, technical experts, land managers, policy makers, planners, academics developers and some community representatives (see the Acknowledgements section within Living Melbourne for a full list).

17. Round 1 consultation on the early draft *Living Melbourne* strategy occurred December 2018 – January 2019. The draft *Living Melbourne* strategy was circulated to over 60 organisations, including all metropolitan councils, relevant Victorian Government departments and agencies, as well as a range of statutory authorities. Insightful, constructive feedback was received from 36 organisations, totalling 640 individual items of feedback demonstrating their commitment to *Living Melbourne* and involvement in its release and implementation.

18. Melbourne Water circulated information inviting Healthy Waterways stakeholders (community organisations and community members) to respond to a questionnaire on *Living Melbourne*. 100% of respondents either strongly agreed or agreed with a metropolitan wide approach to

improve greening efforts and better protect nature across Melbourne. 100% of respondents either strongly agreed or agreed with the vision and goals of the *Living Melbourne* strategy and 100% of respondents stated they would be likely to recommend that their local council endorses *Living Melbourne*.

19. A stakeholder briefing session was held on 13 February 2019 to provide an update on *Living Melbourne* for endorsing organisations plus additional organisations involved in *Living Melbourne's* development.

20. Round 2 consultation on the draft strategy occurred from 22 February 2019 to 15 March 2019. Round 2 consultation asked organisations what needed to change in order for them to support or endorse the strategy. *Resilient Melbourne* received over 130 mostly positive comments from 18 organisations, with no submissions indicating a reticence to endorse. Overall stakeholders have indicated their support for the collective approach that *Living Melbourne* is proposing.

21. *Living Melbourne* responded to feedback and updated the strategy to ensure the final version is representative of the needs of the diverse partnership.

22. Endorsement for *Living Melbourne* is now being sought from the following organisations which have been involved in its development:

    (a) 32 metropolitan Melbourne Local Government Authorities;

    (b) Victorian Government – through DELWP);

    (c) Municipal Association Victoria;

    (d) Melbourne Water;

    (e) Yarra Valley Water;

    (f) South East Water;

    (g) City West Water;

    (h) Parks Victoria;

    (i) Vic Roads;

    (j) Victorian Planning Authority;

    (k) Australian Institute of Landscape Architects;

    (l) Environment Protection Authority; and

    (m) Port Phillip and Westernport Catchment Management Authority.

Internal Consultation (One Yarra)

23. Council's Landscape Design and Arborists have been engaged in the process and provided technical responses at the submission stages.

Financial Implications

24. There is no requirement for endorsing organisations to commit funding alongside endorsement. Action 6 of *Living Melbourne* outlines work being undertaken to raise and leverage finance for its implementation.

25. Council's own Urban Forest Strategy has an Action Plan which supports additional tree plantings in appropriate locations and the preparation of Priority Planting Plans.

Economic Implications

26. Council expenditure on plantings over a number of years is approximately $500k per annum (on average). Tree maintenance is a further approximately $300k annually. Approximately 800 to 1,000 new trees are planted annually.

Sustainability Implications

27. In developing this proposal, *Resilient Melbourne* has identified the health benefits of the current metropolitan urban forest.

28. *Living Melbourne* considers the current and future threats to Melbourne's liveability and proposes actions to extend and improve the metropolitan urban forest to both mitigate impacts and provide a long term strategic approach for its future sustainability.

Social Implications

29. Improved tree canopy assists in both reducing the heat island effect and also adds to the amenity of an area.

Human Rights Implications

30. Protection of people in vulnerable categories is an important focus of an urban forest strategy.

Communications with CALD Communities Implications

31. NIL known

Council Plan, Strategy and Policy Implications

32. The following Council policies are consistent with *Living Melbourne*:

    (a) *A Healthy Yarra;*

    (b) *A Sustainable Yarra*

    (c) *A Liveable Yarra; and*

    (d) *A Leading Yarra.*

Legal Implications

33. *Living Melbourne* is not a legislative requirement nor does it diminish individual council's rights or ability to develop localised urban forest approaches. It is aligned with the Victorian Government's Action 91 in *Plan Melbourne* and aligned with many visions and objectives, of endorsing organisations including Yarra City Council.

Other Issues

34. None

Options

35. Council can endorse the *Living Melbourne* document or choose to not endorse the document.

Conclusion

36. The *Living Melbourne* document supplements the intention of Yarra City Council and many other Local Government Authorities. It is a major initiative of *Resilient Melbourne* and very worthy of endorsement.

RECOMMENDATION

1. That Council:

    (a) notes the report of officers regarding the *Living Melbourne, our Metropolitan Urban Forest Strategy* prepared by *Resilient Melbourne*;

    (b) Endorses *Living Melbourne: our metropolitan urban forest* which means supporting *Living Melbourne's* Vision, Goals and Actions and committing to work in partnership with the other endorsing organisations towards its implementation; and

    (c) Authorises the use of *Yarra City Council* logo to appear as an endorsing organisation in the designed version of *Living Melbourne* which will be launched in June 2019.

CONTACT OFFICER: **David Walmsley**
TITLE: **Manager City Strategy**
TEL: **9205 5350**

Attachments

1 ⇩ Living Melbourne Technical Report
2 ⇩ Living Melbourne - consultation 220219

Attachment 1 - Living Melbourne Technical Report

Living Melbourne

Our metropolitan urban forest

Technical Report

February 2019

Attachment 1 - Living Melbourne Technical Report

Contents Page

1 Introduction 3
2 Biodiversity and conservation across metropolitan Melbourne 4
3 Benefits of the urban forest 20
4 Key influences of metropolitan Melbourne's urban forest 39
5 What is the policy, planning and legislative context in Melbourne? 63
6 Metropolitan Melbourne's urban forest 87
7 Heat in the landscape analysis 108
8 Biodiversity analysis 125
9 Monitoring, measurement, and metrics 138
10 Funding and financing mechanisms 143
11 References 160

1 Introduction

1.1 What is the metropolitan Melbourne urban forest?

The urban forest comprises trees, shrubs, grasslands supported by soil and water and other vegetation growing on public and private land across metropolitan Melbourne. This includes vegetation within parks, reserves and private gardens along railways, waterways, main roads and local streets, and on other green infrastructure such as green walls and roofs. The urban forest encompasses all types of vegetation and ecosystems, but one of the most iconic elements is its trees and shrubs. Fauna is an important component of the urban forest, with complex interrelations between animals and plants helping to maintain the urban forest.

1.2 What is the purpose of the technical support document?

The purpose of this technical support document is to provide the evidence base that underpins the *Living Melbourne* strategy. The sections of this document include:

Section 1 – Introduction

Section 2 – Provides a discussion about why biodiversity is important, and the type and distribution of biodiversity in metropolitan Melbourne.

Section 3 – Discusses the ecosystem services and benefits that the urban forest brings to metropolitan Melbourne's community.

Section 4 – Discusses the value of Melbourne's urban forest and outlines some of the risks that it faces; considers the importance of Water Sensitive Urban Design and explores how urban development has shaped our urban forest; summarises some of the current actions, both singular projects and collaborative activities, that local governments and others are undertaking to manage our urban forest, and provides examples of urban forest management internationally.

Section 5 – Summarises the key policy frameworks or relevant strategies that influence the urban forest.

Section 6 – Provides analyses of the vegetation across metropolitan Melbourne by height and distribution, the public accessibility of our open space assets, and the associated biodiversity modelling.

Section 7 – Provides analysis of the heat mapping mapping incuding modelling of the hot spots and cool spots across metropolitan Melbourne and the methodology of that analysis.

Section 8 – Provides an analysis of the modelling of bird species or bird group distribution and the methodology of that modelling.

Section 9 – Describes existing vegetation measurement and monitoring activities; provides summaries of common urban forest metrics used internationally, and of joint measuring and monitoring platforms that have been developed.

Section 10 – Describes existing financial mechanisms and new options to finance the implementation of this strategy.

2 Biodiversity and conservation across metropolitan Melbourne

2.1 What is biodiversity?

Biodiversity is defined in Protecting Victoria's Environment – Biodiversity 2037 plan as encompassing 'all components of the living world: the number and variety of plants, animals and other living things (including fungi and micro-organisms) across our land, rivers, coast, and ocean. It includes the diversity of their genetic information, the habitats and ecosystems within which they live, and their connections with other life forms and the natural world.' This definition applies to *Living Melbourne*.

Please note that all flora and fauna data records in this section are drawn from the Victorian Biodiversity Atlas (Victoria State Government, n.d.).

2.2 Urban biodiversity in a global context

The world is experiencing unprecedented urban growth. Today, just over half of the world's population (55%) lives in urban areas, and this is predicted to rise to just over two-thirds (68%) by 2050 (United Nations, n.d.). Urban areas currently occupy approximately 3% of the Earth's land surface (McDonald, et al., 2013). Cities are home to billions of people who depend on healthy, natural systems to provide clean water, food, flood protection and resources for industrial, recreational and other uses. The suitability of urban areas for human occupation relies on the presence of natural areas that sustain biodiversity within and outside their borders. A growing global population and an increasing trend toward urbanisation are placing higher demands on the natural systems in and around urban areas.

Despite the known broadscale trends in urban growth, there is still much to learn about the consequences of urbanisation for biodiversity and how best to design cities and towns to conserve biodiversity and maintain healthy ecosystems (Ossola & Niemela, 2018). Until relatively recently, urban areas were thought to be of low value for biodiversity, but evidence is increasingly showing that urban and suburban areas can, in fact, support relatively high levels of biodiversity (Alvey, 2016). For example, a recent study by Ives et al. (2016) found that over 30% of Australia's threatened plants and animals occur in urban areas (Ives, et al., 2016). However, best practice guidelines are lacking for how to halt biodiversity loss or increase biodiversity in these areas (Threlfall, et al., 2017).

According to the Cities and Biodiversity Outlook of the Secretariat of the Convention on Biological Diversity (2012), there are some interesting patterns in urban biodiversity:

1. The number of plant species in urban areas often correlates with human population size more than it does with the area of the city.
2. The age of the city affects species richness: large, older cities have more plant species than large, younger cities.
3. Species diversity appears to be correlated with economic wealth. For example, in Phoenix, USA, plant and bird diversity in urban neighbourhoods and parks showed a significant positive correlation with median family income (Kinzig, et al., 2005). Interestingly, recent research from Australia suggests that education levels may play a more important role than income (Kendal, et al., 2012).
4. Approximately 20% of the world's bird species and 5% of the vascular plant species occur in cities.
5. On average, 70% of plant species and 94% of bird species found in urban areas are native to the surrounding region. A 2014 study similarly found that most species of birds and plants in cities

globally are native to that area (Aronson, et al., n.d.). However, the study also found that the density of native urban species has declined substantially to only 8% and 25% of the typical non-urban density for native birds and native plants, respectively. This disparity was primarily caused by anthropogenic factors (landcover, city age) rather than by non-anthropogenic factors (geography, climate, topography). The authors suggest that despite the reduction in the density of native species, many cities still provide important opportunities for regional and global biodiversity conservation, restoration and education.

2.3 Geography and history of metropolitan Melbourne

Melbourne is located at the junction of seven different bioregions (see Section 2.4.1). Prior to European settlement, the area that is now metropolitan Melbourne was covered in a rich mosaic of different plant communities that ranged from grasslands and open grassy woodland on the cracking clay soils of the west to coastal heathland and heathy woodlands in the southeast, and moist temperate forests and rainforests in the area now known as the Dandenong Ranges. Rivers, creeks, wetlands and swamps added further complexity and richness of habitats to the area. This diverse mosaic arose through a combination of different soils, environmental conditions, and the land management practices of the Woiwurrung (Wurundjeri), Boon Wurrung, and Wathaurong peoples of the Kulin Nation, who are the Traditional Owners of the land now known as Melbourne, and who have spent millennia caring for country.

Since the European settlement of Melbourne in 1835, the city has experienced profound changes due to fluctuating economies, industrialisation, population growth, and other social and political factors. British colonial influences were the primary driver of the development of Melbourne as a city, and economic wealth was largely derived from the gold rush that started in the mid-1800s. This period saw the establishment of large areas of green space and parks that were carefully planned and landscaped (Ives, et al., 2013), giving the inner suburbs the leafy green feel they are known for today. Population growth, manufacturing, and commercial development over subsequent decades led to the city's rapid expansion (*Figure 1*) and established a steady pattern of converting agricultural land into residential land along the fringes. High levels of car ownership and the availability of 'cheap' land on the urban-rural fringe continues to drive this pattern today. The proportion of Melbournians within 10 kilometres of the General Post Office (GPO) has increased from 30% in 1954 to 84% in 2001 (Department of Planning and Community Development 2004, cited by Ives et al. (2013)) (Ives, et al., 2013). Consequently, urban sprawl is one of the biggest challenges that Melbourne faces with respect to sustainability and conserving biodiversity. Another major challenge is increased densification of existing suburbs, often through the conversion of single-dwelling house-lots into multi-unit developments.

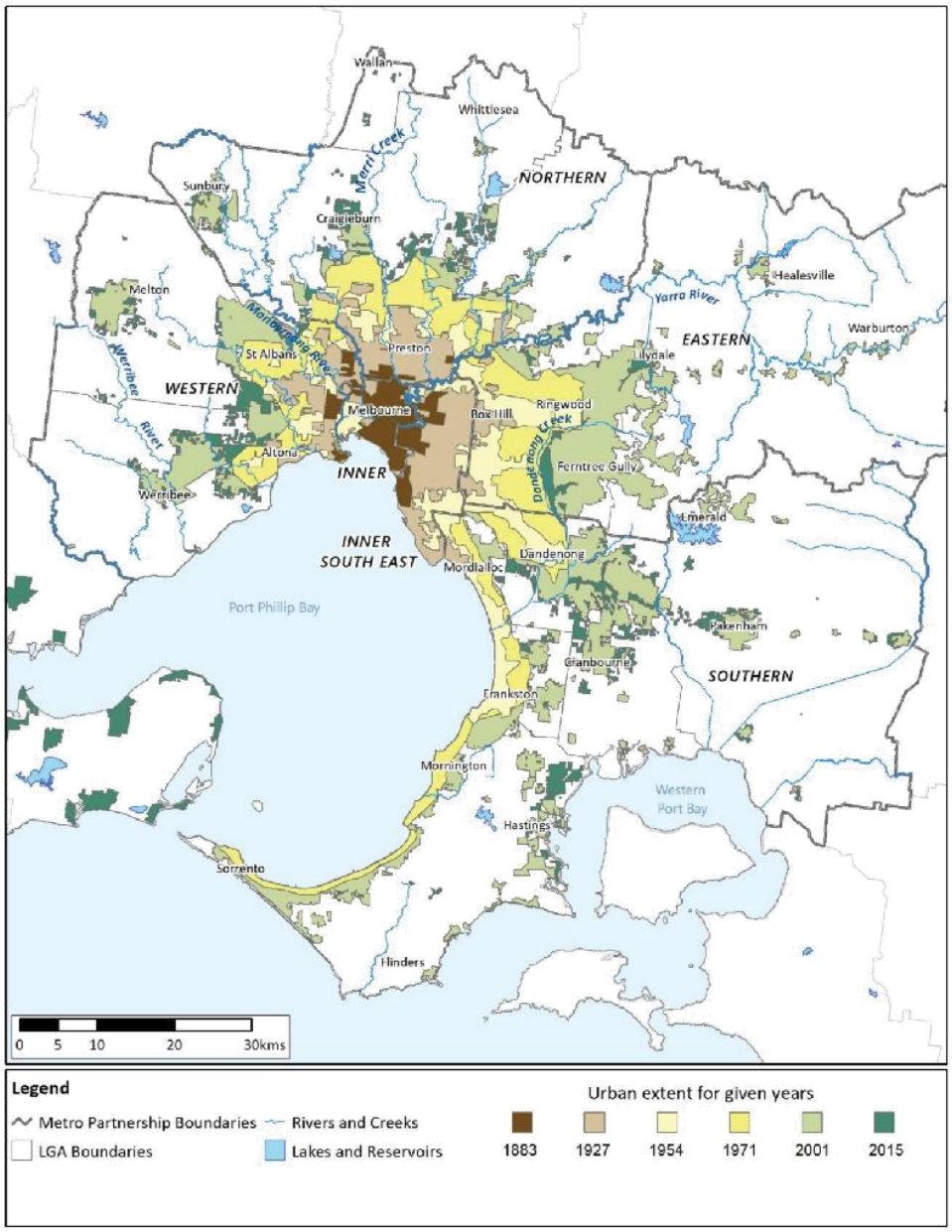


Figure 1. *The growth and expansion of Melbourne since European settlement in 1883. Source: Department of Environment Land, Water and Planning.*

While much of metropolitan Melbourne has been substantially modified and irreversibly changed by urbanisation, the metropolitan area retains substantial natural values and a high diversity of flora and fauna (Victorian Environmental Assessment Council, 2011). The historical development pattern of Melbourne has enabled a range of indigenous and non-indigenous species to persist in the urban environment. This pattern includes the retention of one of the highest percentages of open green space of any city in the world at more than 28%, including Crown road reserves (Victorian Environmental Assessment Council, 2011). In addition, 26% of metropolitan Melbourne (both public and private land) contains native vegetation (Victorian Environmental Assessment Council, 2011). However, a study of a more constrained area of the Melbourne @2030 urban growth boundary found that inner city areas only retained approximately 1.6% of the original vegetation cover compared to the outer suburbs with 16% (Hahs, et al., 2009). Despite the relatively high area of public open space and overall native vegetation cover, many species of native flora and fauna have declined (Hamer & McDonnell, 2010), (van der Ree & McCarthy, 2005), and further loss can be expected due to a significant extinction debt unless additional effort is put into sustaining plant populations (Hahs, et al., 2009).

2.4 Biodiversity of metropolitan Melbourne

2.4.1 Bioregions

Melbourne sits at the junction of seven bioregions, which are broad geographical regions composed of clusters of interacting ecosystems that share common physical and biological features such as climate, geology, landforms, soils and vegetation (Figure 2). Most of the metropolitan Melbourne Urban Forest study area falls within the Gippsland Plain, Highlands Southern Fall, and Victorian Volcanic Plain bioregions, with smaller areas of the Otway Plain, Central Victorian Uplands, Victorian Alps and Highlands-Northern Fall bioregions (Table 1). Summary descriptions of each bioregion can be found within the Victorian Environmental Assessment Council (VEAC) Final Report (Victorian Environmental Assessment Council, 2011).

Figure 2. *Map of the Living Melbourne study area showing the bioregions and extent of remaining indigenous vegetation (NV2005_EVC_BCS)*

Table 1. Extent of Victorian Bioregions within the Living Melbourne study area

Bioregion	Area (km^2)
Central Victorian Uplands (CVU)	247.8
Gippsland Plain (GP)	3,489.9
Highlands - Northern Fall (H-NF)	263.2
Highlands - Southern Fall (H-SF)	3,639.9
Otway Plain (OP)	168.0
Victorian Alps (VA)	63.9
Victorian Volcanic Plain (VVP)	2,590.3
Grand Total	10,463.1

2.4.2 Native Vegetation - Ecological Vegetation Classes

Ecological Vegetation Classes (EVC) are the standard units for classifying vegetation types in Victoria. EVCs are described using a combination of floristics, lifeform, and ecological characteristics, and through an inferred fidelity to particular environmental attributes (Department of Environment Land Water and Planning, n.d.). There are approximately 300 EVCs in Victoria, 85 of which occur within the VEAC Metropolitan Melbourne investigation area (Victorian Environmental Assessment Council, 2011). Many of these EVCs also occur outside of the investigation area and within adjoining bioregions.

The *Living Melbourne* study area contains a total of 93 recognised EVCs of native vegetation. These 93 EVCs fall into 17 groups and cover a total of 2,897.5 square kilometres, or 27.6% of the study area (*Table 2*). This number includes the Mornington Peninsula and western half of the Yarra Ranges local government areas and is therefore slightly larger than that observed in the VEAC Metropolitan Melbourne investigation area.

Table 2. *Extent of native vegetation (hectares) within the Living Melbourne study area in each EVC Group per bioregion. The bioregions are: Central Victorian Uplands (CVU), Gippsland Plain (GP), Highlands - Northern Fall (H-NF), Highlands - Southern Fall (H-SF), Otway Plain (OP), Victorian Alps (VA), Victorian Volcanic Plain (VVP)*

EVC Group	Bioregion							
	CVU	GP	H-NF	H-SF	OP	VA	VVP	Grand Total
Box Ironbark Forests or dry/lower fertility Woodlands	11.0	0.1	0.0	10.9	0.0	0.0	4.1	26.1
Coastal Scrubs Grasslands and Woodlands	0.0	42.2	0.0	0.0	0.3	0.0	0.5	42.9
Dry Forests	44.8	41.3	52.0	619.3	0.0	0.0	6.1	763.4
Heathlands	0.0	5.8	0.0	19.9	0.0	0.0	0.0	25.7
Heathy Woodlands	0.0	46.2	0.0	63.1	0.0	0.0	0.0	109.2
Herb-rich Woodlands	0.0	24.4	0.0	25.9	0.0	0.0	0.1	50.5
Lower Slopes or Hills Woodlands	15.4	54.8	0.0	4.9	0.0	0.0	6.9	81.8
Lowland Forests	0.0	42.7	0.0	213.4	0.0	0.0	0.0	256.2
Plains Grasslands and Chenopod Shrublands	0.0	10.3	0.0	0.0	0.2	0.0	230.9	241.4
Plains Woodlands or Forests	1.5	7.0	0.0	5.6	2.6	0.0	79.5	96.3
Rainforests	0.0	0.0	8.3	24.1	0.0	2.6	0.0	34.9
Riparian Scrubs or Swampy Scrubs and Woodlands	4.3	91.8	4.3	192.8	0.0	0.0	9.8	303.0
Riverine Grassy Woodlands or Forests	0.4	6.8	0.0	7.4	1.7	0.0	8.5	24.7
Rocky Outcrop or Escarpment Scrubs	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2
Salt-tolerant and/or succulent Shrublands	0.0	24.2	0.0	0.0	1.2	0.0	10.8	36.2
Wet or Damp Forests	0.0	2.9	119.0	619.0	0.0	47.9	0.0	788.7
Wetlands	0.0	9.0	0.0	0.0	0.3	0.0	6.9	16.3
Grand Total	77.3	409.5	183.6	1,806.4	6.2	50.5	364.0	2,897.5

EVCs that occur in multiple bioregions may have different ratings of Bioregional Conservation Status (BCS) in each because their prevalence in each bioregion varies. For the *Living Melbourne* study area, there are a total of 202 recognised combinations of EVCs by bioregion; 94 of these are considered Endangered, and 49 are considered Vulnerable (*Table 3*). The Gippsland Plains Bioregion contains the largest number of Vulnerable or Endangered EVCs (20 Vulnerable and 32 Endangered), followed by the Victorian Volcanic Plain (10 Vulnerable, 31 Endangered) and Highlands-Southern Fall (11 Vulnerable, 10 Endangered). This pattern largely reflects the proportion of the study area covered by these three dominant bioregions, and also highlights the need to consider how the metropolitan Melbourne Urban Forest Strategy can contribute to supporting and enhancing the health of these important native vegetation communities so that they can continue to persist into the future.

Table 3. *Bioregional Conservation Status (BCS) of each EVC within the metropolitan Melbourne Urban Forest Strategy study area by bioregion. LC - Least Concern, D - Depleted, R - Rare, V - Vulnerable, E - Endangered, na - insufficient information*

Bioregion	LC	D	R	V	E	na	Total
Central Victorian Uplands (CVU)	3	4		7	9		23
Gippsland Plain (GP)	5	8	3	20	32		68
Highlands - Northern Fall (H-NF)	9	2		1	2		14
Highlands - Southern Fall (H- SF)	11	4		11	10	1	37
Otway Plain (OP)					9		9
Victorian Alps (VA)	3		1		1		5
Victorian Volcanic Plain (VVP)	1	3		10	31	1	46
Grand Total	**32**	**21**	**4**	**49**	**94**	**2**	**202**

2.4.3 Flora of metropolitan Melbourne

Metropolitan Melbourne supports a diverse array of native plants. A report by VEAC (2010) found that, since 1990, 1,753 native vascular plant species have been recorded within the metropolitan Melbourne investigation area (which excludes the Shires of Yarra Ranges or Mornington Peninsula). The report noted that the study area, which represented only 2.5% of Victoria, contained records of 40% of all Victorian native plant species (Victorian Environmental Assessment Council, 2011). When including the areas of the Mornington Peninsula and the western half of the Yarra Ranges, Ives et al. (2013) put the figure at 1,864 native plants in the combined area (Ives, et al., 2013). In addition to vascular plants, the VEAC investigation also recorded 840 species of bryophyte (mosses and liverworts), lichen, and fungi (Victorian Environmental Assessment Council, 2011). Of all the flora species found within metropolitan Melbourne, 178 are considered threatened (Ives, et al., 2013).

The metropolitan Melbourne area also hosts a diverse array of introduced plants (Ives, et al., 2013), and 1,100 species have been recorded within the VEAC investigation area (Victorian Environmental Assessment Council, 2011). Introduced plants represent approximately one third of all plant species within the metropolitan area.

The high diversity of plants in metropolitan Melbourne has been attributed to several factors. These include the high proportion of open space, the diversity of habitats present due to its location at the junction of three major geological formations and seven bioregions, the unique biodiversity of Australia, and the way in which historical planning decisions have influenced the development of the city (Ives, et al., 2013), (Victorian Environmental Assessment Council, 2011).

Within the Department of Environment, Land, Water, and Planning (DELWP) Port Phillip Region, which includes 31 metropolitan municipalites (but not Mitchell Shire Council), a total of 3,496 plant species have been recorded since 1998. Thirty-nine per cent of these species were introduced to Victoria, reflecting the significant changes that have occurred in the region since European settlement. This region also supports a high diversity of ferns and allied plants, as well as cryptogams such as mosses and liverworts, the majority of which are native to the region (Table 4).

Table 4. The number of records within the Victorian Biodiversity Atlas for plant species in the DELWP Port Phillip region recorded since 1 January 1998.

	Vascular Plants	Ferns and Allies	Liverworts	Mosses
Native	2143 (61%)	101 (92%)	96 (100%)	199 (98%)
Introduced	1353 (39%)	9 (8%)	0 (0%)	4 (2%)
Total	3496 (100%)	110 (100%)	96 (100%)	203 (100%)

2.4.4 Fauna of metropolitan Melbourne

Metropolitan Melbourne is situated at the junction of seven bioregions, and the species richness of its fauna reflects this. For example, the area features 21 of Victoria's 23 species of bats, and some of these are at home in bioregions that predominantly occur outside metropolitan Melbourne.

Within the DELWP Port Phillip Region, a total of 27 native amphibian, 45 native reptile, 43 native mammal, and 355 native bird species have been recorded since 1998 (Table 5). A total of 185 native invertebrate species have also been found, but this number is likely to significantly underestimate the actual diversity of invertebrates in the region.

Table 5. The number of Victorian Biodiversity Atlas records for animal species in the DEWLP Port Phillip region recorded since 1 January 1998.

	Amphibians	Bats	Birds	Mammals	Reptiles	Invertebrates*	Fishes
Native Species	27	21	355	43	45	185	88
Introduced Species	0	0	22	17	0	1	13
Grand Total	27	21	377	60	45	186	101

* These values are likely to be significant underestimates of the actual number of invertebrate species in the metropolitan Melbourne area.

2.4.5 Threatened species and ecological communities in metropolitan Melbourne

Australia's urban areas support over 30% of our rare and threatened plant and animal species (Ives, et al., 2016). The DELWP Port Phillip Region is home to 34 species of plants that are listed under the Federal Government's *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, and 64 species of plants that are listed under Victoria's *Flora and Fauna Guarantee (FFG) Act 1988*). Examples of listed plants include the Spiny rice-flower (*Pimelea spinescens subsp. spinescens*), the Round-leaf Pomaderris (*Pomaderris vacciniifolia*) and the Kilsyth South Spider Orchid (*Caladenia sp. aff. Venusta*); all are listed as Critically Endangered in Australia and Endangered in Victoria.

Table 6. Number of plant species listed on the federal Environmental Protection Biodiversity Conservation (EBPC) Act 1999, and the Victorian Flora and Fauna Guarantee (FFG) 1988 Act.

	Higher Plants	Ferns and Allies	Liverworts	Mosses
EPBC Act listed	34	0	0	0
FFG Act listed	64	2	1	0

Within the DELWP Port Phillip Region, 52 species of wildlife are listed under the *EPBC Act* and 95 species under the *FFG Act* (Table 7). Five animal species are listed as Critically Endangered both on the *EPBC Act* and the *FFG Act*, namely the Golden Sun Moth (*Synemon plana*), the Regent Honeyeater (*Anthochaera phrygia*), the Helmeted Honeyeater (*Lichenostomus melanops cassidix*), the Orange-bellied Parrot (*Neophema chrysogaster*) and the Plains-wanderer (*Pedionomus torquatus*).

Table 7. Number of fauna species listed on the Federal Environmental Protection Biodiversity Conservation (EBPC) Act 1999, and the Victorian Flora and Fauna Guarantee (FFG) Act 1988.

	Amphibians	Bats	Birds	Mammals	Reptiles	Invertebrates*	Fishes
EPBC listed	2	1	27	11	3	2	6
FFG listed	3	5	55	13	4	5	10

2.5 Sites of Significance

The metropolitan Melbourne area includes several Sites of Significance related to biodiversity that is listed under the *Convention on Wetlands of International Importance (the Ramsar Convention) 1971*. These include eight National Parks, Port Phillip Heads Marine National Park, Coastal Reserves in Port Phillip Bay and Western Port, and the Edithvale-Seaford Wetlands (Figure 3). These wetlands and coastal reserves are important habitat for migratory birds.

There are also over 200 bushland, grassland and other nature reserves across metropolitan Melbourne, many of which support important populations of plant and animal species (http://creativecommons.org/licenses/by/4.0/, n.d.). These range in size from small spaces of less than 0.5 hectare to large spaces, such as the proposed 15,000 hectare Western Grassland Reserve. These additional areas of native vegetation provide a network of resources and habitat for plants, birds, frogs, insects and other species, and play an important role in supporting Melbourne's biodiversity.

Attachment 1 - Living Melbourne Technical Report

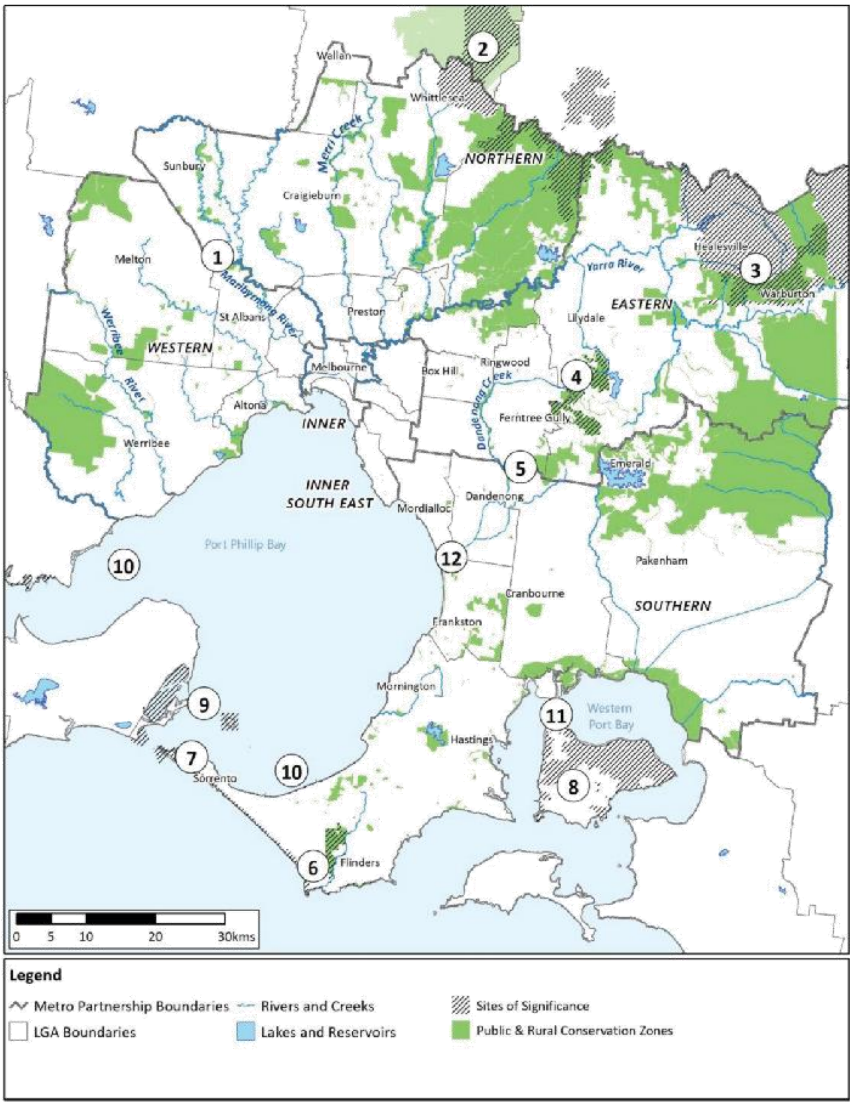


Figure 3. Map of the Living Melbourne study area showing Sites of Significance related to biodiversity. 1) Organ Pipes National Park, 2) Kinglake National Park, 3) Yarra Ranges National Park, 4) Dandenong Ranges National Park, 5) Churchill National Park, 6) Mornington Peninsula National Park, 7) Point Nepean National Park, 8) French Island National Park, 9) Port Phillip Heads Marine National Park, 10) Port Phillip Coastal Reserve, 11) Western Port Coastal Reserve, 12) Edithvale-Seaford Wetlands.

2.6 The influence of the abundance, composition and structure of the urban forest on biodiversity in Metropolitan Melbourne

Urban wildlife can be categorised according to its ability to tolerate or use novel resources found in urban areas. One widely-used categorisation has identified species as urban avoiders, urban adapters or urban exploiters (McKinney, 2008), (McKinney & Lockwood, 1999). Wildlife responds to the resources available to it, and the urban forest (broadly defined to encompass the understorey, midstorey and overstorey that grows in parks, streets and residential yards) is the primary habitat for native wildlife in many cities and towns. The ecological and behavioural traits of a species are often used to predict and describe its response to urbanisation, and many studies explore the role of urban diet, movement capabilities, reproductive output and numerous other factors as explanatory variables. Conservation actions in many regions focus on restoring indigenous or native vegetation systems and the biodiversity that they support. However, urban areas can also support novel ecosystems that have no equivalent in the natural world (Hobbs, et al., 2009), (Kowarik, 2011), and non-native species of plants and animals often play important roles in the functioning of these systems and the services they provide for people and biodiversity. Consequently, the conservation of biodiversity in urban landscapes must acknowledge the role of non-native species, particularly for the resources they provide to other species of wildlife (shelter and food), the ecosystem service they may provide for people (e.g. shading and cooling), and the connection to nature that is so important for the health and well-being of residents (Shanahan, et al., 2015).

The abundance, structure and composition of all layers of the urban forest have a significant influence on the diversity and abundance of wildlife in urban landscapes. Virtually every study ever conducted on urban wildlife – from invertebrates through to birds, mammals, frogs and reptiles – has variously identified that these three components of urban forest affect habitat suitability and play an enormous role in shaping the biodiversity in cities and towns. The remainder of this section outlines how each of these three habitat components has been shown to influence biodiversity. While treated separately here, all three are closely interrelated. Abundance may be of limited value without the right structure and composition: an extensive forest cover within a landscape has little worth for wildlife if it comprises a monoculture of an introduced tree species that provides few resources.

The extent ('abundance') of the area of urban forest is the primary measure of habitat available for wildlife species. For example, trees provide some insectivorous bats with essential roosting opportunities (hollows, peeling bark) and support insects that the bats feed on. Consequently, it is not surprising that a recent study in northern Melbourne found a statistically significant positive relationship between the percentage of tree cover and the activity of insectivorous bats (Caryl, et al., 2014). Numerous other studies in Australia have similarly found that urban tree cover is an important driver of bat diversity, especially for species which typically become less abundant as urbanisation intensifies (Luck, et al., 2013), (Threlfall, et al., 2017), (Threlfall, et al., 2011). A recent study in Melbourne concluded that at least 20% of native forest cover is required to provide positive conservation outcomes for many species of insectivorous bats (Caryl, et al., 2015). Not only is the amount of landscape-level tree cover in the surrounding area an important driver of animal biodiversity, but the size of the patch itself also matters. Numerous taxonomic groups in Melbourne respond positively to area of native vegetation, including birds (Fitzsimons, et al., 2011), (Palmer, et al., 2008) and frogs (Hamer & Parris, 2011). However, not all 'native' forest is equally suitable as habitat for native wildlife, making forest abundance alone an unreliable predictor for faunal diversity. An enlightening study of insectivorous bats in Sydney found that forest on nutrient-rich geology was a frequent predictor of bat activity, while the amount of forest on poorer soils was a less reliable predictor (Threlfall, et al., 2012).

Habitat 'structure' refers to the structural attributes or elements provided by the biotic and abiotic components of the ecosystem. Biotic components include vegetation layers (ground layer, mid-storey shrubs and overstorey or canopy) and vegetation attributes (tree hollows, peeling bark, flowers), and abiotic attributes include rocks for basking, cracks, and soil hollows for shelter. A complex urban forest that maximises the number and types of structural elements also supports the most biodiversity (Müller, et al., 2018). Large trees, with a range of hollow types and sizes, extensive flowering and peeling bark are critically important in Australian urban areas for a range of faunal groups (Le Roux, et al., 2014), (Stagoll, et al., 2012).

The 'composition' of the urban forest refers to the species richness of the vegetation. Species richness is important because native wildlife is keyed into the resources that the native vegetation provides and the time when those resources are available. Species richness of native birds in 72 different neighbourhoods across 18 regional towns in south eastern Australia was strongly positively related to the abundance of nectar-rich plants, while interestingly, the density of exotic birds was lower in the same neighbourhoods (Luck, et al., 2012). A similar result was found in Melbourne, where parks and streets that support native vegetation have a greater richness and abundance of native bird species than new streets or streets with non-native trees (White, et al., 2005). As these streetscapes became increasingly dominated by exotic trees, White et al. (2005) (White, et al., 2005) also observed a reduction in the occurrence of insectivorous and nectarivorous birds that rely on native vegetation for both shelter and food. A study of birds, bats, bugs, bees and beetles in greenspaces of south east Melbourne similarly found a reduction in species richness of many groups where the composition of the urban forest comprised a greater cover of exotic plants (Threlfall, et al., 2017).

Melbourne's fauna is dynamic, and changes in species presence and abundance are largely the result of changes to the extent, structure, and composition of habitat over time. Other factors, such as habitat loss and global climate change at landscape, national or global-scales also contribute. One species that has obviously responded to change is the grey-headed flying-fox *Pteropus poliocephalus*, which prior to the mid-1980s was only an occasional seasonal visitor to Melbourne (van der Ree, et al., 2006). In 1986, a dozen animals stayed in the Royal Botanic Gardens Melbourne over winter and established Melbourne's first permanently occupied colony of flying-foxes (van der Ree, et al., 2006). There are several likely reasons for the permanent occupation of this southern reach of the bats' range. Principal among these reasons is the improved availability of food such as nectar, pollen and fruit in the urban forest due to the increase from 13 suitable plant species prior to European settlement to more than 100 species of food-yielding trees and shrubs with the addition of urban plantings (Williams, et al., 2006). Thanks to the diversity and irrigation of the urban forest, food is now reliably available year-round. The urban heat island effect also means that Melbourne is now warmer than it used to be (Parris & Hazell, 2005) and therefore climatically more like the more northern parts of the bats' range. Meanwhile, habitat loss elsewhere within the grey-headed flying fox's range has also undoubtedly contributed to its increased use of urban landscapes nationally. Rainbow lorikeets, *Trichoglossus haematodus,* have similarly expanded their range and colonised Melbourne as a result of environmental changes (Loyn & Menkhorst, 2011).

2.7 Urban densification and vegetation loss

Global debate persists about whether future urbanisation should focus on 'land-sparing' or 'land-sharing' growth strategies to balance residential demand and conservation outcomes (Lin & Fuller, 2013). Land-sparing concentrates urban development into certain areas and sets aside other land for the conservation of biodiversity, while land-sharing spreads low-intensity development over larger areas, with people and other biodiversity sharing this space (Caryl, et al., 2015). Regardless of the style

of development adopted, it is important to note that in many cases urban growth of any type will reduce species diversity, including for faunal groups such as birds (Sushinsky, et al., 2013) and bats (Caryl, et al., 2015). However, Sushinsky et al. (2013) (Sushinsky, et al., 2013) noted that compact development slows these reductions at a city scale provided that large green spaces are left intact, and that urban sprawl and low-density development benefit non-native species. Melbourne's current strategy of in-fill development in existing suburbs, which applies a largely unplanned and ad hoc approach, will likely result in reductions in biodiversity because no dedicated areas for conservation are simultaneously being set aside. Furthermore, increased urban density not only reduces backyard size and opportunities for conservation, it also reduces the ability for people to connect with nature at home.

2.8 Biodiversity conservation and connecting with nature

A recent and rapidly accumulating body of evidence demonstrates that experiencing nature in cities is critical to the health and well-being of the community (Shanahan, et al., 2015), (Shwartz, et al., 2014). Unfortunately, one of the most effective approaches to biodiversity conservation for many species is to increase the density of development and protect and manage other areas primarily for conservation. While this approach can maintain community access to public open space (provided such open space is available), it means that backyards become smaller and limit opportunities for people to experience nature at their front door. In a context of rapid urbanisation, biodiversity conservation in towns and cities plays a significant role in minimising both the extinction of species and maintaining the human experience of native plants and wildlife. Although parks and reserves currently remain the focus for conserving urban nature, private gardens offer an extensive and undervalued resource for enhancing urban biodiversity (Mumaw & Bekessy, 2017). Gardens can be significant habitats in their own right, and can also improve connectivity by functioning as corridors or enlarging the size of other urban habitats. It is therefore imperative that gardens are not viewed at the individual scale, but instead managed collectively with other gardens and public open spaces as interconnected networks of green spaces across the urban landscape. Currently, the ideal size or configuration of these garden patches remains unknown, and quantifying the structure and functioning of all green spaces using landscape ecology theory and tools will further our understanding of residential ecosystems (Goddard, et al., In proof).

2.9 Connectivity

Connectivity, and the ability of plants and animals to move within or among patches of habitat, is critical for conservation because many individual patches are too small and widely dispersed to support viable populations (Crooks & Sanjayan, 2006). The movement of biota in their natural ranges occurs at spatial and temporal scales ranging from daily activities to annual migrations and once-in-a-lifetime dispersal events. Connectivity is equally import in urban landscapes, yet we know relatively little about. The urban forest plays a significant role in promoting movement in cities and towns by providing habitat as a 'permeable matrix' or green corridors. For many highly mobile urban adapter species such as the rainbow lorikeets and grey-headed flying-foxes mentioned earlier, the entire urban forest provides habitat they can utilise (Shukuroglou & McCarthy, 2006), (Williams, et al., 2006). For other species, such as the Sugar Glider, *Petaurus breviceps*, the bushland reserves of the urban forest provide critical habitat, while adjacent residential yards add connectivity and foraging opportunities (Caryl, et al., 2013). Yet other species rely on urban forest biodiversity corridors as the only safe movement path across the urban matrix.

2.10 Thresholds and urban conservation

The process of defining vegetation thresholds (the absolute minimum required to maintain species richness and diversity) and habitat attributes (e.g. tree cover, percentage of native versus exotic plant

species, amount of understorey, and abundance of specific habitat elements such as tree hollows) in urban landscapes, and their importance to the persistence of particular native species, is still in its infancy. Very little empirical research has been conducted in metropolitan areas to date, with Threlfall et al. (2017) (Threlfall, et al., 2017) being an exception). Numerous modelling and empirical field studies in rural and natural landscapes have consistently identified between 10% and 30% of native vegetation cover as meaningful thresholds; below these levels, significant and alarming reductions in species richness are observed (Estavillo, et al., 2013), (Radford & Bennett, 2004), (Radford, et al., 2005). However, there is still significant debate in the scientific literature on the meaning and relevance of these thresholds (Lindenmayer & Luck, 2005), with arguments focusing on:

- The extinction debt – that many living species may already be functionally extinct due to historic clearing, thus implying the threshold will be significantly higher than those reported in the literature
- Extinction as a species-specific response that varies according to each species' resilience and/or utilisation of the matrix, and thus a threshold for one species may be substantially higher or lower than for another species.
- Threshold-responses to native vegetation cover being only part of the story, as the responses of species to the threats and processes within the cleared landscape are also important
- The potential for thresholds to have perverse outcomes and represent targets to which clearing is acceptable, rather than minimum levels to be avoided.

While the debate about these points continues, general precautionary recommendations such as 'maximise' tree cover and 'reduce threats as much as possible' remain the default in the urban ecology literature. But, while intuitively helpful, what urban planners really need are clear targets to guide and inform decision-making about how much urban native vegetation must be preserved. The most relevant thresholds in the urban ecology literature are those identified by Threlfall et al. (2017), who surveyed bugs, bats, beetles and birds on 13 golf courses, 13 urban parks and in 13 residential neighbourhoods in south-east Melbourne (Threlfall, et al., 2017). The researchers observed uniformly positive effects of the 'volume of understorey vegetation' and 'percentage of native vegetation' on the richness of the five taxonomic groups, but significant variability in the occurrence of different species. For example, the site occupancy of bats, native birds, beetles and bugs was 30% to 120% higher as the understorey volume increased from 10% to 30%, and 10% to 140% higher as native vegetation cover increased from 10% to 30% (Threlfall, et al., 2017). These results suggest that thresholds *do* exist (and appear to be around 30% for understorey volume and up to 40% to 50% native vegetation cover), but with significant variability among species. Further research is needed to determine whether these thresholds are reliable and repeatable across different parts of Melbourne and across different cities, and the degree to which all species will be protected by setting thresholds to meet the needs of the most sensitive species. In the meantime, these findings support a general philosophy of 'more is better'.

2.11 General Principles for Conserving Urban Biodiversity

While a sound understanding of the ecological and biodiversity context of an area is important, it is usually only the first step in protecting and enhancing biodiversity in a region. When it comes to planning for conserving biodiversity in urban areas, Parris et al. (2018) (Parris, et al., 2018) identified seven key principles that should be addressed:

1. Protection. The protection of existing ecological assets is essential for maintaining biodiversity in urban environments (McKinney, 2002), and involves legislative and planning instruments as well

as on-ground actions to ensure that the extent and quality of the asset is maintained into the future.

2. Connectivity. Plants, animals and other organisms require opportunities to move safely through the landscape to meet their daily needs and to maintain the viability of larger metapopulations (Crooks & Sanjayan, 2006). As different organisms have different movement capabilities, connectivity must be considered at multiple spatial scales and at different height levels. For example, connectivity at the level of the tree canopy can be beneficial for canopy dwelling species but is unlikely to provide the same degree of connectivity for ground dwelling animals.
3. Construction. Urban landscapes are intensively managed by people and constantly undergo periods of construction and renewal. These activities provide opportunities to insert additional habitat into the landscape. Ensuring that habitat features maintain structural diversity across space and time, and that there is access to additional resources such as food and water, is a third essential element of supporting urban biodiversity.
4. Cycles. Maintaining natural reproduction and nutrient cycles is essential for maintaining healthy and viable populations of biodiversity.
5. Interactions. Species do not exist in isolation. Individuals interact within a species, as well as with other species, via competition for resources or beneficial interactions such as pollination or seed dispersal. These interactions can be interrupted in urban landscapes, potentially leading to overabundant populations or local extinctions. Therefore, anticipating how changes in urban landscapes are likely to transform interactions between species allows pre-emptive action to reduce any negative impacts.
6. Benevolence. Urban environments can be quite harsh – the urban heat island can increase temperatures and reduce moisture availability, artificial light at night can disrupt circadian rhythms, and anthropogenic noise generated by human activities can interfere with a species' ability to communicate. Planning, designing and building cities that reduce these impacts will increase the number of species that are able to persist into the future.
7. Novelty. Cities and towns contain an array of new forms of ecosystems that do not have a historical precedent yet offer new forms of habitat for species (Hobbs, et al., 2009), (Kowarik, 2011). Recognising the contributions of novel habitats allows for a wider range of ecological assets to be identified within our urban landscapes.

Metropolitan Melbourne supports a highly diverse and species-rich natural environment. While we have many positive measures in place to protect and enhance this biodiversity into the future, there is little time for complacency. *Living Melbourne* is a timely and invaluable opportunity to achieve outcomes for people and biodiversity:

> 'In managing urban biodiversity, we are seeking to preserve Australia's unique plants, animals and ecosystems for the multiple benefits they bring to people. The preservation element relates to a nature-focussed conservation goal, but the multiple benefits are more closely aligned with a human-centric ecosystem services outcome. While these things are related, they are not the same. If we only pay attention to one, we may produce a system where people win, or where nature wins, whereas really what we need to strive for is a win-win situation, where people and biodiversity both benefit. We need to explore what an ecologically-designed landscape might look like.' (Hahs, 2017) (Hahs, 2017)

3 Benefits of the urban forest

3.1 Introduction

This chapter discusses the ecosystem services and benefits that the urban forest brings to metropolitan Melbourne's community.

3.2 What is an ecosystem service?

Ecosystem functions are the energy and nutrient processes that take place in the animal and plant kingdoms. Examples include plant growth, decomposition of organic matter, seed dispersal, and animal reproduction. Ecosystem functions that directly increase an individual's well-being are called ecosystem services (McDonald, 2015). Ecosystem services can be defined as 'the components of nature, directly enjoyed, consumed, or used to yield human well-being.' (Boyd & Banzhaf, 2006, p. 619)

Typical urban ecosystem services provided by plants and trees include:

- maintaining or improving water quality in water catchments
- assisting the treatment of urban stormwater
- lowering water tables, which reduces the risk of salinity
- flood mitigation by slowing runoff
- reducing coastal erosion and flooding through natural coastal habitats like wetlands, shellfish reefs and mangroves
- sequestering carbon
- capturing airborne particulates, which improves air quality
- lowering air temperatures via transpiration
- reducing surface temperatures through shading
- improving urban amenity and therefore community pride of place
- proving cool green space for active and passive recreation
- supporting our mental health and feeling of well-being

Table 8 provides a short list of ecosystem services most relevant to cities. (McDonald, 2015)

Table 8 *Ecosystem service of greatest relevance to cities, classified according to the Millenium Ecosystem assessment, the category of economic good they represent, and spatial scle at which they operate*

Ecosystem service	Economic category	Spatial scale
Provisioning services		
Agriculture (crops, livestock, aquaculture, etc.)	Private good	Regional to global
Water (quantity)	Private good	100 km^2 – upstream source watershed
Cultural services		
Aesthetic benefits	Public or common good	10 km^2 – area of daily travel by urbanites
Recreation and tourism	Public or common good	10 km^2 – area of daily travel by urbanites
Physical health	Public or common good	10 km^2 – area of daily travel by urbanites
Mental health	Public or common good	10 km^2 – area of daily travel by urbanites
Spiritual value or sense of space	Public or common good	Varies – often local, but can be up to global
Biodiversity	Public or common good	Varies – global for existence value, local for direct interaction
Regulating services		
Drinking water protection (water quality)	Public good	100 km^2 – upstream source watershed
Stormwater mitigation	Public good	100 m^2 – downstream stormwater system
Mitigating flood risk	Public good	100 km^2 – downstream flood-prone areas
Coastal protection	Public good	10 km^2 – coastal zone
Air purification (particulates, ozone)	Public good	100 km^2 – regional airshed
Shade and heatwave mitigation	Public good	<100 m – varies with the solar angle

Figure 4 *Ecosystem service of greatest relevance to cities, classified according to the Millenium Ecosystem assessment, the category of economic good they represent, and spatial scle at which they operate*

3.3 Why are ecosystem services significant?

A substantial body of literature recognises the benefits of a healthy urban forest. It can provide -

- Physical health benefits by encouraging physical activity, thus lowering obesity levels and reducing the incidence of some diseases (e.g. chronic heart disease). It is also beneficial for healing and pain relief.
- Mental health and well-being by reducing stress. Stress reduction produces a range of positive outcomes, including to concentration and memory, impulse inhibition, aggression, stress relief, mood, self-esteem, childhood developmental behaviours, depression, cancer, and Attention deficit hyperactivity disorder (ADHD) behaviours in children. People prefer vegetated urban areas to non-vegetated urban landscapes, and their choices bring about the resultant health and well-being values.

- Social cohesion by providing a welcoming shared space, increasing community and neighbourhood connection, and reducing levels of fear and crime.
- Biodiversity and native species conservation through benefits for species richness, and habitat for native and threatened species.
- Ecosystem services via cooling and improved air quality. Vegetation generally, and large trees in particular, reduce urban heat both at street and neighbourhood levels. Urban vegetation, and especially trees, capture and filter air pollutants, including ground-level ozone, sulphur dioxide, nitrogen oxides and particulate matter (Kendal, et al., 2016).

Ives' research concluded that we should avoid a 'one size fits all' approach to urban forest planning (Ives, et al., 2017). His research revealed a complex picture of how different values were assigned to green spaces, but also that different value types are compatible with each other (for example, 'native plants and animals' and 'health/therapeutic' values). Ives suggested that the findings "present an opportunity for management agencies to maximise biodiversity across the whole landscape rather than focussing exclusively on formal nature protection areas, since residents value nature in all types of green spaces."

3.4 How does an urban forest mitigate heat?

3.4.1 A global view

A critical, health-related benefit associated with the urban forest is heat mitigation. Humans have adapted to living in a specific temperature range, and extreme cold or heat is problematic for human health and society. The focus of this section is on temperatures above the human comfort zone as these are the predicted result of climate change.

Average maximum summer air temperatures in cities globally vary greatly, from less than 23°C for some far northern European cities to more than 36°C (97°F) for some sub-Saharan African and Middle Eastern cities. The replacement of shade-bearing and water permeable vegetation with impermeable urban infrastructure has resulted in city environments becoming warmer than their rural surrounds, both in air and surface temperatures (Coutts, et al., 2012), (Filho, et al., 2017). Compared to the countryside, cities have extensive areas of impervious dark surfaces that can absorb, store, and slowly release substantial amounts of heat. Heat from these surfaces may take many hours to dissipate entirely. Compared with moist and shaded environments, a built-up city with one million or more people can have average air temperature increases of 1°C to 3°C during the day and up to 12°C during the night, while city surface temperatures during the day can be 10°C to 32°C higher than air temperatures (EPA, n.d.). This is known as the 'urban heat island effect' and results from:

- the generation of waste heat from concentrated anthropogenic activities (e.g. cars, heating, cooling)
- the concentration of materials that are effective insulators or absorbers of urban heat
- the geometry (compactness) and height of cities, which exacerbate heat retention, and
- increased impermeable surfaces, and the subsequent reduction in soil moisture and soil surface area for evaporative cooling

Approaches to reducing the urban heat island effect include the use of 'green' roofs, light rather than dark surfaces, and the establishment of canopy cover from urban forests. The aim is to reduce air temperatures to maintain public health and well-being.

3.4.2 Excess heat and health impacts

Exposure to high temperatures can adversely affect the health of urban residents. A set of conditions called 'heat injuries' are directly attributable to acute, short-term exposure to heat. Most commonly, acute heat exposure, combined with dehydration, can lead to heat cramps and fainting. Continued exposure can lead to heat exhaustion, which combines the above symptoms with a headache, feelings of dizziness and confusion, pale skin, and profuse sweating. Exposure to extremely high temperatures can lead to heat stroke, and untreated heat stroke can quickly cause damage to the brain, heart, kidneys, and muscles, and in some cases coma or death (Ezzati, et al., 2004).

Epidemiological studies show a significant rise in overall mortality and morbidity during periods of high temperature (McMichael, 2004). Temperatures do not have to be extreme to cause an increase in overall mortality – just above average summer temperatures are enough to have a dramatic impact. Increased mortality occurs mainly because high temperatures are risk factors for other diseases such as heart attack and stroke, particularly in elderly populations. High temperatures are considered to be the weather-related disaster that causes the most mortality globally, killing on average 12,000 people annually in 2004 (Ezzati, et al., 2004); the current global average mortality is likely to be higher. Climate change is dramatically increasing global temperatures, and eight of the ten warmest years in the last century have occurred since this 2004 study was published (NASA/GISS, 2018).

Heat-related mortality is highly episodic and concentrated during particular heat events. Table 9 lists a number of major heatwaves and their estimated health effects. One of the best-studied heatwaves occurred in Europe in 2003 and killed up to 70,000 people (Robine J., et al., 2003). In August 2003, parts of France recorded daily temperatures that were 8°C higher than usual (NASA, 2003), and subsequent analysis found that mortality rates in Paris were 142% higher than usual in that month. Microclimate – the temperature of neighbourhoods – was a strong predictor of death (Vandentorren, et al., 2004), with warmer Parisian neighbourhoods more likely to suffer fatalities.

Table 9 Selected major heatwave events and their resulting mortality impacts based on scientific literature

Location	Year	Mortality
United States (eastern)	1901	9,500 killed
United States (Midwest)	1980	1,700 killed
Greece (Athens)	1987	> 1,000 killed
United States (Chicago)	1995	739 killed
Europe	2003	70,000 killed
India (Andhra Pradesh and Telangana)	2015	> 2,200 killed

Other global studies have constructed curves that relate all-cause mortality to the excess temperature above a safe baseline, with each 1°C increase being associated with a 3.0% to 5.5% increase in all-cause mortality, and a 1.1% to 2.6% increase in cardiovascular mortality (Ezzati, et al., 2004). Another recent report by the World Health Organization (Hales, et al., 2014) used functional relationships (Honda, et al., 2014), where, for instance, a 10°C increase above baseline causes an approximate 18% increase in all-cause mortality, and a 20°C increase above baseline increases all-cause mortality by roughly 50%. While the safe baselines used in the various studies differ, during the European heatwave of 2003, some cities were approximately 15°C to 20°C above the safe baselines.

3.4.3 Vulnerability to heat in Australia

Periods of extreme heat pose a threat to the elderly, very young, and those who are chronically ill. A recent Australian study analysed the spatial relationships between vulnerable urban populations and extreme heat events (Loughnan, et al., 2013). The principal risk factors related to adverse health outcomes were found to be areas with intense urban heat islands, areas with higher proportions of older people, and areas with a high proportion of culturally and linguistically diverse communities. A close correlation was found between vulnerability and ambulance call-outs in Melbourne on hot summer days.

This was also reflected in the 2019 analysis of land surface temperatures that was undertaken in support of this strategy. Using a variety of Australian Bureau of Statistics indices such as the Socio-Economic Indexes for Areas (SEIFA index), which ranks areas in Australia according to relative socio-economic advantage and disadvantage, the analysis found a close correlation between hot spots in the landscape and vulnerable populations. It also identified that, in most cases, there is a greater number of hot spots where the percentage of residential rental properties is highest and where weekly household income was lower. Please refer to Chapter 7 for the detailed analysis.

Additionally, in 2017, Horticulture Innovation Australia completed a nation-wide report that provides data to help the horticulture industry and the 202020 Vision project, a national campaign to increase urban green space in Australia by 20% by 2020, to identify the priority areas for greening (Amati, et al., 2017). The principal objective was to consider how local government's greening efforts can most effectively protect community sectors that are particularly vulnerable to high temperatures but have little access to green areas due to socio-economic, health or age factors. The research highlights the vulnerability of different community sectors to a lack of canopy cover, heat stress, poor health, and challenging socio-economic circumstances. It includes detailed maps and graphs that can identify priority areas for green interventions across crucial local government areas.

The report illustrates the relationship between socio-economic indicators and urban vegetation. The project team developed an index that identifies which areas of socio-economic and health disadvantage coincide with a lack of green cover and a high incidence of heat events. Although limited by available data, the index reflects the relationship between urban heat islands and the percentage of tree canopy cover.

The report also noted that tree canopy has the most significant impact on reducing urban heat while shrubs have a lesser effect. It notes that unirrigated grassland increases percentage hot spots, possibly due to unirrigated pasture resulting in hot areas. However, within this context, it should be noted that shrubs and grasslands have other benefits and play an essential part in our urban biodiversity by providing habitat and refuge for birdlife and other fauna. Also, shrubs will assist pollution reduction as part of a road buffer with good structure (understorey and canopy) by reducing particulates such as PM2.5 and PM10 (see 3.5.2 below).

The report identified opportunities on land associated with industrial facilities, airports, large areas of railway land, significant highways and roofs as areas that could be greened to contribute to the urban forest.

3.4.4 Victorian case study – 2009 Heatwave

The 2009 Victorian Bushfires Royal Commission (2009 Victorian Bushfires Royal Commission, 2010) formed to investigate the Black Saturday bushfires (February 7, 2009) identified that these fires killed 173 people and injured another 414. The fires also claimed the lives of more than a million wild and

domesticated animals and damaging 450,000 hectare of land (4,500 km^2). When a heatwave struck south-eastern Australia in the weeks before February 7, it greatly exacerbated the impact of the two previous months of already hot and dry conditions. Melbourne endured three days above 43°C, and the temperature peaked on the January 30 at 45.1°C, one of the hottest days ever recorded in the city. These temperatures, combined with extremely low levels of humidity, created tinder-dry conditions in the Victorian bush. On February 6, Premier John Brumby issued a public warning that the next day was expected to be the "worst day [for fire conditions] in the history of the state" (Anon., n.d.).

Tragic as these fires were, they were not an isolated event but formed part of an emerging trend. The preceding record-breaking heatwave between January 26 and February 1 had contributed to the deaths of 374 people. As Victoria's Chief Health Officer (Victorian Government Department of Human Services Melbourne, 2009) reported three consecutive days above 43°C and maximum temperatures were up to 15°C higher than average, the state's death toll rose 62% from the same time of the previous year. Nine hundred and eighty people died during the week compared to a weekly mean of 606 deaths for the last five years. Most of those who died (248 people) were aged 75 years or older, and 46 people were aged between 65 and 74.

3.4.5 The future of urban heat

Heatwaves will continue to be a challenge for cities in the future. Globally, more than two billion additional people are expected to live in cities by 2050 (United Nations, Department of Economic and Social Affairs, Population Division, 2015), exposing many of them to the urban heat island effect. Housing new urban dwellers will require additional land development, which in turn will potentially increase the loss of forests and natural vegetation and further contribute to urban heat islands.

Climate change will make heatwaves more frequent and intense. The Nature Conservancy's global study of 245 of the world's largest cities noted that all were forecast to expect average maximum temperatures to increase between roughly 1°C to more than 4°C above current maximums (The Nature Conservancy, 2016). The World Health Organization estimated that by 2030, annual deaths due to high temperatures could rise to almost 100,000 globally (eight times more than the current figures (Hales, et al., 2014), and by 2050, annual heat-related deaths could reach almost 250,000 (Figure 4). Reducing these anticipated deaths will depend on future efforts to reduce greenhouse gas emissions to contain climate change, and on the actions taken to prepare for, and adapt to, climate change.

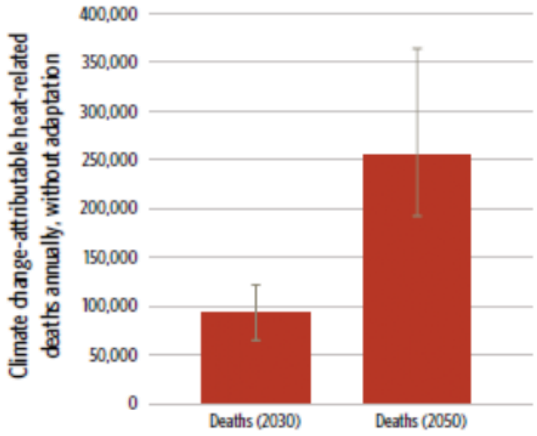


Figure 4 *Forecast of climate change's impact on deaths due to excess heat expressed as annual mortality numbers in 2030 and 2050. The WHO study looked at a range of climate scenarios, which cause a range of death (shown in error bars). Data taken from WHO (2014)*

3.4.6 Trees and temperature reduction

A tree canopy produces a cooling intensity that is defined as the degree Celsius reduction relative to the average temperature outside the patch covered by the canopy. Generally, the larger the canopy, the greater the cooling intensity. The cooler air from beneath the canopy then disperses away from the patch and slowly mixes with the adjacent hot air. The further the air moves from the canopy, the closer the temperature gets to the average temperature in the city (Figure 5).

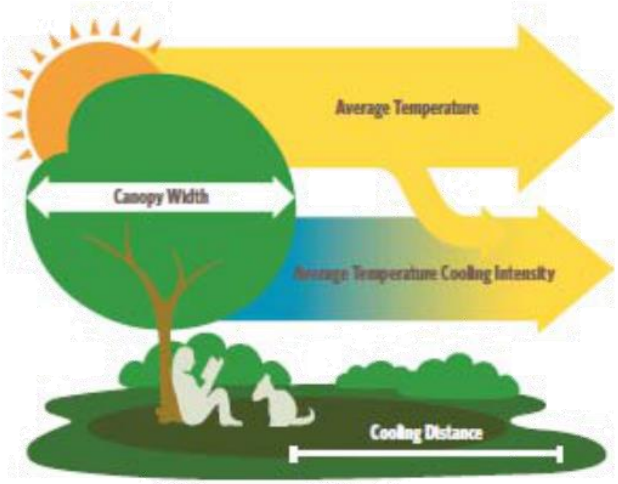


Figure. 5 Temperature mitigation by trees (Illustration: © Mackinzie Jones.)

The cover provided by trees and other vegetation can affect cooling intensity in two ways. First, vegetative cover shades impervious surfaces and prevents the sun's rays from hitting them, thus inhibiting heat storage and subsequent release, which would contribute to the urban heat island effect. Trees that are tall enough to create a large shaded area under their canopy are more useful than short vegetation. Trees also transpire water as they grow and photosynthesize. The water absorbs surrounding warmth and is converted from liquid to water vapour, storing the energy as latent rather than sensible heat. From the perspective of mitigating extreme temperatures, this latent heat storage prevents an increase in air temperature, although the loss of water from planted trees may put a strain on the trees' water supplies (Taha, et al., 1991).

In urban areas, both the transpirative cooling (Gromke, et al., 2015) and the shading effect (Andreou, 2014) of individual trees can substantially lower maximum summer daytime air temperatures at the street and pedestrian level. However, the shading of sealed surfaces under a tree canopy has a particularly critical effect on pedestrian thermal comfort because it dramatically lowers surface temperatures (Vailshery, et al., 2013), (Sanusi, et al., 2016) and the mean radiant temperature to which pedestrians are exposed (Vailshery, et al., 2013), (Sanusi, et al., 2016), (Cohen, et al., 2012), (Taleghani, et al., 2014). Mean radiant temperature is a function of the heat fluxes (short and longwave radiation) that a body receives from surrounding surfaces (Mayer, et al., 2008), and it is the key temperature component determining human thermal comfort in summer (Mayer, et al., 2008), (Ketterer & Matzarakis, 2014), (Shashua-Bar, et al., 2011).

The intensity of the cooling effect of urban trees can vary substantially between tree species (Feyisa, et al., 2014), (Ballinas & Barradas, 2016) and tree size. This is due to differences in foliage density and leaf area index, leaf thickness, orientation and light permeability, as well as photosynthetic and water use rates. A larger, denser canopy is better - cooling intensity shows a strong positive relationship with canopy area and density (Feyisa, et al., 2014), (Chang, 2014). The summer daytime cooling effect of individual trees, street trees, or larger treed areas has been quantified in experimental studies in temperate, subtropical, and tropical regions (Bowler, et al., 2010). Cooling intensity for street trees varies from 0.4°C to 3.0°C, depending on the site and the time of day. Results from studies of urban

parks reveal that cooling intensity varies from close to 0°C to 6.7°C, depending on the site, the time of day, and the distance from the park at which the measurement was taken (The Nature Conservancy, 2016).

The spatial zone – or distance – over which cooling occurs is important. The cooling effect extends into surrounding areas primarily through advection (Sugawara, et al., 2016), (Taha, et al., 1991), and its reach is a positive function of canopy area mediated by airflows and temperature gradients with the surroundings (Feyisa, et al., 2014), (Sugawara, et al., 2016). Most studies find that the maximum cooling distance of urban forest patches or partially forested parks on sunny summer days extends to approximately one park width from the park (Spronken-Smith & Oke, 1998), (Jauregui, 1991), although shorter or much longer distances are possible (Shashua-Bar, et al., 2011), (Chang, 2014). For street trees, the likely effect on temperature reduction is strongest within 30 metres of a tree.

A large amount of literature suggests trees can provide localised but meaningful reductions in temperature and should be complementary rather than a replacement to other means of reducing ambient air temperature. For example, a strategy for buildings is to plant vegetation on the roof. Plants shade the roof and prevent heat storage. Plants and soil surfaces also transpire water, increasing latent heat storage and thereby decreasing sensible heat. An attractive green roof provides many benefits beyond heat mitigation, including aesthetic beauty for the building's residents and increased property value. The main challenge is that greening vegetation is relatively expensive to install on roofs that weren't designed to support soil and plants, and the cost of retrofitting a roof can be significant.

The Low Carbon Living CRC *Guide to Urban Cooling Strategies (2017)* provides practical guidance for built environment professionals and regulatory agencies seeking to optimise development projects to moderate urban microclimates and mitigate urban heat island effects in major urban centres across a range of climates in Australia, including in Melbourne (Osmond & Sharifi, 2017). With an emphasis on the public realm, the document addresses a range of urban typologies, including the dense inner city, middle ring, and outer suburbs. Amongst cooling strategies such as permeable paving, cool roofs, built-shading and evaporative cooling, the guide addresses the use of vegetation as a cooling tool in the Australian context in some detail. It notes that "a lack of sufficient vegetation cover is a defining feature of highly developed urban areas", and "... also a major contributor to the urban heat island effect through decreased evapotranspiration in cities" (p. 19). The guide goes on to discuss the positive cooling benefits of urban vegetation, specifically:

- Street trees
- Natural turfs and grass cover
- Urban parks
- Green roofs
- Green walls

Green roofs, green walls and tree canopy are suggested as part of an 'urban cooling context-intervention matrix' with other cooling techniques for the inner city, inner suburbs and outer suburbs, and specific suburban cooling strategies are recommended for each Australian city.

Trees mitigate air temperature either by shading impervious surfaces (preventing heat storage) or by transpiring water (transferring energy to latent heat). Therefore, tree species that have a high leaf area index (defined as the ratio of leaf area to ground area under canopy) cast denser shade and are more effective at reducing temperatures. In temperate areas with hot summers but cool winters, deciduous trees may be more appropriate, as they supply shade during the hot season but allow the sun to shine

through in the colder months. Trees chosen for shade plantings should be appropriate for a city's climate zone.

Relatively few studies have looked at the temperature mitigation potential of specific species of trees. One interesting study in Addis Ababa (Feyisa, et al., 2014) looked at the temperature mitigation potential of different species, with eucalyptus *(Eucalyptus* spp.*)* cooling more than cypresses *(Cupressus* spp.*)*, Grevillea spp., or acacias *(Acacia* spp.*)*. A study in Mexico City, by comparison, found that sweet gum *(Liquidambar styraciflua L.)* was significantly more effective at temperature mitigation than eucalyptus *(Eucalyptus* spp.*)*. (Ballinas & Barradas, 2016)

3.5 How does an urban forest improve air quality?

3.5.1 Air pollution from particulate matter

Among the most pressing of global urban environmental challenges is air quality. In many cities, the most damaging air pollutant is particulate matter (PM), which is emitted from a variety of sources, especially the burning of agricultural residues, fuelwood, and fossil fuel (Anderson, et al., 2012). Fine particulate matter (less than 2.5 micrograms (µg) in diameter, also known as PM2.5) can be inhaled deep into the lungs and is estimated to cause 3.2 million deaths per year (around 4% of the global burden of disease) (Figure 6), primarily from cerebrovascular disease (e.g. stroke) and ischemic heart disease (e.g. heart attack) (Anderson, et al., 2012), (WHO, 2005). PM2.5 exposure also contributes to chronic and acute respiratory diseases, including asthma. And the problem has the potential to get worse: one study forecast that by 2050, fine particulate matter could kill 6.2 million people per year (WHO, 2005).

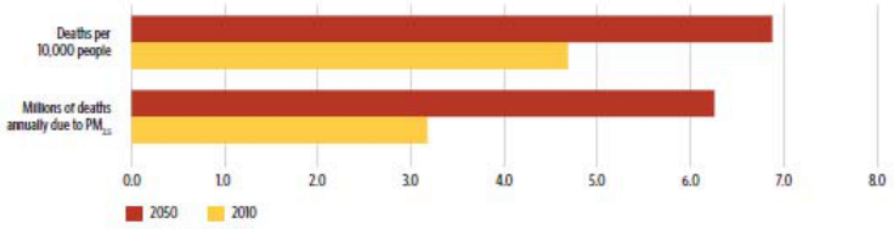


Figure 6 *Forecast global mortality from $PM_{2.5}$ in 2050 compared to 2010, expressed either as the total number of deaths, or as the number of deaths per 10,000 people. The number of people forecast to be killed will almost double (i.e. increase by 100 %). Some of that increase is due to population growth alone. The number of deaths per 10,000 people, however, is still expected to go up by roughly 50 %, primarily due to an increase in $PM_{2.5}$ concentrations in cities in the developing world. Data taken from* (The Nature Conservancy, 2016)

3.5.2 Trees and Particulate matter

Conceptually, there are three processes that relate to PM concentration and trees (Figure 7).

1. Incoming airflow carries a certain concentration of PM (µg/m³).
2. Passing of the incoming airflow through the canopy removes a fraction of the PM. Note that some fraction of the incoming airflow is deflected by the canopy, which can result in locally higher concentrations of PM upwind of a tree. Proper design and location of plantings can ensure that this local concentration does not occur in places where it might put people at risk.

3. Cleaner air exits the canopy and continues moving downwind. Over some distance, this cleaner air mixes with other air that didn't pass through the canopy (re-dilution), and the concentration of PM approaches the average concentration for the region.

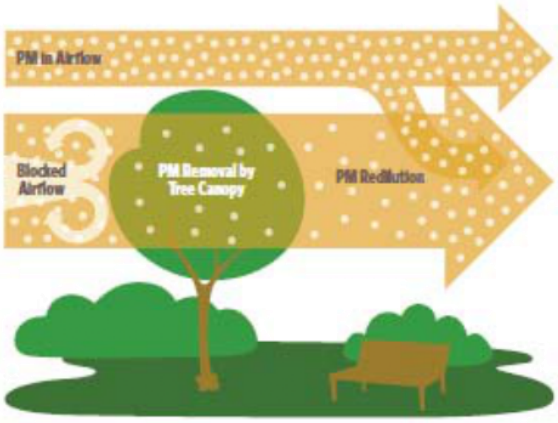


Figure 7 Diagram of particulate matter (PM) removal by trees (Illustration: © Mackinzie Jones.)

3.5.3 Particulate matter removal by tree canopy

Particulate matter is removed by plants through a process known as dry deposition. During dry deposition, particles in the atmosphere deposit themselves on a surface, decreasing the atmospheric concentration of PM (Litschke & Kuttler, 2008). Much of the fine fraction (PM2.5) becomes permanently incorporated into leaf wax or cuticle, while a portion of the coarse fraction is resuspended in the air as a function of wind speed (Nowak, et al., 2013), (Nicholson, 1988). The remainder of the coarse fraction is eventually washed off by precipitation (Matzka & Maher, 1999).

Research findings differ on how much PM tree canopies are able to remove. One key parameter is the concentration of the pollutant: At higher atmospheric concentrations of PM, the rate of dry deposition or absorption is greater. Another parameter is the leaf area: more leaf area offers more surface area on which dry deposition or absorption can take place. Finally, the amount of mixing of the atmosphere matters as well, with better mixing associated with more canopy removal of PM.

The current literature suggests that tree planting and other vegetative screens have primarily local PM benefits. Most reductions in PM concentrations occur within 30 metres of the vegetation, with very little reduction in concentration beyond 300 metres. This horizontal distance depends on wind speed (advection) and turbulent mixing (diffusion) within the urban canopy layer (approximately up to roof height), which are strongly influenced by urban surface morphology (Fisher, et al., 2006), (Carpentieri, 2013). Maximum benefit from plantings is therefore derived where trees are planted at the appropriate density and close to large numbers of people. Within this impacted zone, significant reductions in PM are possible. One study found that a row of roadside street trees lowered indoor PM10 concentrations in houses along the street by 50% (Maher, et al., 2013). Another study found that a single tree lowered PM10 concentrations behind it by 15% (Mitchell & Maher, 2009), and a third study (Bealey, et al., 2007) found that PM concentrations could be reduced by 20%.

The *Green for Good: Assessing the Health Returns of Green Investment* project assessed the impact of green infrastructure on the health of children in the City of Louisville, Kentucky, USA. A screen of mature

trees and shrubs was planted along the busy road in front of a school, and urine and blood tests were taken from the children and staff three weeks before and three weeks after the screen was installed. The results showed that, under certain conditions, the green-wall bio-filter reduced particulate pollution by 60%. Blood tests taken after the plantings showed that higher levels of circulating angiogenic cells (CACs) in both students and staff. These cells keep blood vessels healthy, and higher levels of CACs reduce the risk of heart disease. In children, the levels of immune cells were lower after planting, suggesting that children may be more sensitive to changes in their environment than adults (Louisville Metro Government, 2017). A large body of literature suggests that trees can provide localised but meaningful reductions in PM but should complement rather than a replace other particulate reducing strategies.

3.5.4 Characteristics of tree species

Tree plantings often need to address multiple objectives, including improving biodiversity, adding aesthetic beauty, and being easy to maintain, disease resistant, and hardy in the local climate. Places in which to plant urban trees vary from crowded urban streets to more natural habitat and open space. In addition to the multitude of goals and potential places for trees, species selection or planting strategies must also be tuned to the needs of the local community. However, tree plantings should also incorporate some principles for PM removal and temperature mitigation. Tree leaves remove PM through dry deposition, and tree species that have a larger leaf surface area will generally remove more PM. A large total leaf surface area can be achieved with species that have a dense canopy, or because the leaf surface is 'rough' (with lots of ridges or hair), which increases the surface area for interception (Yang, et al., 2015). An analysis of multiple tree species also that those found those with waxier surfaces generally remove more PM (Sæbø, et al., 2012).

Another consideration in choosing trees is whether a tree is deciduous or evergreen. For the purposes of PM removal, being evergreen is a plus for year-round PM removal as deciduous trees would be less effective in the winter months. A useful study lists the PM removal efficiency of the 100 most commonly planted urban trees globally (Yang, et al., 2015). Species that score high on PM removal efficiency include such common temperate species as eastern red cedar *(Juniperus virginiana L.)*, red maple *(Acer rubrum L.)*, American elm *(Ulmus americana L.)*, and white poplar *(Populus alba L.)*. Some common species that score poorly for PM removal include chokecherry *(Prunus virginiana L.)*, flowering dogwood *(Cornus florida L.)*, and white ash *(Fraxinus americana L.)*. To date, few data are available for Australian urban trees.

Research for *Living Melbourne* found that there is a limited understanding of the relative ability of Australian tree species to capture airborne particulates, in particular PM2.5 particulates. Further research could compare the relative merits of Australian species with northern hemisphere species. Literature identified to date incudes:

- Yang et al. (2015): this provides a ranked list of the 100 most common street trees planted world-wide and their suitability to reduce PM2.5 particulates. No Australian species were listed. It noted that evergreens captured more particulates per annum and that conifers were very efficient.
- Freer Smith et al. (2003) compared particulate pollution (PM10) capture by semi-arid species including *Eucalyptus globulus* (Tasmanian Blue Gum) against five species used widely in woodland of urban and peri-urban areas of Europe. Results indicated that blue gum has low relative deposition velocity and capture efficiency for its leaves but relatively high for its stems.

- Brack (2002) placed an estimated value of airborne particulate pollution mitigation of US$1,050,000 per year on Canberra's 400,000 public trees.

3.5.5 Types of plantings

Major roads can be a significant source of air and PM pollution from vehicles. Tree planting along such roads must be done with some care. Trees reduce PM loading through dry deposition, but they can also inhibit air circulation, trapping pollution in and under the canopy. In some cases, this can be an advantage. For instance, a dense line of trees or shrubs can trap dirty air over a highway, preventing it from moving laterally into other parts of the city. However, if trees are trapping dirty air on major residential roads, it can inadvertently increase people's exposure to particulate matter. Care should be taken when planting trees near major emission sources, and consideration given to the tree species to be planted, their eventual canopy volume, the geometry of nearby buildings and other features that block wind flow, and wind speed and direction (Pugh, et al., 2012). One study suggested that along major roads, single roadside tree lines should be planted of a species with high PM removal capacity, with enough spacing between tree canopies to allow wind flow between trees (Maher, et al., 2013).

Many roads, however, are not major sources of air pollution since they have relatively little traffic (e.g. residential streets with urban residents). Due to the lower traffic levels on these streets, there is less risk of trapping dirty air by blocking wind circulation and greater interest in maximising tree cover for shade. Greater leaf area will help with shade and also allow more PM removal through dry deposition. Since these street trees will be right next to homes and businesses, they should be aesthetically pleasing, hardy enough to withstand an urban environment, and meet the other needs of the local community.

As the ability of trees to reduce PM and temperature is relatively localised, trees that are planted in the middle of urban green parks or other open space have relatively less importance for making air healthier, simply because few people live or work within a few hundred meters of these trees. Thus, while the ability of particular tree species to reduce temperature or PM should be considered when selecting the list of species to plant, it is likely these characteristics will be selected from a set of factors that are important in a park setting (e.g. aesthetic beauty, wildlife value). In these settings, the value of parks and open space for recreation and socialisation is likely one of the most important ecosystem services, and the ability of trees to reduce PM and temperature may be of secondary importance.

3.5.6 Return on investment for particulate matter and heat reduction

Return on Investment of tree planting for air temperature mitigation varies significantly among neighbourhoods. The ideal high Return-on-Investment neighbourhood has a high population density (or a concentration of sensitive populations), leading to larger number of people benefiting from heat reduction by trees. Higher-population density neighbourhoods generally score higher, simply because any reduction in ambient air temperature benefits a larger group of residents.

Sensitive sites, such as schools, hospitals, retirement villages, kindergatens and aged-care facilities should also be a focus. Because populations (young children or the elderly) that use these sites are most likely to suffer negative health effects from air pollution or high temperature, it makes sense to concentrate tree planting around these facilities. Young children, for instance, are especially sensitive to asthma, while the elderly are at increased risk of negative health impacts from exposure to extreme heat (The Nature Conservancy, 2016).

3.6 Physical, mental, social and spiritual health and wellbeing

3.6.1 Intrinsic health benefits of the urban forest

This section has drawn significantly from Park Victoria's Healthy Parks, Healthy People study (Townsend, et al., 2015). Parks Victoria identifies four major categories of human health:

- Physical
- Mental
- Social
- Spiritual

The World Health Organization's definition of health is "a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity." It therefore includes the concept of 'wellbeing', which is defined by the US Centre for Disease Control and Prevention as "a valid population outcome measure beyond morbidity, mortality, and economic status that tells us how people perceive their life is going from their own perspective."

1.6.1 Physical health benefits

Research evidence indicates clear links between the proximity of parks and the physical health of adult populations. For example, men living in areas with greater green spaces have lower risks of mortality from cardiovascular and respiratory diseases, while adults in urban environments who live closer to parks are likely to have a lower Body Mass Index (BMI) than those who live further away. An Australian study found that residents in neighbourhoods containing more than 20% of green space were significantly more likely both to walk and to participate in moderate to vigorous physical activities (MVPAs) on at least a weekly basis.

Promotion of active lifestyle & behaviour change

Access to natural green space not only increases levels of physical activity (thus reducing the risk of stress factors, including non-communicable diseases) and improves immune function, but also has the potential to address other stresses by providing mental health benefits and facilitating social connectedness and independence.

Research has shown that local accessible parks and outdoor spaces can facilitate active lifestyle behaviours that are modelled to children and other family members. These include choosing active transport, pet ownership, promoting pro-environmental behaviour within the family, and increasing direct participation in one's own community.

Given the importance of physical mobility in maintaining the autonomy of older adults, the value of well-maintained, safe, accessible park facilities cannot be overestimated.

Rehabilitation and recovery

In addition to the health benefits of green spaces for the general adult population, research has shown specific benefits for those undergoing rehabilitation or clinical treatment. Literature examining environments that promote physical rehabilitation in clinical populations recognises that exposure to natural green spaces supports a greater sense of wellness. Adults undergoing cancer treatment who were able to undertake rehabilitation in outdoor spaces showed significant positive physiological changes, particularly related to functional wellbeing. Other research has shown that individuals with access to green natural spaces during recovery from cardiac surgery experienced a range of benefits,

including improved physical health and elevated feelings of wellness. They were also more likely to choose regular exercise once rehabilitation was completed.

Children's and young people's health

Children with access to natural green spaces receive greater physiological benefits than those that play indoors. Children with access to parks are less likely to be overweight or obese, and other reported benefits include better eyesight.

Health promotion advocates who investigate the time children spend in public green spaces are particularly interested in variables such as:

- being able to walk to parks
- the relationship to levels of neighbourhood
- perceptions of safety in a park
- cultural norms, and
- attitudes towards outdoor physical activity and park use.

Implicit in the notion of accessibility 'on foot' is the understanding that children who live closer to parks are likely to access them more frequently than children that live further away. In addition to the obvious potential for accessible parks to foster outdoor play, access to safe public parks that results in frequent use is also likely to result in less stress for children in culturally and linguistically diverse (CALD)/low socioeconomic areas, and to increase the likelihood of selecting active transport (walking and cycling) as a method of accessing local green spaces.

In a study by Cheng and Monroe (Cheng. JC-H, 2012), children's connection to nature, their previous experience in nature, their family's perceived value of nature, and their perceived sense of control of nature was found to positively influence their interest in performing environmentally friendly behaviours.

Access to safe and appealing parks, particularly with facilities seen by adolescents as desirable (e.g. basketball courts, skate ramps), has provided a physical outlet for young adults from CALD communities. Park use by CALD communities can reverse perceptions of vulnerability and social exclusion.

Stress relief

The quality, quantity, and accessibility of green spaces has been shown to have a significant inverse relationship to stress among populations, especially in urban areas. Accordingly, there is increasing interest in the stress reduction potential of nature exposure in various forms, especially for individuals requiring physical recovery (hospital/rehabilitation), those in high-risk categories for compromised health, and for disadvantaged communities. Given the considerable contribution of prolonged feelings of stress to the onset of chronic disease (particularly stresses associated with urbanisation), the stress reduction capacity of accessible green spaces should not be underestimated.

1.6.2 Mental/cognitive health benefits

Natural outdoor spaces are a valued, multidimensional resource for promoting positive mental health and associated wellbeing. Aside from psychological wellbeing, the effects of nature on cognitive function in adults are among the most researched psychological outcomes related to passive or active recreation outdoors. Although the psychological effects of exercise in green spaces are less clearly understood than the physical benefits, evidence is accumulating progressively, and numerous synergies exist between the

two areas. Louv (Louv, (2008)) recognises that the negative consequences of nature deficit exist for children and adults alike.

Mental health rehabilitation

Urban living has been identified as a key factor that contributes to stress and mental ill health. The impact of chronic stress associated with urban living is well recognised – chronic stress leads to a number of conditions associated with poor mental and physical health and contributes to a reduced quality of life. In this context, the contribution that being in nature makes to promoting healing and restoration is well documented. The restorative effects of exposure to parks and green open spaces give rise to countless personal benefits, such as recovery among individuals experiencing clinical conditions associated with anxiety and depression, chronic stress such as post traumatic stress disorder (PTSD), reduced attentional fatigue in employees, and attenuation of hyperactivity in younger populations. Additional benefits include the evocation of positive emotions, reduction of sub-clinical depressive/anxious states, and an increased feeling of individual resilience. In recent years, there has also been a growing awareness that people with dementia should have the necessary environmental support and freedom to access the outdoors (Cook, 2015).

Alterations to mood

Connection to nature is vital not only to disease prevention, but also for positive psychological states. Stress attenuation via feelings of connection to nature is closely linked with favourable mental and emotional health outcomes. This is particularly true for populations with sub-clinical depression, who report increased recovery after time spent outdoors.

Research investigating the connection between mental health and green spaces recognises that living in close proximity to useable parks and green spaces significantly mediates individual resilience and life coping skills. Stigsdotter and colleagues (Stigsdotter, (2011)) reported that *"respondents living more than 1 kilometer away from a green space have 1.42 times higher odds of experiencing stress than do respondents living less than 300 metres from a green space."* Additionally, Stigsdotter et al. note that people may visit parks for different reasons. For instance, participants who were stressed were more likely to visit local parks with the aim of restoring their mental state.

Exposure to the natural sounds experienced in parks also enhances mood recovery. Although some measurement limitations are acknowledged within the empirical literature, decision-makers should not ignore the importance of these restorative factors.

In urban environments, access to parks or green spaces has the potential to promote wellbeing through attention restoration and stress reduction. Astell-Burt (Astell Burt, et al., 2013) report that undertaking passive activities in parks can reduce psychological arousal by reducing blood pressure. Attention restoration increases achieved after sitting in a park for 15 minutes may contribute to the prevention of stress-related disease. Adults who exercise in local parks often report mental health benefits such as improved relaxation and stress management, which improve their capacity to disconnect from work/family/daily life.

Cognitive development in children

Blanchet-Cohen and Elliot (Blanchet-Cohen & Elliot, 2011) identified that affording children opportunities to visit parks provides engagement, fun, and education. The authors also noted that children can also 'discover nature' in the form of trees, plants, animals, insects and terrain. Additionally, it is well established that opportunities to play in parks allow children to explore the diversity of protective factors offered by experiencing nature, capitalising on the chance to practise reasoning,

reaction, observation, logic, attentiveness, responding to the environment and people, way-finding, spacio-temporal relation, and task accomplishment.

Children with behavioural or learning disabilities report being able to focus better after spending time in natural outdoor settings. Parks and local green spaces are therefore considered to be valuable resources for primary education. As Olsen (Olsen, 2013) states: "*Outdoor settings, not limited to school grounds or gardens, should be considered as an extension of the classroom in terms of enriched learning and development opportunities.*"

1.6.3 Social and spiritual health benefits

Some authors have suggested that "social health in city neighbourhoods may be deteriorating because modern urban planning and design has in many cases failed to adequately provide for attractive public spaces for residents to gather, interact, and develop relationships" (Baur, et al., 2013). Therefore, parks and other green spaces are vital for promoting social cohesion and social capital in urban communities.

Social cohesion

Interpersonal trust, social cohesion and reciprocity are key features of social capital that are facilitated by the availability of parks and quality open spaces. Park specific social interactions (i.e. informal communication with others) are recognised not only as key mediators of social health perceptions among urban residents, but also moderate stress by fostering social support.

Other forms of natural environments have also been found to foster social health. Community gardening, for instance, is considered a trending topic within the nature and human health domain. Particularly within Australia, this topic has received in-depth examination, and as such community gardens are now recognised as "pillars of social justice and environmental equity; they are places where people can literally seek community." (Porter & McIlvaine-Newsad, 2013)

In the USA, Baur, Gomez and Tynon (Baur, et al., 2013) conducted a study of 1,000 adults from the Portland metropolitan are to test whether urban nature parks, within walking and within driving distance of peoples' homes, had a positive relationship to these adults perceptions of the self-reported social health of their neighbourhood. The findings were that there was a significant and positive relationship, for both walkng and driving distances, to neighbourhood social health. These findings were not influenced by socio-demographic variables and were regardless of whether participants were park users or not.

Sense of place

'Sense of place' is another relevant, place-based theory that recognises the spiritual connection that indigenous (and non-indigenous) people have with their country or 'place'. It is defined as a long-lasting emotional attachment or positive connection between a person and a location. Spirituality could be an important aspect of people's sense of place with nature and may have flow-on benefits for their spiritual health and wellbeing. (Kamitsis, 2013)

The notion of place connection is particularly important to those who are vulnerable to social exclusion or marginalisation. The literature places particular attention on the potential for place attachment to accessible green spaces (e.g. gardens) among people experiencing physical displacement, such as refugees or those undergoing in-patient treatment.

In older adults, proximity to natural outdoor spaces is correlated with greater life satisfaction. Despite the frequent reporting of spirituality within the context of the human health/nature connection, empirical exploration of the spiritual dimension is generally absent or vague. (de Witt, 2013) Existing

gaps in the empirical literature may be attributed to difficulty in measurement, or to cross-over with other psychological/emotional concepts, such as the wellbeing, restorative and therapeutic benefits derived from nature.

3.7 Are there other benefits of an urban forest?

3.7.1 Property values

Street trees and open space have been shown to affect property prices both in Australia and overseas. A literature review by the Victoria Institute of Strategic Studies (Symons, et al., 2015) noted that the presence of trees increased the selling price of residential units between 1.9% and 9%. The review noted that the proximity of open green space also correlated with an increase in property sales prices. The size of the increase was dependent on several factors, such as the area of open space, its proximity to housing, the type of open space, and the method of analysis. Large natural forest areas have a greater effect on nearby property values than smaller urban parks, playgrounds, and golf courses.

Research into property values dates back to the 1850s, when landscape architect Frederick Law Olmsted conducted a study of how parks influence property values. From 1856 to 1873, Olmsted documented the value of property immediately adjacent to New York's Central Park in order to justify the $13 million spent on its creation. He found that, over the 17-year period, there had been a $209 million increase in the value of the property covered by the park. Another component of Olmstead's study was increased tax revenue as a result of the park. The annual excess of tax increase from the property value was $4 million more than the increase in annual debt payments for the land and its improvement. It was concluded that New York City actually made a profit from building Central Park (Symons, et al., 2015).

Engineering firm AECOM's Brilliant Cities Report (AECOM, 2017) on green infrastructure estimated that an increase of 10% in the leaf canopy of street trees alone could increase the value of Sydney properties by an average of $50,000 per unit (based on three suburbs).

3.8 What other factors influence urban forest design?

Many different parameters play into the final form and extent of an urban forest, and they include:

- Ecosystem Disservices (Escobedo, et al., 2011) – urban vegetation can have negative impacts, such as the cost of maintenance, social nuisances such as allergens, and environmental impacts such as the displacement of native species. Disservices can be attributed to green spaces or specific plants. Care needs to be taken that the negative consequences do not outweigh the benefits.
- Thresholds and correlations of the benefits from green space – the size of parks, the distance to parks, and green streetscapes correlate to human health and wellbeing. There are relationships between tree canopy cover and the removal of particulate matter, shade and tree canopy cover, and carbon sequestration and tree biomass. In addition, a variety of green spaces and green space characteristics have been identified as supporting biodiversity.
- Green space targets – these are typically related to the goals of a greening program such as human health (increasing physical activity) or ecosystem services (e.g. cooling). The amount of park space or canopy cover is a common target, and taxonomic diversity also widely used.
- The physical environment shaping the benefits provided by the urban forest – climate is a significant driver for the distribution of plants and a predictor of tree species and diversity. Highly urban areas tend to be warmer, the soils drier, and there are variable pollution and

nutrients inputs. These factors affect the species configureuration and structure of green spaces.

- The social context shaping the benefits provided by the urban forest – social factors that influence the way people think about and use the urban forest include population density, socioeconomic inequality, gender, social values, culture and age.
- Governance and policy shaping the urban forest - a range of policy mechanisms, including information and engagement, incentives and encouragement, government provision, and regulation and legislation are required to support the inclusion, retention and maximisation of green space in cities, as well as addressing both public and private land tenure (Kendal, et al., 2016).

4 Key influences of metropolitan Melbourne's urban forest

This chapter discusses some of the risks to Melbourne's urban forest. It also considers the importance of Water Sensitive Urban Design and how urban development has shaped our urban forest. Further, it discusses what ongoing effect urban development is having on the urban forest. Additionally, it summarises some of the current actions that local government and others are taking to manage our urban forest, including international examples.

4.1 What are the risks to Australia's urban forest from climate change and urban heat?

In 2016, research undertaken for the City of Melbourne and published by the Clean Air and Urban Landscapes Hub identified tree species' vulnerability to future temperatures. It found that, out of the approximately 375 species and 63,000 trees currently planted in the City of Melbourne, up to 55% of trees were vulnerable to climate change in an extreme furture climate scenario (Kendal & Baumann, 2016).

The research identified that two groups of species were particularly vulnerable: those from colder climates (e.g. Europe and North America), and species with narrow climate envelopes, which include many locally indigenous and other native trees such as *Eucalyptus* spp. and *Acacia* spp.

Following this study, in November 2017 the Clean Air and Urban Landscapes Hub released a national analysis of the 'Risks to Australia's urban forest from climate change and urban heat' (Kendal, et al., 2017). The study analysed the risk of temperature increases to 1.9 million trees in 29 LGAs across Australia, including 10 from metropolitan Melbourne (over 817,000 trees assessed). Every tree was analysed to see how close its known temperature tolerance limits were in: (a) current climates, (b) to an emissions-limited climate change scenario by 2040 assuming emissions stabilisation, and (c) a business as usual emissions scenario by 2070. Whilst noting that there was a high level of variation in the risk both from city to city and across areas within each city, it found that by 2070:

- 15% of all public trees (23% of species) in Australia's cities are at high risk (red flagged) from increased temperatures in the emissions-limited climate change scenario (Figure 8)
- 25 of all public trees (37 % of species) are at risk in the business-as-usual emissions scenario by 2070, and
- a further 34 % of trees are at some risk (yellow or orange flagged) in the emissions limited scenario and 29 % in the business as usual scenario.

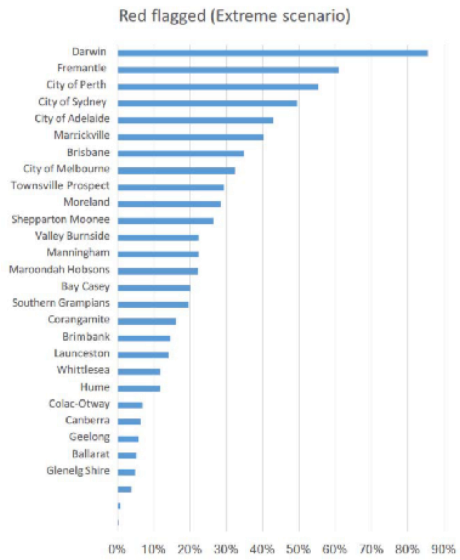


Figure 8 *The proportion of trees red flagged in each LGA under the business-as-usual climate change scenario* (Kendal, et al., 2017)

4.2 What is the role of water sensitive urban design in Melbourne?

Water Sensitive Urban Design is an aspect of Integrated Water Management (Furlong, et al., 2015), (Kuller, et al., 2017) and the outcome of combining historically separate objectives: flood protection, waterway health, urban liveability and climate change adaptation (Kuller, et al., 2017). Water Sensitive Urban Design aims to keep water that was traditionally disposed of via the stormwater system to surrounding waterways and bays within the urban landscape. It is implemented through a combination of policy (e.g. stormwater quality and reuse targets) and green infrastructure developments to help achieve policy targets. Water Sensitive Urban Design is focussed on "incorporating sustainable urban drainage systems, also known as green infrastructure, and reuse schemes into urban planning. This is done to improve liveability outcomes, through providing plants and trees in streetscapes, and environmental outcomes through protecting waterways from the damaging effects of urban stormwater runoff" (Furlong, et al., 2016). Examples of Water Sensitive Urban Design include rain gardens, man-made wetlands, grassed or landscaped swales, porous pavements, street tree pits, and open space irrigation using treated stormwater.

The benefits of stormwater retention within the urban environment include:

- Protection of creeks, rivers, wetlands and harbours from polluted stormwater runoff
- Reduced flooding
- Reduced use of potable water for non-potable needs (e.g. irrigation)
- Improved soil moisture and health
- Decreased urban heat island effects and
- Increased healthy green infrastructure with associated amenity value

Water Sensitive Urban Design can mitigate the urban heat island effect (Coutts, et al., 2012). It can ensure that green plant infrastructure is well irrigated (through redirected stormwater), and that new plantings can be established and maintained. Green infrastructure (trees, wetlands, water infiltration systems, stormwater harvesting and reuse schemes etc.) established to manage stormwater flows can support large trees and increase available shade, while the general greenery and open water components impact the evapotranspiration cycle (the movement of water from the land and vegetation into the atmosphere). Water evaporates from wet/moist surfaces such as lakes, wetlands, and soil, and plants transpire as part of the photosynthesis and plant temperature control processes. The evapotranspiration process extracts heat from the atmosphere (via latent heat of water vaporisation) and leads to cooling. A literature review by Qui (2013) noted that "vegetation in urban areas can reduce the surrounding temperature by 0.5°C to 4°C" (p. 1309), while "the presence of water bodies can reduce the air temperature by several degrees, depending on the size of the water body and distance from the water's edge" (Qui, et al., 2013).

4.3 What is the status of Melbourne's metropolitan councils' urban forest initiatives?

A review of the plans and strategies of all 32 Melbourne metropolitan councils (also termed local government areas) found that the urban forest is acknowledged as a valuable and vital asset and that it makes a significant contribution to the liveability of the city. Some councils use the i-Tree Eco (iTree, n.d.) software to assess the forest benefits and determine an associated dollar value. Across the plans, the threats identified are similar. The main threats facing the urban forests included climate change and associated temperature and rain variability, urban heat island effect and heat retention, infrastructure infringement, urban densification and associated habitat loss. Solutions to these and other challenges included increasing tree diversity to accommodate greater climatic variability and resistance to potential pests, increasing the canopy cover to manage the urban heat island effect, using green space to better manage stormwater, and creating corridors to reduce forest fragmentation.

Many local government authorities address these threats with a range of discrete medium-term (5-10 years) strategies that address a specific issue (e.g. climate change) or a specific component of the urban forest (e.g. open spaces, street trees, parks), and the various councils are at slightly different stages regarding the evolution of their urban forest-related plans. Some councils are focussed primarily on the public domain of street trees and open spaces; others have expanded their focus to include biodiversity and connectivity, and yet others include green infrastructure, water management, and the private realm. There is generally a strong focus on street tree planting and management, and most strategies or plans focuss on public vegetation. Councils acknowledged that private trees and greenery had an equally important role as public vegetation, but access to and control of this sector were challenging.

Thirteen councils have some form of urban forest strategy and the primary focus is on trees and canopy cover. The existing strategies tend to be long-term (>10 years), use a broad definition of an urban forest, have performance measures (typically canopy cover, tree diversity), and address to some degree vegetation on private land (primarily via community engagement programs or a significant tree register). For many, though, there is still a heavy focus on street trees and the public realm. For some councils, the urban forest strategies are structured so that it is possible to see how the goals and targets feed into the greater network of strategies i.e the overall council strategy, urban design, water management and climate change.

A key measure of an urban forest is canopy cover, which is an indication of its current state and a useful measure of progress. All thirteen councils have established an urban forest canopy cover target. For example, the City of Melbourne aims to increase the public realm canopy cover from its current 22% to

40% by 2040. Port Phillip identified streets with low canopy cover (0 to 10%) and will prioritise these neighbourhoods for further tree plantings. It also has set a target percentage increase in canopy cover for each neighbourhood. The Yarra intends to increase its total canopy cover from 17% (2014) to 21.25% by 2040 – an increase of 25% – while the Moreland intends to double its total canopy cover (from 14% to 29%) by 2050. Whittlesea and Knox specifically state their goal increases in terms of streetscape canopy cover, while Brimbank and Wyndham have total canopy cover targets, and separate, open space and private canopy targets. Setting goals for private canopy cover are particularly challenging, as these directly impacts land development. However, several councils have done so. For example, Banyule's goal is to increase canopy cover on non-council managed land by 20% within 15 years, while Moreland's goal plans to ensure that its current private realm canopy remains at 9%. Wyndham acknowledges the differences between established private realm and new developments and has set two targets: a 15% canopy cover for established areas, and 10% canopy cover for new areas by 2040.

While increasing natural infrastructure is one avenue for expanding the urban forest, protecting the existing natural infrastructure is another. There are several ways to achieve this, and a key building block is establishing a detailed and current database. Knowing the composition and state of the urban forest provides the foundation for planning and moving forward. At least 25 councils have a comprehensive street tree and/or park database, although formats and depth of data vary. For the private realm, detailed databases do not exist. At least nine councils have a significant, exceptional, or heritage tree register, and another six are in the process of developing one. These registers primarily capture private trees but may included notable public trees. Trees are typically nominated by the community for their local significance. The registers, however, contain only a handful of all private trees (e.g. the City of Melbourne's Significant Tree register lists about 200 trees, Casey's approximately 1000, and Moonee Valley's approximately 100 trees). Banyule also includes significant areas of vegetation in its register.

Tree protection includes protecting trees and vegetation in construction zones, establishing clear guidelines for removal, ensuring removal is a last resort, and establishing a penalty system that will deter damage and unpermitted removal. The City of Melbourne has established a compensatory valuation equation for its street and park trees that incorporates an amenity, basic, and species value along with a removal cost. For large trees, the total value could easily reach six figures, which may encourage developers to consider alternative solutions to removal. The valuation also provides a foundation for determining penalty costs for damage or unpermitted removal. Examples of other councils that have established public tree valuation methods include Wyndham (which had established a method based on the cost of removal and replacement along with an economic benefit factor incorporating the tree height), Brimbank (which used the Modified Burnley valuation method) (Moor, 1991), and Knox (which used the City of Melbourne's method) (Melbourne, n.d.).

Deterring tree removal in the private sector is currently managed by either defining a significant tree and or maintaining a significant tree register. Brimbank's Urban Forest Strategy action list includes investigating options to record all trees on private land, while Wyndham's City Forest and Habitat Strategy aims to ensure all significant trees on private land are nominated and protected by 2040. Under council law, a significant tree is usually defined by its size and its circumference at a certain height above the ground. Pruning or removal of such trees requires a permit. However, as there is no comprehensive database of private trees, pruning and removal can occur without council's knowledge. There are penalties for non-permitted activities, such as for Port Phillip, where the penalty is twenty penalty point (currently equivalent to $2,000). If a council maintains a 'significant', 'exceptional' or 'heritage' tree register there is less chance that a non-permitted activity will occur. The penalty for such a planning infringement can be several penalty points (e.g. for Banyule and Moonee Valley it is five penalty points for an individual), and in some situations, tree reinstatement or remediation may also be required.

Urban forests face a variety of threats, and providing for a diversity of plant species, genera and families is one means of improving their resilience. The greater the diversity, the lower the risk of a single event – such as a pest or extreme heat event – destroying large sways of vegetation. Diversity includes different tree ages, species, growth rates, and degrees of health. At least five of the Melbourne metropolitan councils have included diversity targets for the street and park trees in their urban forest strategy, and several others have indicated that the diversity needs to improve. As little is known about private trees, diversity targets for this sector have not been set.

The primary focus of the diversity targets are species. At the time of this review, the City of Melbourne had set a goal of no more than 5% of any one species, 10% of anyone genus, and 20% of any one family. The council also set as a target that no more than 10% of the tree population will be in poor health by 2040. In contrast, Wyndham had set a target of no more than 10% of a species, 20% of a genus, and 30% of a family by 2040, while Brimbank had set a limit of a maximum of 50% of one family and intended to introduce additional families.

A healthy urban forest requires water, particularly during the plant establishment phase. Increased variability and unpredictability in weather patterns due to climate change is likely to make consistent and economical irrigation difficult. Banyule and Brimbank highlight the need to further embed Water Sensitive Urban Design in all of their development for the benefit of the total urban forest.

The councils recognised that, to achieve a healthy, connected fabric of urban forests, a collective effort was needed. Port Phillip, in its latest long-term strategy (2017–2027) (City of Port Phillip, 2017), identified the need to work with inner-city councils on an urban forest and biodiversity strategy. Four Local Government Authorities with urban forest strategies were members of Greening the West, and six were members of the National Urban Forest Alliance. Greening the West program was developed through a collaboration of nine western Melbourne metropolitan councils whose goal was to maximise urban greening by doubling the canopy cover and increasing green space. The National Urban Forest Alliance aims to promote and grow healthy, resilient urban forests across the nation through partnerships, research, information sharing, and guidelines. All ten councils, along with several other bodies and community groups, are working together to link up green spaces across their councils to protect natural areas and create a world-class urban ecosystem.

4.4 What have been the impacts of urban growth and densification on the urban forest?

The history of Melbourne's development and growth has had an important effect on the shape and form of the urban forest. This section briefly describes what this effect has been in relation to residential urban form.

4.4.1 Early development patterns

Preferences for elevation, views, water, and mature trees meant that Melbourne's early development was outwards, from the original settlement on the banks of the Yarra to the north-east, east, and south-east, and tended to be on the hillier treed terrain (Presland, 2008). The flatter northern and western (largely grassland) plains were considered less hospitable and desirable. This pattern of development along ridgelines is still revealed to some extent in the current location of open space along waterway corridors and of green wedges that separate development areas (Bush, 2017).

4.4.2 Residential subdivision

Much of Melbourne's residential development up until about 1990 consisted of detached houses that took up about a third of the lot, and a large backyard (Hall, 2010). This facilitated a backyard of 150 to

400 square metres. The common, back-to-back backyard pattern (Figure 9) created large, contiguous areas of private open space that had ecological, cooling, aesthetic, stormwater runoff, family security and recreational benefits.

Figure 9 Contiguous back-to-back backyard vegetation, Eastern metropolitan region, Victoria 2010.

However, since then, the trend has been towards larger houses on smaller greenfield plots and urban infill in established urban areas, which includes medium to high density development of townhouses and apartments. This has reduced lawn and garden sizes and increased impervious surfaces (Figure 10). At the same time, the plot coverage of dwellings has increased. A comparative study contrasted the plot ratio of older established suburbs to newer suburbs (Hall, 2007) and showed a difference in the range of 30% plot coverage in the older established Melbourne suburbs to 65% in a newer suburb in Melbourne. This pattern was repeated across Australia and accompanied by urban form dominated by narrow lots with deep or square plan houses that resulted in little usable green space.

(a) 1996 (b) 2018

Figure 10 Redevelopment of three lots in the Eastern metropolitan region.

Note the loss of vegetation that is evident between images (a) and (b) before and after redevelopment and the large areas of impervious surfaces in impage (b). (Source: Explore Whitehorse http://maps.whitehorse.vic.gov.au/)

A further study found that almost all new suburban houses have minimal provision of soft-landscaped, private open space (Hall, 2010). It noted that this is happening irrespective of the size of the lot and seems connected with a trend to larger dwellings in relation to the lot area (Figure 11). The result of infill development is illustrated in Figure 14 with (a) before an (b) after infill development being illustrating a loss of private green space in Eastern metropolitan region, Melbourne.

> *"During the 1990s, the physical form of new suburban development in Australia changed dramatically. Houses with large backyards ceased to be built. Suburban form since then has been characterised by dwellings which cover at least 40% of the lot. Such houses have a deep or square plan with minimum wall length, few windows, an integral garage, often single-storey. These trends have resulted in a diminution of the backyard in both shape and total area. This has reduced the amenity of the property in terms of outlook from the dwelling and facilities for outdoor recreation around the home, especially for young children. However, the disadvantages go way beyond the lifestyles of the occupants. There is a loss of biodiversity and an increase in run-off of storm water. The microclimate becomes hotter and this, in turn, requires more air-conditioning and increased energy use. Moreover, it represents a permanent change in building form that cannot be corrected later." (Hall, 2010)*

(a) 2010 *(b) 2018*

Figure 11 Infill development illustrating loss of backyards and vegetation in Eastern metropolitan region, Melbourne

4.4.3 How current urban form affects landscaping

A 2017 study of inner suburban Melbourne found that as the density of a development increased, both the proportion of trees on a lot, and the soft landscaping, decreased (Stanford & Bush, 2017). Interestingly, this study also found a preference for trees over smaller vegetation types when available space is limited. Research in the cities of Boroondara and Yarra noted that, while there were significant

losses of trees on private property due to densification, this had been partly offset by an increase in public land planting, mostly in streets and in parks (Moore, 2009). However, the study also noted that, even on public land, spaces for larger trees were limited. As a result, public land plantings were not likely to be able to make up for the loss of canopy trees in private spaces.

4.4.4 The result of greater densification on urban heat

The Western Adelaide Urban Heat Mapping Project Report clearly identified surface temperature differences in low (Fulham), medium (West Croydon), and high (Northgate) density residential zones (Seed Consulting Services: Airbourne Research Australia and EnDev Geographic, 2017). The more compact urban form provided less space for greening to mitigate the warming effect of impervious surfaces such as driveways, roads, and dark roofs. High density areas of Northgate were found to be 2.9°C warmer (and 2.0°C above average) than the low-density areas of Fulham. Figure 12 below shows surface temperatures in low (Fulham), medium (West Croydon) and high (Northgate) density residential zones.

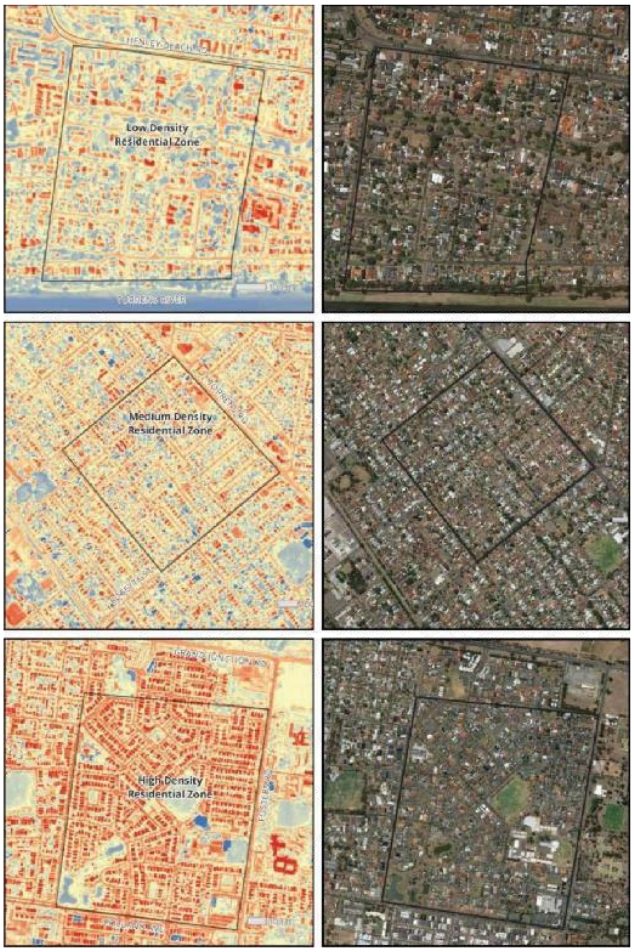


Figure 12 *Surface temperature differences in low (Fulham), medium (West Croydon), and high (Northgate) density residential zones (Source: Western Adelaide Urban Heat Mapping Project Report)*

A study on the equitable provision of shading through tree canopy in western Melbourne included both online and in-depth interviews with local government officers and Victorian Government staff (Cook, et al., 2015). The interviews focussed on cultural and behavioural change, the potential for regulating in favour of private space trees, and additional roles for local government. The interviewees acknowledged that tree canopy cover in private space faced many challenges, including the reduction of average lot size, larger house sizes, in-fill development, and the move toward 'zeroscaping' private gardens (which results in water saving but also less vegetation). The study noted agreement that the governance of the urban canopy was complex and involved many local governments, utilities, developers, Victorian Government and residential stakeholders. Despite the known benefits of trees, most are not protected by planning or environmental controls. Also, as the majority of the urban forest is located on private

land, the integrity of urban forest strategies depend on the activities, values and perceptions of private landowners and residents. Survey respondents were of the view that, while about 65% of residents were engaged in urban forest stewardship, this left a sizeable percentage whose attitudes ranged from indifference to hostility towards this task.

Local government's urban forest strategies acknowledge that private land is a vital component of the urban forest and are trying to ensure that, as far as practicable, it is protected and enhanced. As an example, the Brimbank City Council's urban forest strategy states the following:

P23 *Private land accounts for the majority of land ownership in the Brimbank area. Whilst Council develops and improves the Urban Forest on land it manages, it currently has limited control on private land such as residential and industrial areas.*

Private land owners must be engaged in the development of the Urban Forest. Without the Urban Forest on private land, Brimbank will not be able to achieve 30% canopy cover to improve liveability. There will also be the potential for reduced permeability such as paving for driveways, parking and outdoor areas.

P42 *Brimbank has already made progress to create better landscape outcomes, which includes residential developers being required to include tree planting within the development. Two lot subdivisions will be required to plant two medium trees in the front of the property and a small tree to the rear of the property to shade surfaces and reduce heat island impacts. The developer will also be encouraged to provide permeable surfaces such as permeable paving, rain gardens and grassed areas to minimise water entering into the Brimbank drainage system. This amendment to the Planning scheme will ensure strong Urban Forest outcomes for new development.*

Brimbank will also encourage further environmental design principles such as Green Roofs, Green Walls and other vegetative features that help to mitigate the impacts of heat in residential areas (Brimbank City Council , 2016).

The above discussion illustrates the impact of urban densification on the urban forest. Examples of the impact of infill development in established suburbs on urban vegetation are common; three are provided below.

Figure 13 illustrates where three allotments with three detached dwellings (on the left) have been re-developed to yield eight dwellings. This resulted in a gain of five dwellings, but with a significant loss of on-site vegetation and a gain in impervious surfaces.

(a) 2010 *(b) 2018*

Figure 13 *Redevelopment of (a) three allotments with three detached dwellings, to yield (b) eight dwellings (Source: Nearmap)*

Figure 14 illustrates a similar re-development of four allotments with four detached dwellings (on the left) to yield twelve dwellings. This led to a gain of eight dwellings but also a significant loss of vegetation and a gain in impervious surfaces

(a) 2010 *(b) 2018*

Figure 14 *Redevelopment of (a) four allotments with four detached dwellings, to yield (b) twelve dwellings (Source: Nearmap)*

In contrast, Figure 15 illustrates a higher-density development that provides for significant private green space with 18 households on approximately 3000 m^2 (Community, n.d.).

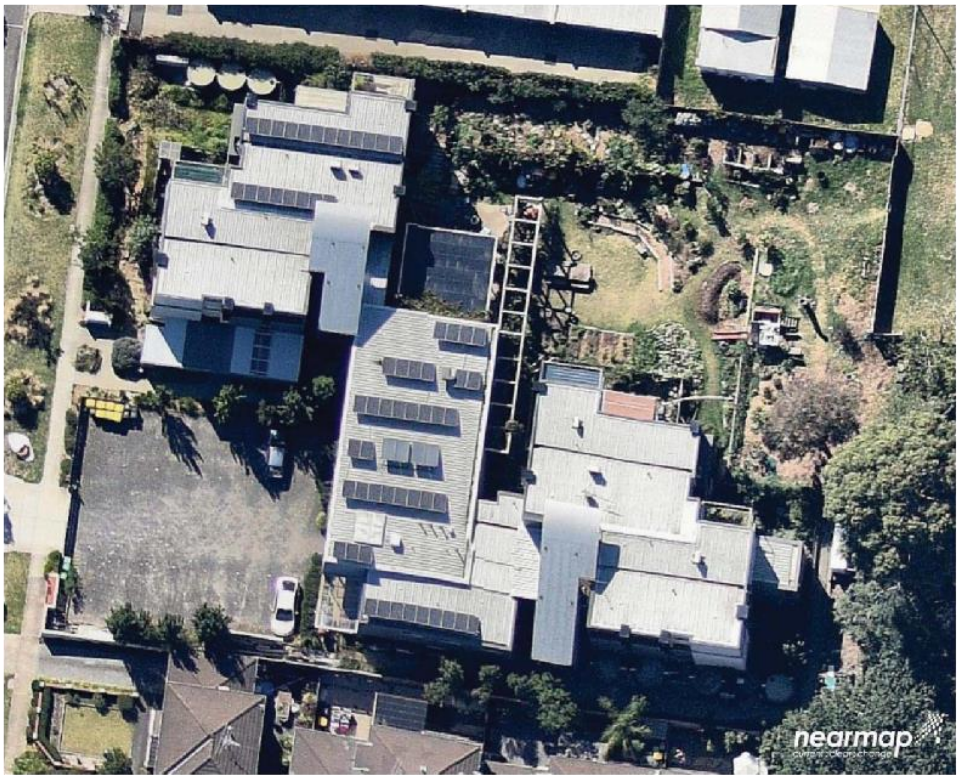


Figure 15 Northern metropolitan region, Melbourne (Source: Nearmap)

4.5 What domestic case studies are there of actions to protect the urban forest?

4.5.1 City of Melbourne Urban Forest Strategy

The City of Melbourne's Urban Forest Strategy 2012–2032 (City of Melbourne, n.d.) was an outcome of the city's overall plan and vision to be "one of the top ten most liveable and sustainable cities in the world" (Victoria State Government. Department of Environment, Land, Water and Planning, 2013), and it is a key component of the refreshed strategy (Future Melbourne 2026) (City of Melbourne, 2016). A healthy urban forest helps address the original community vision for Melbourne as outlined in the Future Melbourne plan that is a city that works within its environmental means, and the revised 2026 goal of a city that cares for its environment. In addition to the Urban Forest Strategy, the 2012 Open Space Strategy (City of Melbourne, 2012) and the 2017 Nature in the City Strategy (City of Melbourne, 2017) outline three strategies to achieve these goals. These strategies fit within the broader 2017 Climate Change and Adaptation Refresh (City of Melbourne, 2017), 2014 Zero Net Emissions (City of Melbourne, 2014), and 2014 Total Watermark Strategies (City of Melbourne, 2014).

The City of Melbourne's urban forest definition is broad and encompasses trees and vegetation, soil and water, private and public realms, and an array of different green spaces. In 2012, the Urban Forest Strategy outlined Melbourne's urban forest benefits and assigned them an estimated amenity value of

A$700 million. Climate change, population growth, and urban heating were identified as the primary threats to maintaining an urban forest that was resilient, added to the liveability and sustainability of the city, and created community health and wellbeing.

The Urban Forest Strategy identified six strategies and six associated targets, which were implemented via specific and broader actions. The first level action was the application of an overarching 'Green Governance Philosophy'. This philosophy accepts the need to work across administrative, discipline and regional boundaries to share knowledge, communicate, and create integrated action. The process included local community and business entities, national bodies, and global expertise to ensure creative and effective solutions to a healthy urban forest could be implemented. The Green Governance concept is reiterated in the 2017 Nature in the City Strategy.

Strategy 1 in the Urban Forest Strategy is to increase the public realm canopy cover from 22% to 40% by 2040. The key mechanisms to achieve this were the ten Urban Forest Precinct Plans (City of Melbourne, 2015), which provide specific details about where, when and what will be planted in each street across the municipality. The rationale for ten smaller rather than one overarching plan was to reduce the complexity and workload into manageable subsets, capture unique local features, and draw in local community values and vision. The Urban Forest Precinct Plans determine key planting constraints, opportunities for major redesign, and street planting prioritisation for 2013–2023. They also highlight biodiversity corridors and connectors between open spaces. The 2012 Open Space Strategy covers public parks and gardens within the various precincts and emphasises the greater use of large canopy trees to assist with urban heat reduction, improved biodiversity, and managed water runoff. Specific precinct principles and the 2011 Urban Forest Diversity (City of Melbourne, 2011) guidelines define the choice of tree species. In addition to the Urban Forest Precinct Plans, there are planting plans for several major boulevards.

The Urban Forest Precinct Plans are living documents that are evolving over time. While the primary focus for the first period was on street trees, the second 10-year planning period aims to expand on the initial biodiversity, corridor, connectivity and understorey plantings to incorporate the results of the 2017 Nature in the City Strategy outcomes. The Nature in the City Strategy aimed to address ecosystem health and biology, urban landscape connections, private realm participation, and continued excellence in urban ecology innovation. As urban ecology is a relatively new field, many of the actions in the Nature in City Strategy focused on research, data collection, and learning.

While the expansion of the public realm canopy is one element of the Urban Forest Strategy, the other is the protection of the existing canopy. The City of Melbourne has an efficient Tree Removal and Retention Policy which enables pre-emptive protection when construction work takes place near trees. It also manages pruning and maintenance, and oversees permitted tree removal. An Exceptional Tree Register was established for the protection of trees on private property.

Strategy 2 in the Urban Forest Strategy is to increase urban forest diversity. The target is to have no more than 5% of any one tree species, 10% of any one genus, and 20% of any one family. In addition to species, diversity must include other factors such as age and growth rate. The 2011 Urban Forest Diversity Guidelines is the primary tool for achieving this. A selection process and subsequent array of street and park location types have been identified. For each location, the minimum conditions for successful planting have been identified, along with a list of suitable trees. The selection process has taken into consideration a wide range of factors (e.g. vulnerability to pests and pathogens, drought tolerance, heat tolerance, street arrangement, maintenance, attractiveness). In addition to street and park trees, the Urban Forest Strategy aims to improve structural diversity by encouraging green walls, green roofs, and green laneways via four major projects – the Urban Forest Fund, 2014 Growing

Greening Guide, Green Roof Project Map, and the Greening Laneway. These projects also aim to engage the private sector in the process.

Strategy 3 aims to improve vegetation health so that 90% of the tree population is healthy by 2040. There are three ways to achieve this. Primarily, urban forest health is delivered through a careful maintenance program that consists of on-ground care and proactive research and innovation. The second way is via the 2014 Total Watermark Strategy, a component of which addresses soil moisture to support a healthy urban forest, particularly in the open spaces, parks and gardens. The Urban Forest Precinct Plans comprise the third way towards tree health by addressing local soil and moisture concerns through water sensitive urban design.

Strategy 4 seeks to improve soil moisture and water quality. The target is for sufficient moisture to be maintained to support healthy vegetation growth. The primary vehicles for addressing this are the 2014 Total Watermark Strategy and the 10 Urban Forest Precinct Plans.

Strategy 5 is to improve urban ecology, with the target to protect and enhance urban ecology and biodiversity. The key deliverable is the recent 2017 Nature in the City Strategy, which has as its goals to create a more diverse, connected and resilient natural environment, connect people to nature, and demonstrate leadership in the urban ecology arena. The targets include increasing biodiversity, habitats and ecosystem health, improving corridor connectivity, and engaging the private realm. The strategy requires an extensive list of actions, from mapping, establishing baselines, research and monitoring, through to management, planning, and guidance. Timeframes range from one to ten years.

Strategy 6 is to engage with the community, aiming to improve the appreciation of, and participation in, the urban forest development in both the public and private realms. In the early years of the Strategy, the Urban Forest Precinct plans fulfilled this commitment through an ongoing program of community engagement to co-design the planting plans for each precinct. Since the completion of the Urban Forest Precinct, documents and engagement programs include:

Citizen Forester Program: volunteers are trained to carry out urban forest advocacy, monitoring, and research tasks. The program caters to a range of interests and abilities, and provides a variety of activities that are fun and meaningful.

BioBlitz Programs: BioBlitz programs are events that engage both experts and community members in the identification and collection of data on a range of plant and animal life. The events are diverse and engaging, and have included spotlighting nocturnal animals and insects, recording animal calls, sampling various insect and sea creatures, and photographing animals in their local surrounds.

Urban Forest Visual (UFV): the UFV is an interactive data visualisation that displays a map of tree locations, species, ages, and health. An email address is provided for each tree so that the public can send in information about a specific tree, its health, need for maintenance, or a note of appreciation.

Biodiversity Visual: this is an interactive visual map of the insect biodiversity found in the City of Melbourne. Over 560 insect species at 15 sites (primarily public parks and gardens) were identified and recorded, and the data may be interrogated in a variety of ways to aid understanding of the insect life and presence.

Urban Forest Fund: the City of Melbourne launched the Urban Forest Fund to support alternative greening projects within the council district. The fund provides financial support for green spaces, tree planting, vertical greening or green roofs.

2014 Growing Green Guide: this guide (created jointly with the Inner Melbouree Action Plan group of local governments) is targeted towards projects based in Melbourne and Victoria and aims to assist and

encourage those who may be involved in the design, construction and maintenance of green roofs and facades.

Green Roof Project Map: this project involved the mapping of rooftops in the City of Melbourne to determine whether they had the potential to be used for solar, cool or green roofs. The information is available online to assist those interested in adapting their roofs.

Greening the Laneways: this is a world-first interactive map developed to show which laneways in the City of Melbourne are suitable for greening. The possible greening options are based on the available sunlight, exposure to wind, and other physical characteristics. Four green laneways were piloted (Katherine Place, Meyers Place, Guildford Lane, and Coromandel Place) and in 2017 received trees, planter boxes, vertical greening, pot plants, murals and new pedestrian spaces.

4.5.2 Greening the West

Greening the West is a regional initiative that aims to assist communities in Melbourne's west through the expansion of green spaces in all forms, such as parks, reserves, streetscapes, green roofs and walls, private backyards, car parks, sporting fields, and waterways. Key goals include increasing green space by 25% by 2030, increasing the supply of alternative water for green space by 25% by 2030, and doubling tree canopy cover by 2050 (Greening the West, n.d.).

An alliance of advocates from the western municipalities of Brimbank, Hobsons Bay, Maribyrnong, Melton, Moonee Valley and Wyndham developed the Greening the West Strategic Plan. The plan identifies eight key goals and targets that the alliance has committed to working towards to contribute to a green and healthy west. Examples of the initiatives implemented to date include:

One million trees

This project planted one million trees across several major nature links in western Melbourne. In 2018, Victoria's Community Correctional Services commenced an ongoing project to provide gardening services to the 1 Million Trees Project. Services include site maintenance, weeding and watering.

Greening the pipeline

Greening the Pipeline aims to convert 27 kilometres of the heritage listed Main Outfall Sewer between Brooklyn and Werribee into a linear park. The first section at Williams Landing that showcases the concept was completed in 2017. The vision is to create a vibrant space that will connect communities and provide a unique space to meet, play, and relax.

Afton Street Conservation Park Wetlands

The wetland restoration, created in 2010, provides a new open space for visitors to enjoy native plants and wildlife. It also showcases a new and sustainable way of watering green infrastructure. The wetlands capture and recycle urban runoff via five linked ponds in a naturally occurring process. The initial larger pond filters dirt and rubbish from residential stormwater, while the smaller ponds filter out various pollutants and bacteria. The clean water is stored in an irrigation pond and used to water the local sports field.

Exford Primary School

Exford Primary School is an example of how a small targeted greening project can achieve multiple goals: improve aesthetics, create additional habitat, and provide an interactive opportunity for engaging the students, teachers, and parent body. Drought hardy native trees were planted at the school.

Lower Stony Creek

The Stony Creek area is an example of the indigenous vegetation and wildlife that used to exist throughout the Western Plains of Victoria. Recent restoration has raised the profile of the area, and future work will build on the established escarpment shrubland and continue the creation of a habitat corridor along Stony Creek.

Upper Stony Creek

This project involves the transformation of a 1.2 kilometre section of the Upper Stony Creek into a community space with walking paths, wetlands and a revegetated creek bed. The project won the Excellence in Strategic or Master Planning Award at the Stormwater Victoria Awards for Excellence in 2016.

4.5.3 Mornington Peninsula Landcare Biolinks

'Linking the Mornington Peninsula Landscape' (Mornington Peninsula Landcare Network, n.d.) aims to sustain and build the capacity of local groups to implement and maintain on-ground projects that contribute to landscape restoration, connectivity, and environmental sustainability. Using the 'Bay to Bay Biolink' as a model, the project engages a project coordinator, an engagement specialist, and a local ecologist to assist Peninsula Landcare groups to work with residents to produce local biolink plans. The project will be undertaken over five years across the Mornington Peninsula and include Watson Creek Catchment, Sheepwash Creek Catchment, Main Creek Catchment, Southwest Mornington Peninsula Landcare region, Dunns Creek Catchment, Merricks Coolart Catchment, and Red Hill South Landcare region.

4.5.4 Gardens for Wildlife

Launched in 2006, the Knox City Council's Gardens for Wildlife (Knox City Council, n.d.) program was designed to encourage residents to provide habitat and food sources for threatened wildlife (e.g. birds, insects, and frogs), by planting indigenous plants or suitable exotic species in their gardens. The program is a partnership with the Knox Environment Society and currently has over 800 contributing households.

4.5.5 Living Links

The goal of the Living Links project (Living Links, n.d.) is to create a network of green and blue spaces in Melbourne's south-east. The project aims to connect parks, reserves, coast and beaches, rivers, creeks and wetlands. Currently, 17 corridors have been identified with potential connection opportunities to improve the local community and environment.

4.5.6 City of Sydney

The 2013 City of Sydney Urban Forest Strategy (City of Sydney, 2013) is a key tool for delivering on the Sustainable Sydney 2030 (City of Sydney, 2017) and Greening Sydney (City of Sydney, 2012) plans. The city has set the goal of increasing its current canopy cover from 15.5% to 23.25% by 2030 and 27.3% by 2050, and the program also addresses the trees' age spread and species diversity. Key tools for achieving these targets are the Local Environmental Plan (City of Sydney, 2016) and the Development Control Plan (City of Sydney, 2012). The Local Environmental Plan is the key legal document for guiding planning decisions, and the Development Control Plan supports these plans by providing more detailed planning and design guidelines. Important elements of the Development Control Plan are protection tools for existing trees on private property and the requirement for a minimum of 15% canopy cover (within ten years) for all land classes and developments (City of Sydney, 2013). In addition, a landscape codehas also been developed to ensure that developments the support greening goals of the City of Sydney.

4.6 Existing collaborative models in Melbourne

As previously identified, many organisations are undertaking significant work to maintain and enhance our urban forest. While this work is often being undertaken in an isolated and ad hoc manner there are many existing collaborative networks across Melbourne that can provide models of co-ordinated action. A few key models are provided in this chapter.

4.6.1 Association of Bayside Municipalities

The Association of Bayside Municipalities is an unincorporated association of the councils that have frontage to, and are affected by, the tidal influences of Port Phillip Bay.

The Association of Bayside Municipalities is hosted and recognised by the Municipal Association of Victoria as the key representative of local government in relation to the sustainable management and health of Port Phillip Bay. The ABM provides a forum for:

- information exchange, innovation, and best practice in coastal management
- advocacy – representing the collective views of member councils
- networking and collaboration between member councils, other Bay stakeholders and coastal organisations
- leadership in coastal planning and practice
- integrated, whole-of-bay outcomes for Port Phillip Bay

The Association of Bayside Municipalities has a steering committee with elected councillor representation from each member municipality. It is supported by an executive officer who provides secretariat services to the ABM committee and coordinates programs. A technical group, comprising municipal staff, meets on an as-needs basis, and project control groups manage specific actions.

4.6.2 Council Arboriculture Victoria

Council Arboriculture Victoria is an association of Victorian Council Arborists and Tree Managers that promotes the protection and enhancement of our urban forest, including public and private trees. Council Arboriculture Victoria has an executive committee with five position holders, including chairperson, vice chairperson, treasurer, secretary, and minutes secretary.

It also has a general committee, usually comprised of five to ten people. Council Arboriculture Victoria also meets every 2nd month for a general meeting. Issues relevant to the protection and enhancement of the urban forest are canvassed and discussed and guest speakers promoted.

4.6.3 Greenhouse alliances

Metropolitan Melbourne hosts four sub-regional greenhouse alliances, including:

- Northern Alliance for Greenhouse Action
- South East Councils Climate Change Alliance
- Western Alliance for Greenhouse Action
- Eastern Alliance for Greenhouse Action

Alliances have different memberships, operations, and governance models, but their governance structures are formal.

A paper prepared for the 2013 National Climate Change Adaptation Research Facility (Hunt, 2013) conference summarises the benefits of the greenhouse alliances, noting that alliances:

- provide formal mechanisms to give different groups confidence in collaborating on complex issues,
- scale up local issues into broad-ranging strategic contributions through projects and project advocacy, and
- communicate the need for urgent and deep action.

It also notes that the alliances work with their local communities and cooperate across regions as a network on issues of state or national importance. The Executive Officers meet bimonthly to share information and resources and contribute to expanded regional action on climate change. Importantly for local government, they attract funds into the regions from various sources.

4.6.4 Northern Alliance for Greenhouse Action (NAGA)

NAGA is a grouping of nine metropolitan councils. The NAGA governance structure includes an Executive that meets quarterly, with one representative (councillor or senior staff) from each member organisation. Executive working groups draw membership from both the Executive and the Implementation Forum, and discuss finance, advocacy and governance issues in detail to inform the Executive's decision-making processes. The Implementation Forum meets at least bimonthly.

In addition, NAGA's structure includes working groups to allow detailed project management and/or technical discussion and information exchange.

The NAGA Secretariat, which consists of an executive officer and a project manager, supports and resources these governance structures (Figure 16).

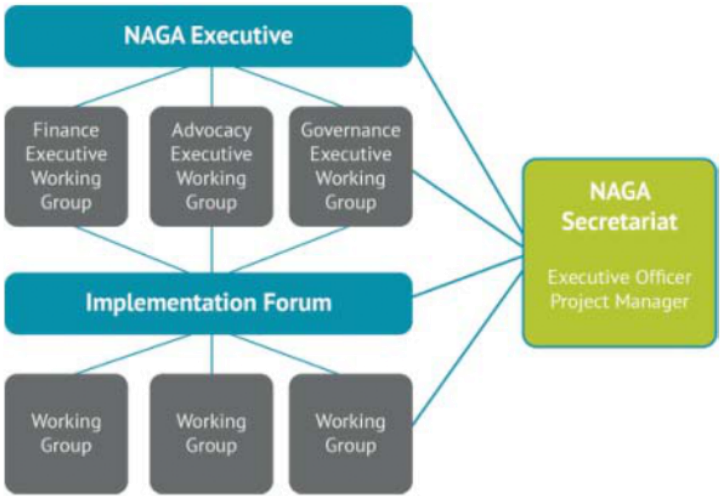


Figure 16 Governance structure of the the Northern Alliance for Greenhouse Action (Source: NAGA Website)

4.6.5 South East Councils Climate Change Alliance (SECCCA)

SECCCA is a network of nine councils in the south-east region that work together to respond and adapt to the impacts of climate change. SECCCA is an incorporated body that follows the Model Rules for Incorporated Associations established by Victoria's Office of Consumer Affairs. The management committee is composed of members nominated by their councils. There are sub-committees that report to the management committee and variously address governance, finance, communications, and projects.

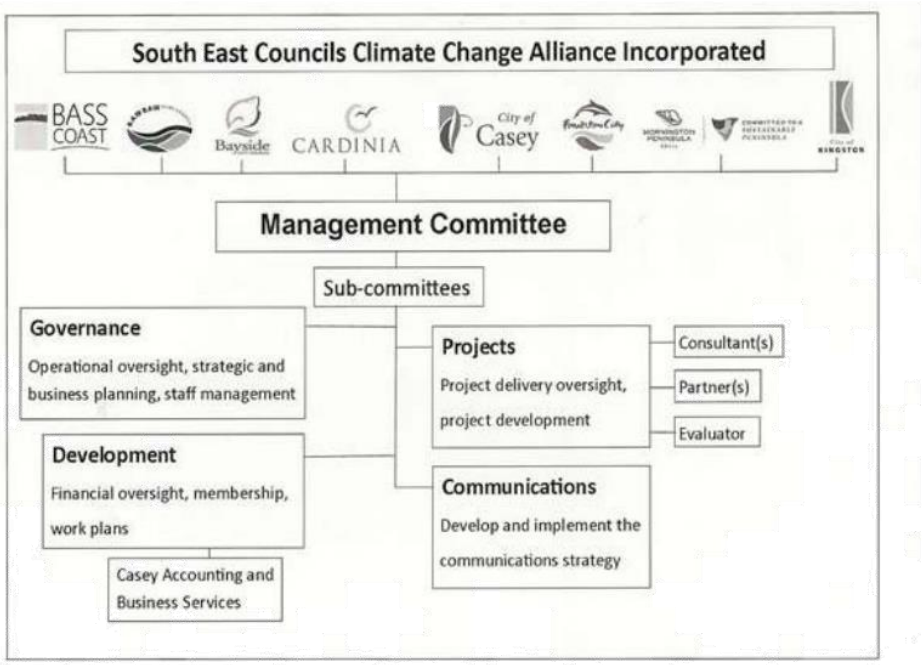


Figure 17 Governance structure for the South East Councils Climate Change Alliance (Source: Hunt 2013)

4.6.6 Western Alliance for Greenhouse Action (WAGA)

The Western Alliance for Greenhouse Action (WAGA) was established in 2006 to bring together interested councils and other organisations committed to a collaborative response to climate change across the region. At present, its members are the eight WAGA councils. Associate members in the past have included Victoria University and the Western Region Environment Centre.

WAGA's governance structure includes a WAGA Executive Committee including one senior manager from each member council. A Chair is elected annually from the committee members and it is responsible for strategic direction, political support, financial contributions and annual budget.

Reporting to this committee is the WAGA Operational Committee which includes operational staff from each member council. The Operational Committee develops WAGA's Annual Implementation Plan and projects for endorsement by the Executive Committee. One of the Operational Committee's most

important roles is information-sharing and capacity-building for staff around their corporate climate change programs.

Working Groups are established as required, either lead by an alliance council or by a joint project officer and are accountable to the WAGA Operational Committee. The structure allows for non-WAGA committee members to be co-opted to projects as necessary.

The WAGA Coordinator works with the Operational Committee to develop the Annual Implementation Plan and projects, facilitates the work of the Operational Committee and Working Groups, and is directly accountable to the Executive Committee.

4.6.7 Eastern Alliance for Greenhouse Action (EAGA)

The Eastern Alliance for Greenhouse Action (EAGA) is a formal collaboration of eight councils in Melbourne's east, working together on regional programs that reduce greenhouse gas emissions and facilitate regional adaptation. EAGA operates a similar governance model to WAGA. It includes:

- an executive committee that meets quarterly and manages strategic directions for EAGA's priorities, actions and operations.
- a steering committee that meets monthly and manages projects consistent with the strategic direction
- working groups that meet as required for project implementation and technical discussion

A regional coordinator is employed to support and resource these governance structures.

4.6.8 Greening the West

'Greening the West' is a regional initiative that is about enriching communities in Melbourne's west through the development of green spaces. The alliance of green space advocates forms a steering committee. The steering committee meets quarterly to discuss issues that benefit from collaboration, and to share municipal and joint project updates.

Together they share knowledge, promote, and scale practical solutions in the western municipalities of Brimbank, Hobsons Bay, Maribyrnong, Melton, Moonee Valley and Wyndham.

The group is made up of a total of 23 member organisations, including state government departments and agencies, water utilities, and community groups. It includes the following partners: City West Water, the Urban Development Institute of Australia, Regional Development Australia, Yarraville on the Nose, Western Water, VicRoads, Parks Victoria, Melbourne Water, LeadWest, Friends of Lower Kororoit Creek, the Department of Health and Human Services, the Port Phillip and Westernport Catchment Management Authority and the Department of Environment, Land, Water & Planning.

In 2018, changes to the governance structure were considered to incorporate the steering committee within the structure of LeadWest.

4.6.9 LeadWest

LeadWest is a regional not-for-profit, membership-based organisation that advocates for Melbourne's west. It is an independent company limited by guarantee whose membership includes all six local governments in Melbourne's west, joined by companies and other organisations with substantial operations or interests that are based in the west, including those managing water, energy and telecommunications networks.

LeadWest is governed by a 17-member Board of Directors, comprising:

- Twelve Directors representing local governments that are LeadWest members (currently one each from the cities of Brimbank, Hobsons Bay, Maribrynong, Melton, Moonee Valley and Wyndham)
- Four Directors elected by LeadWest members
- An independent Chair of the Board

The Board is supported by committees overseeing policy priorities and has a Chief Executive Officer and two advocacy projects managers.

4.6.10 LGPro Biodiversity Planning Network Special Interest Group

LGPro is the peak body for Local Government professionals in Victoria. It has a Board comprising 10 people, all of whom are elected by its members every three years. The executive officer provides secretariat services for the Board and is supported by several staff.

LGPro supports its members through a broad range of professional development programs, online learning opportunities, forums, and events. A key aspect of this support program is the professional networks known as Special Interest Groups (SIGs). The SIGs provide opportunities to network, share best practice, and improve practices and knowledge. Each SIG is supported by an online forum.

The Biodiversity Planning Network SIG is primarily for local government staff that implements biodiversity legislation and policies to assist in the protection and enhancement of natural values within their municipality and the State. External attendees are by invitation only. The Biodiversity Planning Network SIG:

- Discusses emerging issues with the aim of providing advice to policy makers, and to advocate for the protection of biodiversity
- Shares knowledge and experience to improve the implementation and outcomes of legislation and policy (e.g. Native Vegetation Framework, local policy)
- Provides an ongoing mechanism and forum for communication, consultation, and liaison with other government agencies and stakeholders on biodiversity issues
- Provides opportunities for professional development, peer support, and communication

The network has regular meetings across two metropolitan regions: the Western & Northern region, and the Eastern & Southern region.

4.7 International activities

4.7.1 Louisville, Kentucky, United States of America

In the United States, Louisville, Kentucky, is one of the cities most susceptible to the urban heat island effect, and it has been ranked fourth in terms of the hottest urban areas (Rice, 2014). In 2015 a detailed canopy assessment was conducted by the Davey Resource Group, which determined canopy cover to have declined from 40% in 2004 to approximately 37% by 2015 (Davey Resource Group, 2015). Much of the remaining cover was in protected parks and not in the city centre, streets, or residential areas. The report predicted that the cover was likely to decline further given that 10% to 20% of the trees were ash and therefore susceptible to emerald ash borer (*Agrilus planipennis*). The consultants produced a map of all realistically plantable areas, along with planting priorities based on their potential impact on

mitigating urban heat island effect, stormwater, fragmentation, and population density. A comprehensive study in 2016 (Urban Climate Lab, 2016) assessed the extent of the heating effect and potential impact on the health of residents and established a canopy target of 45%. The report presented both metro-wide and neighbourhood specific recommendations, and tree planting and revegetation were central to these.

4.7.2 Boulder, Colorado, United States of America

Boulder's urban forest and canopy has faced a range of challenges, from EAB through to a series of wild fires and floods. Consequently, a part of the City of Boulder's Resilience Strategy is an urban forest strategy (City of Boulder Colorado , 2016). To aid in the development of this strategy, the city has undertaken a tree inventory, a canopy assessment, and an emerald ash borer review, and it is currently involved in an urban forest strategy public engagement program.

4.7.3 Vancouver, British Columbia, Canada

A review in 2014 found that Vancouver's canopy cover was declining (City of Vancouver, 2014). While in 1995 the canopy cover was estimated to be 22.5%, by 2006 it had fallen to 20%, and by 2013 it had fallen further to 18%. The current urban forest strategy has set a target of growing the canopy cover to 20% by 2030 and 22% by 2050. To achieve this, a range of tools have been implemented, and these include strengthening tree protection and retention by-laws, expanding park planting programs, and creating street management plans.

4.7.4 New York City, New York, United States of America

Cool Neighbourhoods NYC (City of New York, 2017) is a US$106 million program launched in 2017 that aims to minimise the urban heat island effect through strategic street and park tree planting, with a focus on vulnerable neighbourhoods. New York City also calculated that it would be more cost-effective to construct source controls and green infrastructure to manage its stormwater than to continue to increase the capacity of its traditional grey infrastructure. In 2011, the NYC Green Infrastructure Plan (City of New York, 2011), a detailed plan for adopting green infrastructure for water pollution control via watershed planning was launched. The plan included significant funding (US$187 million through to 2015, and US$1.5 billion through to 2030).

4.7.5 City of London, United Kingdom.

The 2014 i-Tree eco analysis of the Greater London urban forest was the largest i-Tree Eco project in the world at the time of its completion (Treeconomics, 2015). The analysis found that there were 8.4 million trees in Greater London, delivering at least £133 million of benefits every year in the form of pollution reduction, carbon sequestration, and stormwater management. Although approximately 60% of the trees were in private ownership, 60% of the ecosystem service benefits were provided by public trees in parks and green spaces due to the size of those trees.

The i-Tree eco data were used to help support the development of the urban forest goals in the London Environment Strategy 2017 (Greater London Authority, 2017). The goals included growing the green cover to 50% by 2050, increasing canopy cover from 20% to 22% by 2050, ensuring adequate protection for existing trees, instigating a major tree planting program, and setting up a data/monitoring system.

4.7.6 Metropolitan Area of Chicago, Illinois, United States of America

Established in 2013, the Chicago Region Trees Initiative is a collaborative effort by 13 regional organisations to develop a strategy for the seven-county metropolitan urban area. The aim is to ensure that the forest population is better understood and valued, that effective performance measurement

systems are set up, and most importantly that the forest will be healthier, more resilient, and diverse by 2040.

As part of the strategic development, the initiative will address critical issues such as:

- Data gathering and analysis to better show the underserved and challenged areas
- Increasing tree care and forestry stewardship activities and ability
- Increasing knowledge gaps, risk assessment, and management ability and policy support
- Sharing information and raising the profile of Chicago Region Trees Initiative in the wider community

The strategy will include actionable goals for canopy cover, species and age diversity, and management skills across the public and private spectrum.

4.7.7 Chicago Wilderness Program, Illinois, United States of America

The Chicago Wilderness Program set out in 2004 to map the green infrastructure of seven Illinois counties using geographic information systems, with the goal of identifying critical green infrastructure areas within the region to protect. The most recent version of the project Green Infrastructure Vision 2.0 (Chicago Metropolitan Agency for Planning, n.d.) set out to further collect and refine the data to find significant blocks of unfragmented landscapes, identify assemblages of mix habitats, assess compatible adjacent land/water features, and define habitat connection networks. The goal was to assist with the creation and preservation of a mosaic of biodiversity. These online data are available to an array of decision-makers in the environmental sector, including those involved in urban forestry management. The Chicago Wilderness is now a collaboration of 250 organisations.

4.7.8 City of Guelph, Ontario, Canada

The City of Guelph's Urban Forest Strategy (2009) found that the solution to successfully addressing the challenges facing its urban forest was to elevate the importance of green infrastructure and place it on par with the roads, sewers and buildings. As such, the city's policy needed to define the urban forest as essential green infrastructure and a priority for protection and management. The strategy developed 'tree friendly zoning', a 'tree first' site plan process, and 'tree friendly' urban design and open space guidelines as implementation tools (Urban Forest Innovations Inc., 2009).

4.7.9 The City of Singapore, Singapore

Singapore's first urban greening program began in 1967 with a vision of becoming a 'Garden City.' The aim was to make the newly founded, independent republic a clean and liveable city for its citizens, create an attractive destination for foreign investment and tourism, protect important waterways and water reserves, and aid with regulating the microclimate (Friess, 2016). The primary tool to support this aim was tree planting in new urban areas and along streets (Singapore Government, n.d.). By the 1970s the program had expanded to include the creation of parks and green spaces for recreation and improved air quality, and the 1975 Parks and Tree Act provided the necessary gravitas and stimulus (e.g. large concreted areas had to include 30% to 40% greenery). (Friess, 2016)

The 1992 Singapore Green Plan was Singapore's first environmental strategy and aimed to ensure continued economic growth without environmental compromise. The Plan has been periodically updated to expand its environmental goals (National Library Board Singapore, 2017). In 1998, the 'Garden City' morphed into a 'City in a Garden' with the aim of 'greening' going beyond improving the built environment and living standards to becoming an essential economic contributor (Singapore Government, n.d.), (National Parks, 2004). Since then, a succession of integrated strategic/planning

documents has been developed with green infrastructure components that support the 'City in a Garden' vision.

Singapore's limited natural resources have meant that from the outset it has had to be creative and use resources sustainably while generating economic growth (Hean, 2017). Integrated long-term planning, and the government's majority land ownership (Singapore's government owns about 85% of the land (Shatkin, 2014, p. 117), have meant that "urban planning is synonymous with national development" (Shatkin, 2014, p. 116). Urban planning and greening have become an integral part of the country's identity and are a vital tool for delivering high living standards, managing limited water resources, preparing for future threats (e.g. climate change), and contributing to its economic success (through tourism, green technology, and green training) (National Parks, 2017), (Shatkin, 2014), (Ministry of the Environment and Water Resources MEWR, 2015), (Ministry of the Environment and Water Resources (MEWR), 2012), (Ho, 2014).

Due to a lack of natural water and reservoirs, Singapore is considered one of the world's most water-stressed countries (Luo, et al., 2015). The growing population, economic demands, and more recently the impact of climate change on weather patterns are putting constant pressure on the country's water supply. Today, freshwater is provided by 17 man-made reservoirs, a pipeline from Malaysia, water desalination, and wastewater reclamation. Watershed protection, i.e. drainage management into the waterways and reservoirs, has long been part of Singapore's land use planning. As vegetated areas were known to reduce runoff, sediment, and pollutants entering waterways, the forests surrounding the McRitchie Reservoir were designated as a catchment nature reserve as early as the 1860s (Friess, 2016). The first tree planting programs in the 1960s after Singapore had gained independence focussed on watershed protection as a key benefit of the program. The *2001 Sewage and Drainage Act* ensured that the role of vegetation in protecting the watershed was written into law (Friess, 2016). More recently, the implementation of Singapore's 2006 Active, Beautiful, Clean Waters (ABC Waters) programme sought to integrate stormwater drains and canals into the surrounding green infrastructure with the goal of beautifying urban areas, creating blue recreational areas, and importantly improving stormwater quality.

Urban heat island effects were studied in Singapore as early as 1964, and the studies to date have clearly illustrated the considerable difference in temperature that green space can provide (Friess, 2016). Some research has even found differential cooling from different green spaces. The findings also highlight the role of proper land use planning, urban heat island design in high rise buildings, and the use of urban greening (urban forest, green roofs, facades, and vertical building greening). Despite Singapore's growing population and densification, it has managed to grow its canopy cover from 20% in 1987 (Newman, 2014) to close to 30% in 2017 (Choo, 2017).

5 What is the policy, planning and legislative context in Melbourne?

5.1 Introduction

The stewardship and management of the urban forest impacts on a range of diverse disciplines, such as:

- arboriculture services
- town planning
- public open space and conservation reserve management
- traffic engineering
- climate change adaptation and mitigation
- urban and landscape design
- water and waterway management
- aboriginal heritage
- public health
- social policy

This section summarises the key policy frameworks or relevant strategies that, through these disciplines, influence the management of the urban forest. They include:

- Planning policy and the Victoria Planning Provisions
- Sustainable design requirements
- Plan Melbourne 2017–2050
- Protecting Victoria's Environment – Biodiversity 2037
- Water for Victoria
- Yarra River Action Plan *Wilip-gin Birrarung murron*
- Healthy Waterways Strategy 2013–2017
- Climate change framework and climate change adaptation plan
- Victorian Public Health and Wellbeing Plan 2015–2019
- Victorian Memorandum for Health and Nature
- *Aboriginal Heritage Act 2006*

5.2 The planning policy framework

A planning scheme is a statutory document that sets out objectives, policies and provisions for the use, development and protection of land in the area to which it applies. It regulates the use and development of land through planning provisions to achieve those objectives (Department of Environment, Land, Water and Planning , n.d.).

Each of the 79 local government areas in Victoria, including the 32 municipalities of metropolitan Melbourne, is covered by a planning scheme. Planning schemes are legal documents prepared by the local council (or the Minister for Planning) and approved by the Minister.

Planning schemes consist of:

- maps that show how the land is zoned, and overlays affecting the land
- an ordinance that sets out the written requirements of a scheme, including local policies and the types of use or development which needs a permit
- incorporated documents such as codes of practice

Zones indicate the primary character of the land, whether it is residential, industrial, or rural, and determine the types of uses that may occur. Some local areas have special planning controls (known as overlays), such as areas of significant vegetation. These controls are in addition to the zone controls and ensure that important aspects of the land are recognised.

In addition to zones and overlays, other requirements in the ordinance, such as particular provisions, may also apply depending on the proposal for the land. Planning schemes contain state standard provisions drawn from the Victoria Planning Provisions as well as local policy and provisions. State provisions – the Victoria Planning Provisions – include fixed state content and zones, overlays and incorporated documents. The *Planning and Environment Act 1987* (Victorian Legislation and Parlimentary Documents, 2012) distinguishes between the Victoria Planning Provisions (VPP) and a planning scheme. The Victoria Planning Provisions are a comprehensive set of planning provisions for Victoria; they are not a planning scheme and do not apply to any land. Rather, the VPPs are a statewide reference to be used as required to construct planning schemes. VPP also refer to many incorporated documents. Some parts of the VPP, such as state policies, are included in every planning scheme.

Planning scheme content specific to a local area (local provisions) is contained in the Municipal Strategic Statement, local policies, schedules and incorporated documents. The local planning policy content must be provided by the planning authority (usually the local council). It must include a Municipal Strategic Statement (MSS) and select the appropriate zones and overlays from the VPP for inclusion in their planning scheme.

Planning schemes can apply to all private and public land in Victoria. A planning scheme is generally binding on all people and corporations, as well as on every Minister, government department, public authority and local council. Some exemptions apply. These relate to existing use rights, exemptions declared under Section 16 of the *Planning and Environment Act 1987*, Commonwealth land, and permanently reserved Crown land. The administration and enforcement of a planning scheme is the duty of a responsible authority. In most cases that is a local council, but it can be the Minister administering the *Planning and Environment Act 1987* or any other Minister or public authority specified in Clause 61.01 of the scheme. Changes to the planning scheme may be made by both the Minister for Planning and the local council.

5.3 Sustainable design in the Victoria Planning Provisions

5.3.1 Introduction

Victoria's statutory planning system includes regulations that can potentially influence vegetation protection and opportunities to increase or decrease vegetation on private property in residential areas. Broadly, these are (1) residential planning zones, which are subject to (2) residential development standards, and (3) planning overlays. Many municipalities also use local laws as a fourth but perhaps less systematic tool for vegetation protection, particularly to protect significant trees. Enforcement and penalties for not following these regulatory measures remain a real challenge for local governments.

The Victoria Planning Provisions provide the template for residential planning zones and have three clauses that may impact on opportunities for planting vegetation in new developments. These are the new 'garden area requirement', a clause for 'single dwelling on a lot', and a clause for 'two or more dwellings on a lot' (the combined codes are commonly known as Rescode). Municipalities may have additional requirements that impact on vegetation in their schedules to zones. Schedules provide local councils with the opportunity to customise the standard zoning requirements to a specific local context.

Rescode clauses contain several standards that potentially impact on vegetation in residential zones. These can be categorised as requirements that relate to non-built spaces which could accommodate vegetation and built elements that would influence the dimensions of those non-built spaces. Permit applications for lots with 'two or more dwellings' residential zones and those that allow residential uses must also include a landscape layout.

Local councils may add in additional details in schedules in their planning schemes. Residential zones may have schedules that refer to specific geographic areas and may include specific additional requirements which affect vegetation for development proposals for two or more dwellings on a lot.

Overlays are planning controls in addition to planning zones and their schedules and are also specific to defined areas. Only one zone applies to a lot, however it may have multiple overlays. Those that relate to vegetation protection are environmental and landscape overlays, while some municipalities also use heritage overlays to protect significant trees.

Many municipalities have their own local laws, which require applications for permits to remove or carry out works to trees on both public and private property. Significant or exceptional tree registers are local law but also only protect individual trees in an ad hoc manner. Nonetheless, local laws may be an additional protection for trees on private property if that scope is defined by individual councils' laws.

5.3.2 Planning zones and overlays

The Victoria Planning Provisions provide the template for residential planning zones (Clause 32) and have the three Rescode clauses that may impact on opportunities for planting vegetation in new developments. Municipalities may have additional requirements that impact on vegetation in their schedules to zones. Schedules provide local councils with the opportunity to customise the standard zoning requirements to a specific local context.

5.3.3 Garden area requirement

The garden area requirement only applies to two residential zones, the General Residential Zone (GRZ, Clause 32.08) and the Neighbourhood Residential Zone (NRZ, Clause 32.09). Introduced in March 2017, local governments must now assess the garden areas in residential development proposals requiring a planning permit on lots over 400 square metres in those two zones. Garden areas do not include driveways, car parking or built areas but may include patios, swimming pools and tennis courts. Three categories apply:

- Lots between 400 and 500 square metres are required to have 25% of their area set aside as garden area
- Lots between 501 and 650 square metres are required to have 30%
- Lots over 650 square metres are required to have 35%
- The garden area requirement is mandatory and in addition to the performance-based requirements of Clause 54 and 55.

5.3.4 Clauses 54 and 55 – residential development standards

These clauses contain standards that potentially impact on vegetation in residential zones. They are requirements relating to non-built spaces that could accommodate vegetation and built elements and thereby influence the dimensions of those non-built spaces. They include:

- Non-built spaces: front, side and rear setbacks, site coverage, permeability, significant trees, private open space, and communal open space
- Built elements: building height, site coverage, access ways and carparks, storage

For example, both Clause 54 and 55 require that dwellings do not cover more than 60% of a lot (unless a municipality has defined a different standard to its residential zones). Clause 54 – 'one dwelling on a lot' – has 'A' standards that are not defined in a separate document but are incorporated throughout that clause, and Clause 55 has 'B' standards that operate in the same way. Clause 55 also requires that development proposals include a landscape layout for three residential zones: GRZ, NRZ, and the Residential Growth Zone (RGZ, Clause 32.07). This requirement also applies to two other zones, the Activity Centre Zone and Commercial Zone 1, which allow residential uses.

5.3.5 Municipality-specific schedules to residential zones

Local councils may add additional details to schedules in their planning schemes. Residential zones may have schedules that refer to specific geographic areas. For example, Banyule City Council has two schedules for its GRZ: Schedule 1 refers to areas that the council 'Accessible areas and Ivanhoe residential diversity areas', and Schedule 2 is for 'Incremental areas.' These areas are spatially distributed throughout the municipality. Moreland City Council has only one schedule for its NRZ, so its requirements apply to any lot in that zone across the municipality.

The schedules to residential zones may include specific additional requirements that affect vegetation in the B13 landscaping requirement of Clause 55 and are therefore only relevant for development proposals for two or more dwellings on a lot. For example, both of Banyule's GRZ schedules require landscape plans that indicate at least one large tree in the front setback, and Schedule 2 has an additional requirement for one tree for every 400 square metres of the lot.

Municipalities that have specific tree requirements in the schedules to their residential zones for development proposals for two or more dwellings are Greater Dandenong (adopted 2013), Banyule (adopted 2014), Stonnington (adopted 2014), Moreland (adopted 2015), Whitehorse (adopted 2015), Brimbank (adopted 2016), Darebin (adopted 2017), and Knox (adopted 2016). Schedule requirements include a minimum number of trees in the total lot, in front setbacks, and in private open space. Specific characteristics of these trees include that they are canopy trees, along with their size, maturity, and species (with Whitehorse noting that trees should preferably be indigenous), and the dimensions of areas to accommodate trees (defined as 'permeable' by Knox City Council).

5.3.6 Planning overlays

Overlays are planning controls that apply in addition to planning zones and are specific to defined areas. While only one zone applies to a lot, it may have multiple overlays. Those that relate to vegetation protection are environmental and landscape overlays, and some municipalities also use heritage overlays to protect significant trees. Of the eleven metropolitan councils that have vegetation-related overlays, most use the Environmental Significance Overlay (ESO), followed by the Vegetation Protection Overlay (VPO). The first is a more general mechanism that requires planning permission for new development on land with environmental constraints and values. The VPO specifically protects vegetation and requires permits for the removal of those plants (with councils able to define specific rules in the schedule to the overlay).

5.3.7 Local laws

Many municipalities have their own local laws that require permits to remove or carry out works to trees on both public and private property. The City of Frankston's local law adds specific tree size requirements for permits for tree works and protection on private property. Local laws may also define tree protection zones within which, for example, trees should not be affected during construction works. Significant or exceptional tree registers are another type of local law that also only protects

individual trees in an ad hoc manner. Nonetheless, local laws may provide additional protection for trees on private property if individual councils define the scope of those laws to include private land.

5.3.8 Building regulations

The National Construction Code (NCC) sets minimum standards for construction, ensuring that new buildings and alterations, and additions to existing buildings, are safe and meet a minimum acceptable level of health, safety, amenity, and sustainability (Council, 2016) .

The NCC is a Council of Australian Governments (COAG) initiative that is managed by the Australian Building Code Board (ABCB). The NCC sets out the minimum standards for all new building works throughout Australia. It is comprised of the Building Code of Australia (BCA) and the Plumbing Code of Australia (Volume 3). The BCA6 includes two volumes: Volume 1 applies to multi-residential, commercial, industrial and public buildings (Class 2 to 9), and Volume 2 applies to low rise residential (Class 1) and non-habitable buildings (Class 10).

The overall goal of the NCC is to 'enable the achievement of nationally consistent, minimum necessary standards of relevant safety (including structural safety and safety from fire), health, amenity and sustainability objectives [in the design and construction of new buildings] efficiently.' The specific goal of the energy performance provisions of the NCC is to 'reduce greenhouse gas emissions'.

5.4 Plan Melbourne 2017 – 2050

Plan Melbourne 2017–2050 (Victoria State Government, 2016) is the Victorian Government's long-term plan to accommodate Melbourne's future growth in population and employment. It applies to the 32 local government areas that are impacted by the Urban Growth Boundary. Where relevant, planning and responsible authorities must consider and apply the strategy under Clause 9 of the VPPS. It includes:

- Principles that underpin a long-term vision for Melbourne
- Outcomes to drive Melbourne as a competitive, liveable, and sustainable city
- Directions that set out how these outcomes can be achieved
- Policies outlining how each outcome will be approached, delivered, and achieved

A separate five-year implementation plan has been developed as a companion document to Plan Melbourne 2017-2050. The implementation plan sets out how Plan Melbourne will be delivered and focuses on the short-term actions essential for successful implementation.

Directions, supporting policies, and actions of note in the context of the metropolitan urban forest strategy include:

Direction 2.1 Manage the supply of new housing in the right locations to meet population growth and create a sustainable city

Plan Melbourne 2017–2050 (Victoria State Government, 2016) articulates the benefits of increasing urban density and provides a framework and directions for how and where urban densification should take place. In relation to housing density, Plan Melbourne makes the following policy observations (with emphasis added in *italics*):

- Melbourne will need 1.6 million new homes over the next 35 years. One of the issues that needs to be addressed includes the *provision of medium and higher-density housing close to jobs and services.*
- For Melbourne to become more equitable and accessible, local residents need to have a *choice of housing* within their neighbourhood.

- It is unsustainable to keep expanding Melbourne's outer-urban growth areas. If the city continues to expand, the *natural environment will be impacted*, commute times to employment and services will grow longer, and *socioeconomic disparities across the city will increase*.

Direction 2.1 states that there are social, economic, transport and environmental benefits of creating a more compact, sustainable city. The environmental benefits of higher-density neighbourhoods are that they create opportunities for efficient use of resources and materials, reduce pollution due to the promotion of sustainable transport, preserve and help fund the maintenance of public open space, create new public open space, reduce overall demand for development land, and avoid expanding suburbs without supporting services.

According to the Plan, since 2014 around 70% of all new housing has been built in established areas, and it provides two projections for growth in Scenarios 1 and 2 below (Table 8).

Table 8 *Housing distribution between established areas and growth area greenfields* (Source: *DELWP, Plan Melbourne 2017-2050)*

Scenario 1 Victoria in Future 2016			
	Net dwellings additions 2015-51		
Region	Total	Established	Greenfields
Inner metro	215,000	215,000	0
Western	385,000	150,000	235,000
Northern	355,000	175,000	180,000
Inner South East	110,000	110,000	0
Eastern	175,000	175,000	0
Southern	310,000	185,000	125,000
Total Melbourne	1,550,000	1,010,000	540,000
	100%	**65%**	**35%**
Scenario 2 Aspirational scenario			
	Net dwelling additions 2015-51		
Region	Total	Established	Greenfields
Inner metro	230,000	230,000	0
Western	365,000	160,000	205,000
Northern	340,000	180,000	160,000
Inner South East	125,000	125,000	0
Eastern	190,000	190,000	0
Southern	300,000	195,000	105,000
Total Melbourne	1,550,000	1,080,000	470,000
	100%	**70%**	**30%**

As such, Plan Melbourne seeks to locate at least 65% of new housing in established areas, and no more than 35% in growth areas, in line with current levels of development and Victoria in Future projections. To achieve this, new development should be directed to areas with appropriate infrastructure, and greater density is supported *where it optimises the value of existing infrastructure*.

However, rather than promoting medium to higher density development across the board, development in growth areas needs to move away from uniform-sized housing lots towards providing both higher and lower density options within each precinct. Additionally, planning for growth areas must deliver a variety of lot sizes and housing types, which can be achieved through:

- larger lots (to provide a sizeable backyard for those families that desire it), and
- options to locate townhouses, low-rise apartments, and aged-care housing close to shopping centres and community facilities.

Direction 5.4 Deliver local parks and green neighbourhoods in collaboration with communities

Direction 5.4 with its attendant policies, 5.4.1 and 5.4.2 addresses greening neighbourhoods, including supporting local open spaces, community gardens and productive streetscapes

Policy 5.4.1 Develop a network of accessible, high-quality, local open spaces

Policy 5.4.2 Support community gardens and productive streetscapes

Direction 6.4 Make Melbourne cooler and greener

Direction 6.4 states: 'To mitigate the impacts of increased average temperatures, Melbourne needs to maintain and enhance its urban forest of trees and vegetation on properties lining transport corridors, on public lands, and on roofs, facades and walls.'

Policy 6.4.1 Support a cooler Melbourne by greening urban areas, buildings, transport corridors and open spaces to create an urban forest

Action 91 Whole-of-government approach to cooling and greening Melbourne

Create urban forests throughout the metropolitan area by:

- Assembling and disseminating spatial data on the green space network, existing tree cover, and surfaces. This data will be the baseline for modelling future greening strategies and their impacts on amenity of our urban areas, including cooling effects.
- Working with local government to establish greening targets for each of the metropolitan regions.
- Liaising with water corporations to identify opportunities for use of alternative water supply to support greening strategies.
- Supporting development of municipal urban forest strategies using a coordinated approach with VicRoads, private road operators, and other public land owners and managers.
- Preparing greening strategies for state-owned public land, including schools, parkland, road, rail, and utility corridors, achieving an appropriate balance between asset protection and urban greening.
- Investigating a targeted grants program to support innovation and actions for greening neighbourhoods.
- Investigating demonstration projects including green roofs, green walls, and landscapes.

- Preparing new guidelines and regulations that support greening new subdivisions and developments via landscaping, green walls, and green roofs, and increase the percentage of permeable site areas in developments.

Direction 6.5 Protect and restore natural habitats

Direction 6.5 states: 'Government and community groups need to work in partnership to map Melbourne's network of green spaces, investigate where the network could be improved, and support the development of the metropolitan urban forest strategy.'

Policy 6.5.1 Create a network of green spaces that support biodiversity conservation and opportunities to connect with nature

The implementation plan notes under 'Initiatives underway' that there are a range of programs and projects such as Living Links, Greening the West, and other initiatives by the People and Parks Foundation that are growing Melbourne's network of green spaces. The *Living Melbourne* brings these initiatives together as part of a metropolitan urban forest strategy for all of Melbourne.'

Action 93 Metropolitan open space strategy

Prepare a metropolitan open space strategy that enhances recreation, amenity, health and wellbeing, species diversity, sustainable water management, and urban cooling across Melbourne. The strategy will include measures to:

- Protect and enhance existing open spaces, underpinned by improved and accessible spatial data.
- Plan for an increase in open space, particularly in areas identified as lacking access to open space, areas undergoing substantial population growth, and areas where the network of green spaces could be expanded or improved.
- Enhance the role, function, and overall community value of currently underutilised public land assets (e.g. utility easements, school grounds) in contributing to the open space network. Further discussion of open space can be found on page 97.

5.5 Protecting Victoria's Environment – Biodiversity 2037

Protecting Victoria's Environment – Biodiversity 2037 (State of Victoria Department of Environment, 2017) is the Victorian Government's plan to stop the decline of biodiversity and achieve overall biodiversity improvement over the next 20 years. It makes the case for increased effort, and defines a new approach to managing biodiversity. The science underpinning the plan seeks to get on top of the problem of Victoria's biodiversity decline and establishes a long-term vision and defines goals. To deliver on these goals, specific targets have been developed.

The Biodiversity Plan presents a long-term vision for Victoria's biodiversity, supported by two goals:

- 'Victorians value nature', and
- 'Victoria's natural environment is healthy'.

The plan sets statewide targets for both goals (Table 11).

Table 11 *Vision, Goals and Targets from Protecting Victoria's Environment – Biodiversity 2037* (State of Victoria Department of Environment, 2017)

VISION: *Victoria's biodiversity is healthy, valued, and actively cared for*	
GOAL: 'Victorians value nature'	GOAL: 'Victoria's natural environment is healthy'
Targets: • By 2037: • All Victorians are connecting with nature. • Five million Victorians are acting to protect the natural environment. • All Victorian Government organisations that manage environmental assets contribute to environmental-economic accounting.	Targets: A net improvement in the outlook across all species by 2037, so that: • No vulnerable or near-threatened species will have become endangered. • All critically endangered and endangered species will have at least one option available for being conserved ex situ or re-established in the wild (where feasible under climate change) should they need it. • We achieve a net gain of the overall extent and condition of habitats across terrestrial, waterway and marine environments.

Supporting these targets are 20 priorities that are discussed and expanded upon in the plan. Of relevance to the metropolitan urban forest strategy are Chapters four and five.

Chapter 4 A healthy environment for healthy Victorians

Key points:

- A healthy environment is fundamental to a healthy society.
- More needs to be done to enable Victorians to access nature, including increasing people's awareness and understanding of the environment and how they can act to protect it.
- We all need to work together – across government, business, and the community – to ensure that we have a healthy environment to support a healthy society.

Priority 4 - increase opportunities for all Victorians to have daily connections with nature.

Initiatives by the government to deliver this priority will include:

- Establish reliable baseline information about Victorians' current connection with the natural environment.
- Identify less engaged groups, and understand barriers to engagement to increase opportunities to connect with nature.
- Implement and promote programs to increase opportunities for people to connect with nature, including programs to get Traditional Owners out on Country.
- Promote opportunities for additional 'greening' in established urban areas through broadening standards for public open-space planning provisions in the context of long-term change in population and community needs.

Chapter 5 Linking our society and economy to the environment

This chapter emphasises that the State's natural capital enhances Victoria's ability to generate wealth. It notes that the Victorian Government is planning to integrate the United Nations System of Environmental-Economic Accounting (SEEA) into reporting, decision making, and evaluation of social, economic and environmental outcomes and trade-offs. This will ensure that a form of environmental-economic accounting is used that will help to reveal the linkages between natural capital, society and the economy, and identify risks and opportunities for Victoria. The plan also highlights that Victoria will increasingly need to protect and utilise its environmental assets to deliver co-benefits for the economy and environment, and to help communities become more liveable, resilient, and climate-adapted.

In reference to creating more liveable and climate-adapted local communities, Biodiversity 2037 notes that:

> *'In recognition of the benefits provided by green infrastructure, local governments are planting urban forests and using integrated water management to cool built-up environments by reducing the urban heat island effect, while also removing harmful air pollutants, filtering water, and providing opportunities for people to connect with nature, particularly where native plants are used. Resilient Melbourne, Greater Melbourne's first resilience strategy developed as part of the 100 Resilient Cities Program, aims to ensure a viable, sustainable, liveable, and prosperous city long into the future, and to enable strong natural assets and ecosystems alongside a growing population.*
>
> *Currently, there is no clear 'ownership' of green infrastructure, so green infrastructure projects have historically been conducted opportunistically rather than strategically. Local governments are now leading the way in urban greening, but a whole-of-government approach is needed to ensure the broad range of benefits are realised'. (p. 32)*

Priorities and initiatives arising from this chapter include:

Priority 6 - Embed consideration of natural capital into decision making across the whole of government, and support industries to do the same.

Initiatives by the government and partners to deliver this priority will include:

- In the short term, prepare and publish a set of environmental accounts for the department and portfolio partners and contribute to relevant national initiatives.
- In the longer term, integrate the system of environmental-economic accounting into reporting across the whole-of-government, and into decision making and evaluation of social, economic and environmental outcomes and trade-offs.
- Partner with the broader business community and industry leaders to promote the increased adoption of environmental-economic accounting.

Priority 7 - Help to create more liveable and climate-adapted communities.

Initiatives by the government and partners to deliver this priority will include:

- Use environmental-economic accounting business applications to help government, industry and communities understand the benefits of protecting environmental assets in both the built and natural environments.
- Develop guidelines or standards to give government, industry and communities an increased ability to better realise the benefits of green infrastructure.

- Provide information that enables communities to plan for climate change, compare trade-offs, and create a vision for their region that delivers a strong regional economy and a healthy natural environment.
- Improve the liveability of Victorian cities and towns – for example, by implementing Plan Melbourne 2017–2050.

Priority 8 - Better care for and showcase Victoria's environmental assets as world-class natural and cultural tourism attractions.

Initiatives by the government and partners to deliver this priority will include:

- Work in collaboration with the community to ensure that Victoria's iconic natural assets keep offering opportunities to connect with nature, and provide support to local economies.
- Develop policies and approaches to ensure that tourism to sensitive areas is sustainable and its impacts are minimised.
- Build on existing work to promote Victoria's environmental assets at statewide, regional and local levels as world class natural and cultural tourism attractions.
- Continue to provide world class nature-based experiences through Zoos Victoria, Museum Victoria, Parks Victoria, the Royal Botanic Gardens Victoria, Philip Island Nature Park, and alpine resorts.

5.6 Water for Victoria

The State of Victoria's Department of Environment, Land, Water and Planning 2016 Water for Victoria strategy (Victoria State Government. Department of Environment, Land, Water and Planning, 2016) is the Victorian Government's strategy for the long-term management of Victoria's water supplies. It sets out the following vision:

'*Water is fundamental to our communities. We will manage water to support a healthy environment, a prosperous economy, and thriving communities, now and into the future'.*

The strategy clearly recognizes the two challenges of climate change and population growth, both of which are central to the management of Melbourne's urban forest. It stresses that Victoria is becoming warmer and drier, and that, as the fastest growing state in Australia, Victoria's population is projected to reach 10.1 million by mid-century. Climate change means that Victoria can expect more extreme weather events including droughts, floods, and heatwaves. It also means that, by 2065, annual streamflows to some catchments could reduce by around 50%, resulting in less available water storages.

The strategy identifies 15 projects:

1. Yarra River as a priority waterway for long-term investment
2. Yarra River Protection Project (Birrarung)
3. 2015 Environmental Water Recovery Targets for the Werribee and Maribyrnong Rivers
4. Aboriginal Water Program – mapping Wurundjeri cultural values on the Yarra River
5. Invest $16 million in Werribee and Bacchus March irrigation modernisation
6. $300,000 Federal Government funding for the Coldstream Recycled Water Pipeline feasibility study
7. $91,500 Federal Government funding – South East Melbourne Regional Water Plan pre-feasibility study

8. Reactivate Target 155 for Melbourne
9. South central Victoria market trial
10. Green priority spaces for community health and wellbeing using stormwater and recycled water
11. Better designed suburbs and new developments to support liveable communities
12. Integrated water management forums for Werribee, Maribyrnong, Yarra, Dandenong and Westernport
13. Improved planning arrangements linking to Plan Melbourne and the Yarra River Protection Project
14. Commence long-term water resource assessment for southern Victoria in 2018
15. Review the Central Region Sustainable Water Strategy in late 2016

5.7 Yarra River Action Plan *Wilip-gin Birrarung murron (2017)*

The Yarra River Action Plan (Victorian State Government, Department of Environment, Land, Water & Planning , 2017) outlines Victorian Government's response to the Yarra River Protection Ministerial Advisory Committee (Yarra MAC) Discussion Paper, Protecting the Yarra River (Birrarung). The health of the Yarra River, its tributaries and riparian vegetation is critical for sustaining Melbourne's urban forest. The plan is guided by five objectives:

1. A healthy river

- *Wilip-gin Birrarung murron* (keep the Birrarung alive)
- protect and improve the health of the river and its riparian ecology
- increase the resilience of the river to the impacts of climate
- change and population growth
- protect the health of Port Phillip Bay

2. The Great Yarra Parklands

- recognise the network of parklands along the Yarra as part of the one integrated living whole natural asset
- improve community access to, and movement along and on, the river
- increase opportunities to enjoy the river parklands for people of all ages and abilities
- create more destinations and improve visitor experiences

3. A culturally diverse riverscape

- in partnership with Traditional Owners, recognise, protect and promote both intangible and tangible cultural values
- recognise, protect, and promote heritage values
- quality public places for recreation, celebration and coming together

4. Securing the Yarra footprint

- protect iconic and naturalistic river landscapes from inappropriate development
- connect communities and places along the river with trails and cycling corridors

- recognise the importance of the river to the economic prosperity and vitality of Melbourne and the Yarra Valley

5. Modern governance

- provide visionary leadership and a long-term commitment to delivering the vision and its goals
- partner with the Traditional Owners in the management of natural resources
- align the activities and decisions of responsible agencies and councils
- prioritise collaborative community processes

These objectives are supported by 30 actions. The key actions will be to:

- establish a new Ministerial Advisory Council with a membership that includes experts, stakeholder group representatives, and at least two Wurundjeri Council representatives
- establish Melbourne Water as the lead agency for developing and coordinating implementation of a Yarra Strategic Plan
- coordinate funding to ensure the Yarra Strategic Plan is properly resourced
- require independent auditing and reporting on the implementation of the Yarra Strategic Plan
- establish regular reporting on the environmental condition of the Yarra River and its parklands
- translate the names of geographical sites along the Yarra into the Traditional Owner language

5.8 Healthy Waterways Strategy 2018–28

The Healthy Waterways Strategy 2018-28 (Melbourne Water, 2013) is a shared strategy across Melbourne Water, state and local government, water corporations and the community for the rivers, creeks, estuaries and wetlands of the Port Phillip and Westernport Region. The Port Phillip and Westernport region has a total area of almost 13,000 km^2 extending from Lancefield and Whittlesea in the North to Ballan in the West, Warburton and Drouin in the East and Werribee, Frankston and Cowes in the South. The Strategy has been collaboratively developed with over 630 individuals and 220 organisations, including Traditional Owners from the Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation, the Bunnarong Land Council Aboriginal Corporation and the Wathaurong Aboriginal Corporation.

The Strategy provides a single framework to protect and improve the waterways' environmental, social, economic and cultural values to the community and meet the obligations for waterway and stormwater management, as outlined in relevant State, national and international legislation, policy and agreements. The Strategy sets:

- A long-term vision for the region:

  Healthy and valued waterways are integrated with the broader landscape, and enhance life and liveability. Waterways connect diverse and thriving communities of plants and animals; provide amenity to urban and rural areas, and engage communities with their environment; and are managed sustainably to enhance environmental, economic, social and cultural values.

- A 50-year vision and a set of 20-50 year goals for each of the five major catchments in the region: Werribee, Maribyrnong, Yarra, Dandenong and Westernport.
- 10-50 years targets for the nine key values that have been chosen as representative measures and their 21 underpinning waterway conditions. These targets are set at the sub-catchment,

estuary and wetland levels. The six key environmental values are fish, frogs, macroinvertebrates, platypus, vegetation and birds. The three key social values are amenity, recreation and community connection.

- 45 ten-year regional performance objectives for cultural values, economic values, responding to climate change, responding to urban stormwater and the pressures of urbanisation, community place-making, managing pollution, rural and agricultural activities, litter, vegetation management, controlling pest plants and animals, governance, engaged and knowledgeable community and stakeholders, monitoring, evaluation, reporting and adaptive management.
- Over 900 ten-year sub-catchment, estuary and wetlands performance objectives, that cover areas such as stormwater and water quality, access, recreation, habitat and water for the environment.

The Healthy Waterways Strategy prioritises and aligns effort and investment at catchment and sub-catchment levels to ensure they contribute to broader, regional goals and outcomes. The Strategy contributes to thriving communities that are resilient and connected through nature in many of its approaches and objectives. These include:

- Recognising that the waterways of the region play a growing role in the provision of green open spaces for a growing population.
- Creating cooler, greener and more liveable urban environments through revegetation and as part of managing excess stormwater. Key related ten-year performance objectives of the Strategy include:
  - revegetating an additional 1,888 kilometres of canopy cover alongside waterways
  - maintaining 1,352 kilometres of high and very high quality vegetation and 3,620 kilometres of continuous vegetated buffers
  - reusing an additional 83GL per year of stormwater - which will represent a large source of alternative water for fit-for-purpose use such as irrigating green spaces
  - infiltrating an additional 23 GL per year of stormwater- which will keep more water in the landscape and soils
  - increasing access to and along waterways by 179 kilometres.
- Protecting headwaters to ensure they are retained as features in the landscape for environmental, social, cultural and economic benefits.
- Building capacity to encourage organisations and individuals to contribute to a knowledge collective, share resources, capability, skill, and leverage each other's efforts.
- Developing environmental-economic accounts for the region's waterways to demonstrate returns on catchment and waterway investment and better reflect the values provided by waterways in decision-making.
- Better understanding and tracking the multiple benefits of waterway investments, and use this knowledge to collaborate across organisations to achieve improved amenity, recreation and community connection.
- Using a place-based approach to reinvigorate waterways and the land around them, thereby enhancing the health and wellbeing of local communities and flora and fauna. An example of

this is the transformation of modified waterways to create more natural, community-loved spaces.

- Protecting and enhancing sites of biodiversity significance
- Conducting a robust multidisciplinary research program that covers liveability, community engagement, and social research; stormwater management and flooding; water quality; streamside vegetation and instream habitat; wetlands and estuaries.
- Protecting existing and restoring habitats through the removal of fish barriers, investigating and mitigating the risk of erosion, investigating options to make more water available for environmental flows or protecting refuge reaches.

5.9 Climate change framework and climate change adaptation plan

5.9.1 Victoria's Climate Change Framework

Victoria's Climate Change Framework (Department of Environment, Land, Water & Planning, 2016) articulates the Victorian Government's long-term vision and approach to climate change. The framework sets out:

- a vision for a net zero emissions, climate-resilient Victoria in 2050
- how action on climate change aligns with jobs, cost of living, and health
- the steps to be taken to commence the transition
- the challenges to be addressed to move to a net zero emissions economy
- how Victoria is preparing for a changing climate

5.9.2 Victorian Climate Change Act 2017

On 23 February 2017, the *Climate Change Bill* passed through the Victorian Parliament, creating a new *Climate Change Act*. The *Climate Change Act 2017:*

- establishes a long-term emissions reduction target of net zero by 2050
- requires five yearly interim targets to keep Victoria on track to meet the long-term target
- introduces a new set of policy objectives and an updated set of guiding principles to embed climate change in government decision making
- requires the government to develop a Climate Change Strategy every five years to set out how Victoria will meet its targets and adapt to the impacts of climate change (from 2020)
- requires adaptation action plans for key systems that are either vulnerable to the impacts of climate change or essential to ensure Victoria is prepared (from 2021)
- establishes a pledging model to reduce emissions from government's own operations and from across the economy (from 2020)
- establishes a system of periodic reporting to provide transparency and accountability, and ensure that the community remains informed.

The *Act* commenced operation in November 2017 and sits alongside other key Victorian Government energy and climate change initiatives, including Victoria's Climate Change Framework, Victoria's Climate Change Adaptation Plan 2017-2020, and the Victorian Renewable Energy Targets (VRET).

5.9.3 Victoria's emissions reduction target

The Victorian Government has committed to a long-term target of net-zero greenhouse gas emissions from Victoria by 2050. This will be achieved by reducing greenhouse gas emissions as far as possible and offsetting any remaining emissions through activities such as tree planting. Interim targets are to be set every five years to 2050.

Victoria's renewable energy targets (VRET) are that:

- at least 25% of the state's electricity comes from Victorian-built renewable generation by 2020, and
- at least 40% of its electricity is renewably generated by 2025.

Delivered by Sustainability Victoria, TAKE2 is the state's collective climate change program, supporting individuals, government, business, and other organisations to help our state achieve net zero emissions by 2050. The Victorian Government has two pledges:

1. Operational pledge – that Victorian Government departments will take action to reduce operational emissions including energy use, transport and waste, and find cleaner, greener ways to operate. This will contribute to one whole-of-government pledge.
2. Sector pledges – that Victorian Government policies and programs promote lower emissions across the state's economy in key sectors, including energy, agriculture, transport, and waste.

The Victorian Government also invites voluntary pledges being made by local governments, businesses, community groups and individuals to reduce their emissions and contribute to meeting Victoria's emissions reduction targets.

5.9.4 Victorian Climate Change Adaptation Plan 2017–2020

The Adaptation Plan (Victoria State Government Department of Environment, Land, Water and Planning, 2017) sets out the Victorian Government's priorities for leading and supporting the community to adapt to climate change from 2017 to 2020.

It explains how the Government will support adaptation and coordinate action on different scales (local, regional, and sectoral). It also outlines how the Government is already addressing adaptation and lays out the Government's plan for strengthening these mechanisms and filling important gaps. The Government's priorities over the life of the Adaptation Plan are to:

- More effectively manage risks to the Government's own assets and services from climate change by assessing the Government's current capabilities and practices and addressing whole-of-government risks and impacts in a more coordinated way.
- Help the community to understand and manage the risks and impacts of climate change
- Encourage adaptation action across all policy areas and sectors of the economy by strengthening the consideration of climate change in the policy and regulation of health and human services, emergency management, the natural environment, agriculture, water and the built environment, as well as introducing a new sector-based approach to adaptation planning in preparation for sectoral Adaptation Action Plans under the proposed new legislative framework.

The adaptation plan reiterates the six broader goals:

- Leadership
- Collaboration and shared responsibility
- Connected, resilient, and safe communities

- A healthy environment
- Priority support for vulnerable communities
- A flexible and prosperous economy

5.10 Victorian Public Health and Wellbeing Plan 2015–2019

The vision of the Victorian Public Health and Wellbeing Plan 2015–2019 (Victorian State Government , 2015) is for a Victoria free of the avoidable burden of disease and injury so that all Victorians can enjoy the highest attainable standards of health, wellbeing, and participation at every age.

The Plan outlines the Victorian Government's key priorities to improve the health and wellbeing of all Victorians, particularly the most disadvantaged. As many chronic diseases and injuries are preventable, the plan focuses on supporting healthy living from the early years and throughout life.

The importance of maintaining healthy environments is also a focus of the Plan, as is responding to the impacts of climate change on people's health and wellbeing. The Plan emphasises improving health and wellbeing via a range of public health approaches. These are:

- supporting healthy and sustainable environments, which is critical to the health and wellbeing of the current and future generations. Particular attention is given to climate change adaptation and air, food, and water quality.
- place-based approaches, which emphasise the significance of location to health and focus on a range of settings in which people spend their time.
- people-centred approaches, which focus on building strong partnerships between health services and other networks, and emphasise prevention, empowerment, education, and health literacy.

5.11 Victorian Memorandum for Health and Nature

In April 2017, the Minister for Health and the Minister for Energy, Environment and Climate Change jointly signed a memorandum on health and nature (Victorian State Government Department of Environment, Land Water and Planing , n.d.). The memorandum highlighted the current health issues facing communities and the role that nature has in mitigating their impact. Victoria's parks, open spaces, waterways and green urban spaces provide many benefits, including physical, psychological, social and cultural well-being. These benefits are acknowledged in key policy platforms such as the Victorian Public Health and Wellbeing Plan 2015–19, and Protecting Victoria's Environment: Biodiversity 2037. There are many opportunities to expand activities in this area via collaboration with the health sector, environment, and parks, business, research, planning, and policy to expand impactful nature in our cities. The Victorian Government is committed to supporting health and nature programs.

5.12 Aboriginal Heritage Act 2006

The *Aboriginal Heritage Act 2006* acts primarily to provide for the protection of Aboriginal cultural heritage in Victoria. The *Aboriginal Heritage Regulations 2007* give effect to the *Act*. The *Regulations* prescribe standards, set out the circumstances in which a Cultural Heritage Management Plan should be prepared, and sets the fees for an application for a cultural heritage permit. The *Regulations* should be read in conjunction with the *Act*.

This act allows several different organisations, groups, and bodies to connect and better enforce and preserve policies regarding Aboriginal Heritage. It does this through:

- the establishment of a Victorian Aboriginal Heritage Council to provide a state-wide voice for Aboriginal people, and to advise the Minister for Aboriginal Affairs on issues relating to the management of cultural heritage
- the introduction and management of a system of Registered Aboriginal Parties that allows for Aboriginal groups with connections to country to be involved in decision making processes around cultural heritage. There are three Registered Aboriginal Parties applicable to metropolitan Melbourne – the Bunurong Land Council Aboriginal Corporation, Wathaurung Aboriginal Corporation (trading as Wadawurrung (Wathaurung)), and the Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation (Wurundjeri).
- raising public awareness and understanding of Aboriginal cultural heritage in Victoria
    - establishing an Aboriginal Cultural Heritage Register to record Aboriginal culture
- the establishment of cultural heritage management plans and cultural heritage permit processes to manage activities that may impact Aboriginal cultural heritage. Where areas are identified that may impact on Aboriginal cultural heritage, it is important to engage early and often to both seek the hopes, wants, and desires of the Traditional Owners and to ensure that works at each location are tailored to take account of particular local conditions.
- a system of cultural heritage agreements to support the development of partnerships around the protection and management of Aboriginal cultural heritage
- providing appropriate sanctions and penalties to prevent harm to Aboriginal cultural heritage
- clearer powers for Authorised Officers and Aboriginal Heritage Officers, and increased

5.12.1 Registered Aboriginal Parties

Registered Aboriginal Parties (RAPs) are organisations that hold decision-making responsibilities under the *Aboriginal Heritage Act 2006* for protecting Aboriginal cultural heritage in a specified geographical area. The Victorian Aboriginal Heritage Council determines which applicants will be registered as RAPs. Figure 20 provides a map of the Registered Aboriginal Parties. There are currently 11 RAPs in Victoria, listed in alphabetical order below:

- Barengi Gadjin Land Council Aboriginal Corporation
- Bunurong Land Council Aboriginal Corporation
- Dja Dja Wurrung Clans Aboriginal Corporation
- Eastern Maar Aboriginal Corporation
- Gunaikurnai Land and Waters Aboriginal Corporation
- Gunditj Mirring Traditional Owners Aboriginal Corporation
- Martang Pty Ltd
- Taungurung Clans Aboriginal Corporation
- Wathaurung Aboriginal Corporation
- Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation
- Yorta Yorta Nation Aboriginal Corporation

These RAPs currently cover approximately 60% of Victoria. Three of these Registered Aboriginal Parties have decision making powers under the *Aboriginal Heritage Act 2006* including the Bunurong Land Council Aboriginal Corporation, the Wathaurung Aboriginal Corporation, and the Wurundjeri Land and Compensation Cultural Heritage Council Aboriginal Corporation

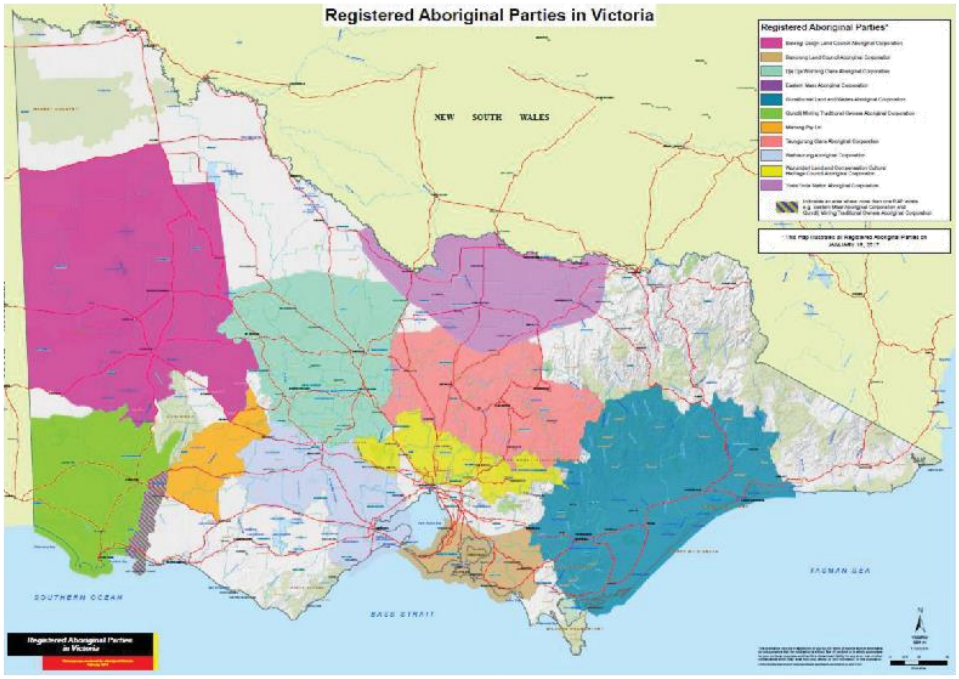


Figure 18 *Registered Aboriginal Parties in Victoria (Source: DELWP https://www.vic.gov.au/system/user_files/Documents/av/Statewide_Appointed_RAPs-wv-23MAR18_150dpi.pdf)*

5.13 Melbourne's Open Space

Melbourne's reputation as one of the world's most liveable cities stems from a history of integrated urban planning that has viewed open space as central. Open space reflects what we value and how we live. An example of early planning for open space for a growing city can be seen in Figure 19. This critical green infrastructure includes our parks and gardens, our walking and cycling trails, beaches and foreshores, piers and jetties, and our plazas and civic areas.

Figure 19 Metropolitan Town Planning Commission open space map 1929 (Source: DELWP)

Plan Melbourne 2017-2050 (Victoria State Government, 2016) identified the need for a new generational open space plan for metropolitan Melbourne, and this work is now underway. The new open space plan will guide investment in open space development in partnership with 32 local governments that manage just over 50% of the public open spaces. The intention is to correct some of the current inequities in provision and access to open space across our suburbs, and to tackle the escalating heat island and broader sustainability issues. The plan will look at where investment in existing open space could optimise its use and relevance for a multicultural and aging community, and examine how improvements in design and quality can make more of what we have. This will include reviewing existing and surplus public land to see how it might be repurposed. A further consideration will be where land should be reserved for future generations, its governance, and the onging funding of open space.

The remainder of this section provides some basic analysis of the spatial distribution and area of Melbourne's open space assets. This analysis is based on the information available through the Victorian Planning Authority's **Metropolitan Open Space Network Portal**.

Public land, including the street and road network, constitutes an important component of the urban forest. As a public asset, the majority of this land is managed and maintained by local and Victorian government authorities. As a result, because of the discrete number land managers, the proportion of total vegetation and total tree canopy can be more easily influenced on public land than it can on private land. The public land data have been broken down by total municipality, and for the area inside the urban growth boundary, as per the Victorian Environmental Assessment Council's (VEAC) Metropolitan Melbourne Investigation (2011). As noted in the VEAC report, the proportion of public land managed by local government in comparison to other agencies changes substantially once the urban growth boundary is taken into consideration. The following three tables provide an analysis.

- Table 12 provides a breakdown of open space by category and ownership for the total metropolitan area and as a proportion within the urban growth boundary. It indicates that the total amount of open space across all 32 municipalities is 33%. This figure drops to 19% within the urban growth boundary. There are significant differences in both the proportion of open space by category and ownership when the urban growth boundary is considered, and this affects the management influence that can be exerted.
- Table 13 summarises key statistical differences in open space ownership across all metropolitan partnership boundaries compared to within the urban growth boundary.
- Table 14 provides an analysis of open space type and ownership measured by hectares (ha) and percentage (%) across Melbourne subregions, and as a proportion within the urban growth boundary. Open space definitions are available from the Victorian Planning Authority: https://vpa.vic.gov.au/wp-content/uploads/2017/06/Metropolitan-Open-Space-Strategy-Open-Space-Category-Definitions.pdf

Inside the urban growth boundary, significant increases in public land can be seen for parks and gardens, sports fields, organised recreation spaces, and recreation corridors. Declines are apparent in conservation reserves and natural and semi-natural open space. These occur on large areas of crown land outside the urban growth boundary, predominantly in the peri-urban municipalities of Whittlesea, Nillumbik, Yarra Ranges, Cardinia, Mornington Peninsula, and Wyndham.

Significant decreases in open space ownership inside the urban growth boundary occur for crown land (from 80.61% to 37.93%), and increases proportionally for local government (from 7.22% to 31.82%). Less significant increases in ownership are also indicated for state government, public authority, and private open space. Local government, managers of crown land, as well as public authorities and state government organisations, can therefore significantly influence the structure of the urban forest. It is also worth noting that 10.89% is private open space that may contribute to maintaining and enhancing biodiversity and the community's health and wellbeing.

Figure 20 provides a map of open space ownership by distribution across metropolitan Melbourne. Crown land, and land owned by local government, clearly makes up large proportions of the total open spaces within the urban growth boundary and broadly across the matrix of the metropolitan area.

Table 12 Open space by category and ownership for the total metropolitan area and as a proportion within the urban growth boundary (Source: Statistics derived from the Victorian Planning Authority's Metropolitan Open Space Network Portal)

	Total area of 32 Local Government Areas		Inside the urban growth boundary	
	Hectares	%	Hectares	%
Total Area of 32 Local Government Areas	**893,648**		**285,549**	
Total Open Space	**296,228**	**33%**	**53,744**	**19%**
Open Space Categories				
Parkland and garden	8,061	2.72%	6,329	11.78%
Conservation reserves	132,128	44.60%	6,247	11.62%
Natural and semi natural	120,942	40.83%	19,712	36.68%
Recreation corridor	1,162	0.39%	733	1.36%
Sports fields and organised	15,856	5.35%	11,052	20.56%
Civic square and promenade	29	0.01%	29	0.05%
Government schools	2,906	0.98%	2,788	5.19%
Non-Government schools	2,862	0.97%	2,500	4.65%
Cemeteries	1,159	0.39%	880	1.64%
Services and utilities reserves	8,689	2.93%	1,216	2.26%
Tertiary institutions	904	0.31%	828	1.54%
Transport reservations	1,518	0.51%	1,418	2.64%
Public housing reserves	11	0.00%	11	0.02%
Total Open Space	**296,229**	100.00%	**53,744**	100.00%

Table 13 Summary of key statistical differences in open space ownership across all metropolitan partnership boundaries as compared to within the urban growth boundary

Open Space Ownership	Total area of 32 Local Government Areas		Inside the Uurban Growth Boundary	
	Ha	%	Ha	%
Federal	22	0.01	3	0.01
Crown	238,796	80.61	20,382	37.93
State Government	14,146	4.78	3,508	6.53
Local Government	21,392	7.22	17,102	31.82
Public Authority	10,501	3.54	5,155	9.59
Private	8,981	3.03	5,854	10.89

Attachment 1 - Living Melbourne Technical Report

Table 14 *Open space type and ownership measured by hectares (ha) and percentage (%) across Melbourne sub-regions (Source: Statistics derived from the Victorian Planning Authority's Metropolitan Open Space Network Portal)*

	Inner region		Inner South East		Western		Northern		Eastern		Southern		Total 32 LGA		Inside UGB	
	Totals	%	Totals	%	Totals	%	Total	%	Total	%	Total	%	**Grand Total**	%	**Sub-Total**	%
Total Area of Sub-Region (Ha)	**7,858**		**16,251**		**133,656**		**167,959**		**291,364**		**276,559**		**893,648**		**285,549**	
Total Open Space (Ha)	**2,357**		**2,568**		**33,050**		**36,340**		**172,576**		**49,338**		**296,228**		**53,744**	
Open Space		**30**		**16**		**25**		**22**		**59**		**18**		**33**		**19**
Crown road reserves (Estimate)															**37,121**	**13**
Open Space Categories																
Parkland and garden	628.39	26.67	357.39	13.92	1872.37	5.67	1567.98	4.31	1492.22	0.86	2142.08	4.34	8,060	2.72	6,329	11.78
Conservation reserves	0.00	0.00	12.02	0.47	13158.80	39.81	14151.66	38.94	83914.45	48.62	20891.33	42.34	132,128	44.60	6,247	11.62
Natural and semi natural	707.20	30.01	550.80	21.45	6756.87	20.44	15050.85	41.42	81002.37	46.94	16874.11	34.20	120,942	40.83	19,712	36.68
Recreation corridor	2.45	0.10	5.24	0.20	194.89	0.59	190.66	0.52	352.44	0.20	416.22	0.84	1,162	0.39	733	1.36
Sports fields and organised recreation	735.32	31.20	1123.97	43.77	2825.65	8.55	2381.62	6.55	3044.50	1.76	5745.29	11.64	15,856	5.35	11,052	20.56
Civic square and promenade	12.31	0.52	2.09	0.08	1.23	0.00	11.32	0.03	1.27	0.00	1.02	0.00	29	0.01	29	0.05
Government schools	55.91	2.37	156.33	6.09	557.05	1.69	634.47	1.75	717.22	0.42	785.46	1.59	2,906	0.98	2,788	5.19
Non Government schools	53.28	2.26	251.43	9.79	368.96	1.12	877.50	2.41	571.62	0.33	739.26	1.50	2,862	0.97	2,500	4.65
Cemeteries	51.17	2.17	45.80	1.78	225.67	0.68	361.07	0.99	88.44	0.05	387.09	0.78	1,159	0.39	880	1.64
Services and utilities reserves	2.20	0.09	8.30	0.32	6800.67	20.58	392.42	1.08	753.05	0.44	732.81	1.49	8,689	2.93	1,216	2.26
Tertiary institutions	74.56	3.16	23.02	0.90	150.73	0.46	364.62	1.00	167.67	0.10	123.34	0.25	904	0.31	828	1.54
Transport reservations	23.69	1.01	31.39	1.22	136.95	0.41	355.36	0.98	471.10	0.27	499.77	1.01	1,518	0.51	1,418	2.64
Public housing reserves	10.10	0.43	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11	0.00	11	0.02
Open Space Ownership																
Federal	0.00	0.00	0.00	0.00	1.67	0.01	1.34	0.00	0.00	0.00	18.91	0.01	22	0.01	3	0.01
Crown	1,840.92	78.12	662.68	25.81	13,935.34	42.16	24,468.27	67.33	162,850.45	94.36	35,038.67	20.30	238,796	80.61	20,382	37.93
State Government	92.94	3.94	159.33	6.21	11111.25	33.62	1125.05	3.10	853.39	0.49	804.17	0.47	14,146	4.78	3,508	6.53
Local Government	65.54	2.78	1009.28	39.31	4633.45	14.02	5347.18	14.71	4209.59	2.44	6127.33	3.55	21,392	7.22	17,102	31.82
Public Authority	39.15	1.66	47.35	1.84	1030.79	3.12	3590.22	9.88	2827.79	1.64	2965.98	1.72	10,501	3.54	5,155	9.59
Private	101.95	4.33	597.81	23.28	1631.16	4.94	1409.32	3.88	1441.56	0.84	3799.33	2.20	8,981	3.03	5,854	10.89
No Data	216.08	9.17	91.32	3.56	706.66	2.14	398.15	1.10	393.57	0.23	583.39	0.34	2,389	0.81	1,740	3.24
Total Open Space (Ha)	**2,356.58**	**100.00**	**2,567.77**	**100.00**	**3,3050.31**	**100.00**	**36,339.53**	**100.00**	**17,2576.34**	**100**	**49,337.79**	**29**	**296,228**	**100**	**53,744**	**100.00**

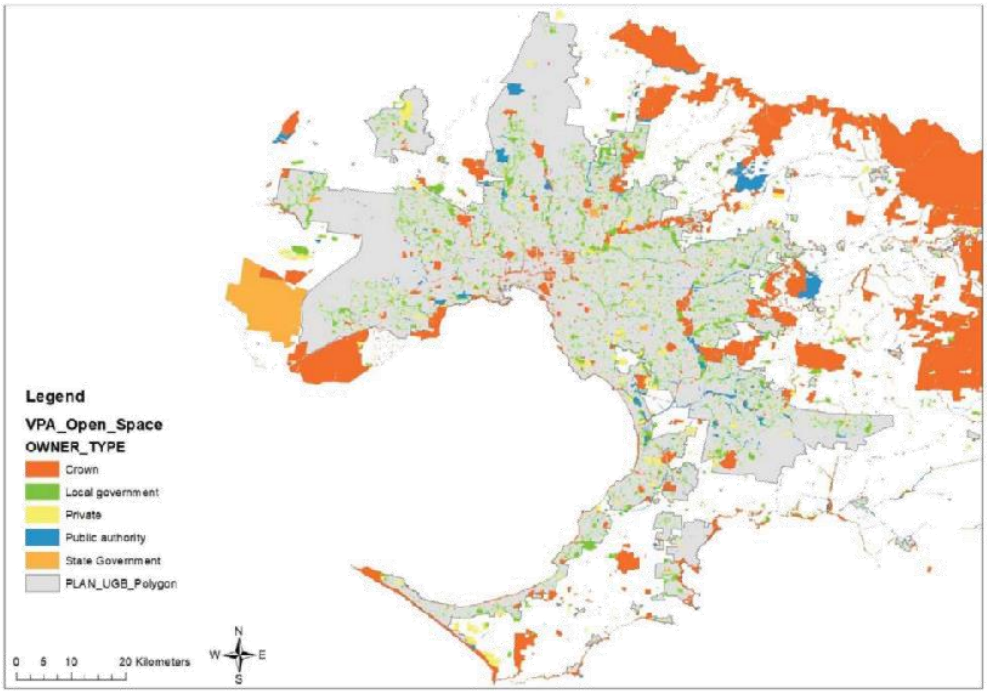


Figure 22 Distribution and ownership of open space across metropolitan Melbourne

6 Metropolitan Melbourne's urban forest

Figure 21 provides an overall illustration of metropolitan Melbourne's urban forest, overlayed on local government boundaries and the urban area of Melbourne. The existing urban area has been isolated in the analysis because it provides the existing vegetation cover in the urban area and discounts the statistical biases that occur when the large tracts of non-urban land (e.g. open rural land and state forests) are considered as part of the analysis. Please note that the existing urban area data layer for 2015 was used for this vegetation analysis. Following the completion of the analysis a 2017 urban area layer was identified. However, as the land area difference between the 2015 and 2017 data layers is approximately 2.2% it was considered that this difference was insufficient to warrant re-running the analysis. Any future analysis should use the most recent urban area data layer.

For the purposes of the analysis, 'understorey' is defined as vegetation with a height of less than 3 metres. 'Canopy' is defined as vegetation with a height above 3 metres.

The mapped area is limited by the data available at the time of processing. Most notably, this comprises the area between the Princes Highway and Princess Freeway at Pakenham, and the townships east of Pakenham within the Cardinia Shire Council. For this reason, the analysis should be considered in terms of 'mapped' vegetation.

6.1 An overview of metropolitan Melbourne's urban forest

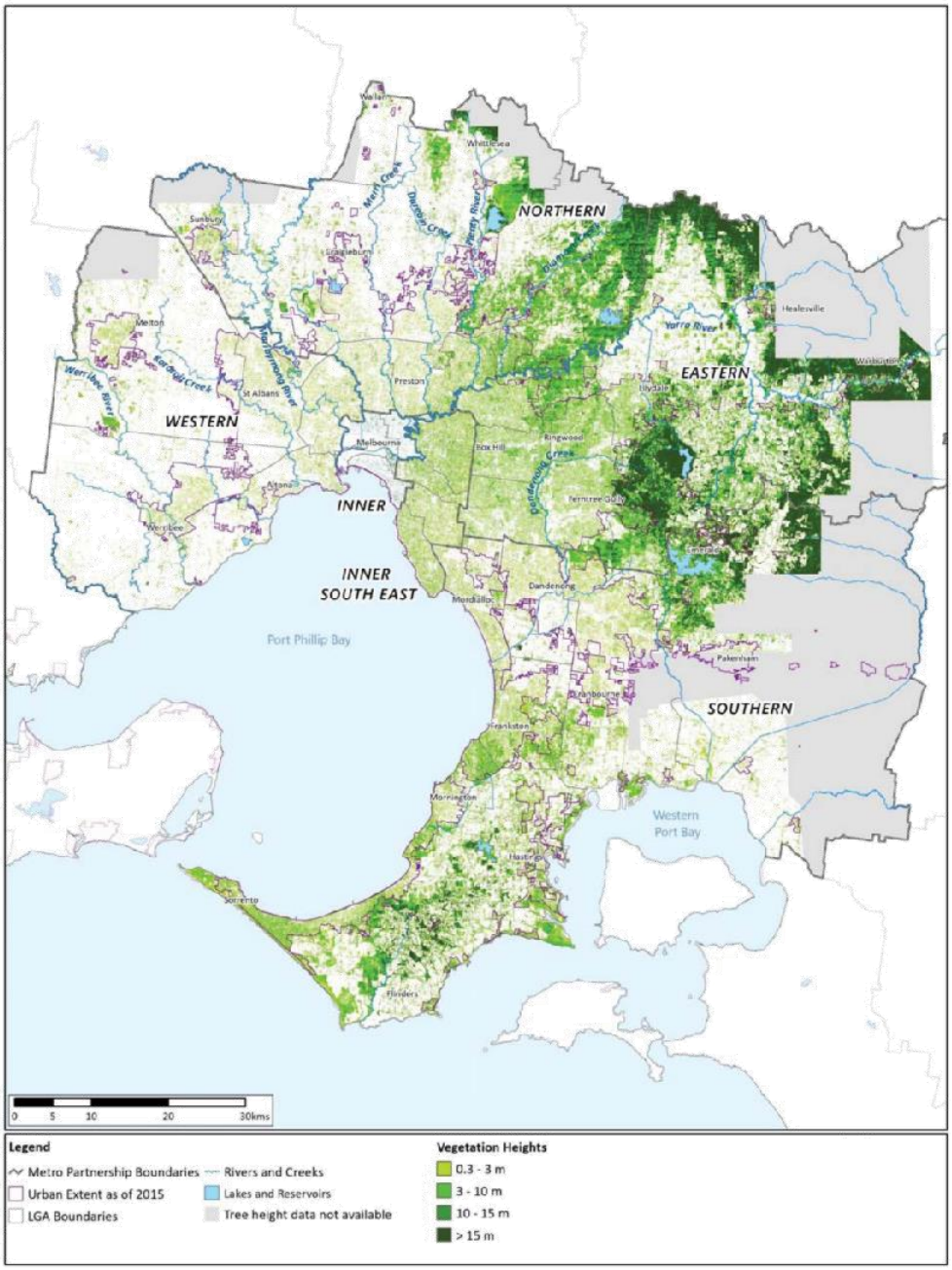


Figure 23 Metropolitan Melbourne's urban forest

Data Sources: 'Vicmap Admin', 'Road Network - Vicmap Transport', 'Watercourse Network 1:25,000 Vicmap Hydro', Copyright ©The State of Victoria, Department of Environment, Land, Water & Planning 2018; 'Urban Extent 2015' Copyright ©The State of Victoria, Department of Environment, Land, Water and Planning, 2016; LIDAR Projects: '2008-9 Greater Melbourne Urban LiDAR Project'; 'Victorian Coastal LiDAR Level 3 Classification (Port Phillip & Western Port)'; '2011 Melbourne & Surrounds Forest Structure LiDAR'; '2005-6 Outer South East Melbourne'; Copyright ©The State of Victoria, Department of Environment, Land, Water & Planning 2018. Satelite imagery: November 2016-March 2017, Copyright 2018 DigitalGlobe Incorporated; Mapping software: Courtesy of Trimble® eCognition® Essentials

6.1.1 Distribution of canopy cover across the metropolitan urban area

Table 15 provides a regional breakdown of the distribution of canopy cover across the existing urban area of metropolitan Melbourne. As a proportion of all vegetation, the urban area has a total canopy cover of 15.4%. In each region, percentage canopy cover is highest in the Eastern (25.2%) and Inner South East (21.7%) Regions, with the Southern (16.4%), Inner (12.5%), and Northern (12.1%) Regions providing lower canopy cover levels. Canopy cover is lowest in the Western Region (4.2%).

Table 15 Canopy cover within the existing urban area of Melbourne

Metropolitan Regions	Trees canopy 3 m to 15 m (%)
Eastern	25.2
Inner South East	21.7
Southern	16.4
Inner	12.5
Northern	12.1
Western	4.2
Total Metropolitan tree canopy	**15.4**

Table 16 provides a breakdown of the percentage cover of vegetation between zero metres and 15+ metres in height for each municipality by partnership region, and within the existing urban area of Melbourne. The total percentage of vegetation is lowest in the Inner Region (30.8%) and highest in the Eastern Region (57.2%). Nillumbik Shire Council (44.6%) has the highest percentage of canopy cover and the City of Wyndham the lowest (2.6%), other than the small portion of Mitchell Shire Council that is represented.

The City of Melton has the highest percentage of grass cover (32.7%), while the City of Stonnington has the lowest (5.5%).

In terms of shrub cover, Mornington Peninsula Shire has the highest percentage (20.8%), and City of Melbourne has the lowest (5.5%).

Understorey vegetation is highest in the Southern (38.6%), Eastern (32%), and Western Regions (30.3%), and lowest in the Inner Metropolitan Region (18.4%).

There is relatively little vegetation above 15 metres (large trees) across the urban area, with coverage generally ranging from 0.1–2.9%. Exceptions are the Yarra Ranges Council (7.7%), and the Cardinia Shire Council, with a relatively high proportion of large trees (14.1%).

It is also worth noting that small trees and shrubs, collectively, provide the majority of vegetation cover in all regions other than the Western Region, and in most municipalites.

Attachment 1 - Living Melbourne Technical Report

Table 16 Percentage cover of vegetation between 0 m and 15+ m in height within the existing urban area of Melbourne by metropolitan region

Metropolitan Region	Local Government Area	0 - .30 m Grass	.30 – 3 m Shrub	3 m – 10 m Small tree	10 m – 15 m Medium tree	15 m+ Large tree	Understorey 0m – 3m	Canopy 3m - 15m	Canopy plus shrub .30-3m + 3m- 15m	Total Vegetation
Eastern	KNOX	20.40%	18.20%	14.00%	2.60%	0.90%	38.60%	17.50%	35.70%	56.10%
	MANNINGHAM	12.70%	20.10%	20.80%	6.20%	2.80%	32.70%	29.80%	49.90%	62.50%
	MAROONDAH	11.20%	18.90%	22.60%	5.00%	1.40%	30.10%	29.00%	47.90%	59.20%
	MONASH	11.90%	18.20%	13.70%	1.80%	0.40%	30.10%	15.90%	34.10%	45.90%
	WHITEHORSE	8.50%	17.80%	19.60%	3.50%	0.80%	26.30%	23.90%	41.70%	50.20%
	YARRA RANGES	13.00%	18.40%	22.10%	8.10%	7.70%	31.30%	37.80%	56.20%	69.10%
Eastern Total		13.40%	18.60%	18.40%	4.40%	2.40%	32.00%	25.20%	43.80%	57.20%
Inner Metro	MELBOURNE	12.00%	5.50%	6.20%	2.40%	1.30%	17.50%	9.90%	15.40%	27.40%
	PORT PHILLIP	9.30%	9.40%	11.30%	2.10%	0.40%	18.70%	13.90%	23.30%	32.50%
	YARRA	10.00%	9.80%	11.40%	2.70%	1.70%	19.80%	15.80%	25.60%	35.70%
Inner Metro Total		10.80%	7.60%	8.80%	2.40%	1.20%	18.40%	12.50%	20.10%	30.80%
Inner South East	BAYSIDE	11.10%	18.60%	17.50%	2.00%	0.40%	29.70%	19.90%	38.50%	49.60%
	BOROONDARA	8.20%	18.30%	21.70%	3.90%	1.10%	26.50%	26.80%	45.10%	53.20%
	GLEN EIRA	8.50%	18.40%	13.00%	1.10%	0.20%	26.80%	14.30%	32.70%	41.10%
	STONNINGTON	5.50%	13.80%	19.40%	3.30%	0.70%	19.30%	23.40%	37.20%	42.70%
Inner South East Total		8.50%	17.70%	18.30%	2.70%	0.70%	26.10%	21.70%	39.40%	47.80%
Northern	BANYULE	12.60%	17.20%	18.70%	3.90%	1.40%	29.80%	24.00%	41.20%	53.80%
	DAREBIN	13.40%	14.50%	8.10%	1.10%	0.40%	27.90%	9.50%	24.00%	37.40%
	HUME	18.20%	9.10%	3.90%	0.60%	0.10%	27.20%	4.60%	13.70%	31.90%
	MITCHELL	18.10%	0.10%	0.10%	0.00%	0.00%	18.20%	0.10%	0.20%	18.30%
	MORELAND	10.90%	12.90%	6.50%	0.60%	0.20%	23.80%	7.30%	20.20%	31.10%
	NILLUMBIK	8.00%	14.50%	31.10%	10.60%	2.90%	22.40%	44.60%	59.10%	67.10%
	WHITTLESEA	17.00%	9.40%	3.30%	0.50%	0.10%	26.30%	3.90%	13.30%	30.20%
Northern Total		14.60%	12.10%	9.40%	2.00%	0.60%	26.70%	12.10%	24.20%	38.70%
Southern	CARDINIA	21.40%	13.50%	12.80%	7.10%	14.10%	34.90%	34.10%	47.60%	69.00%
	CASEY	29.80%	18.50%	6.70%	0.80%	0.20%	48.20%	7.70%	26.20%	55.90%
	FRANKSTON	16.10%	20.20%	16.90%	2.40%	0.50%	36.30%	19.80%	40.00%	56.10%
	GREATER DANDENONG	19.90%	12.60%	4.80%	0.70%	0.10%	32.50%	5.70%	18.30%	38.10%
	KINGSTON	16.00%	15.30%	7.60%	0.90%	0.50%	31.30%	9.00%	24.30%	40.30%
	MORNINGTON PENINSULA	17.70%	20.80%	23.10%	3.30%	0.90%	38.50%	27.30%	48.10%	65.80%
Southern Total		20.80%	17.80%	13.00%	2.10%	1.20%	38.60%	16.40%	34.20%	55.00%
Western	BRIMBANK	16.50%	10.50%	3.40%	0.40%	0.40%	27.10%	4.20%	14.70%	31.30%
	HOBSONS BAY	17.20%	10.60%	3.80%	0.30%	0.30%	27.80%	4.40%	15.00%	32.10%
	MARIBYRNONG	12.50%	11.00%	5.00%	0.50%	0.40%	23.50%	5.90%	16.90%	29.40%
	MELTON	32.70%	12.50%	2.80%	0.20%	0.00%	45.20%	3.10%	15.60%	48.30%
	MOONEE VALLEY	11.50%	13.50%	7.10%	0.60%	0.20%	25.10%	7.90%	21.40%	33.00%
	WYNDHAM	21.40%	9.00%	2.30%	0.20%	0.10%	30.40%	2.60%	11.60%	33.10%
Western Total		19.50%	10.80%	3.60%	0.40%	0.20%	30.30%	4.20%	15.00%	34.50%
Grand Total		**16.30%**	**15.10%**	**11.90%**	**2.30%**	**1.10%**	**31.40%**	**15.40%**	**30.50%**	**46.80%**

Figure 22 provides the percentage of three simplified vegetation classes, trees (> 3 m in height), shrubs (0.3-3 metres) and grasses (< 0.3 m) by total urban area and partnership region. Across the urban area, the overall proportional coverage is similar, but between and within regions the proportions vary significantly. The figure also indicates the high proportion of grass in the Western and Southern Regions, and he high proportion of trees in the Eastern and Inner South East Regions.

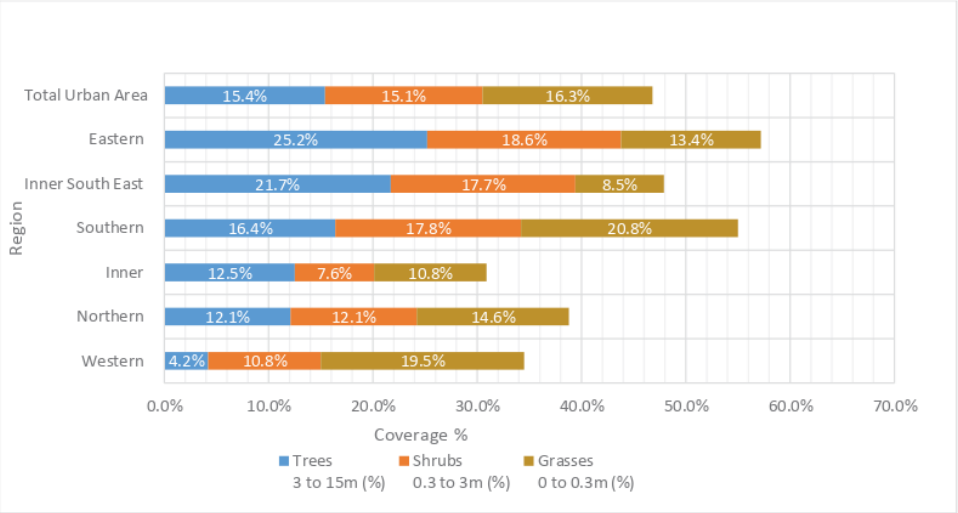


Figure 22 Percentage cover of simplified vegetation types (grass, shrubs, trees) within the urban area by metropolitan region

6.1.2 Vegetation analysis by land use type

Modified Victorian planning zone groups were used to analyse vegetation percentage (canopy cover) by land use type. For the urban area of Melbourne, these are shown in Table 17 and represented graphically in Figure 23. When focussing only on canopy cover, it is apparent that by far the greatest contribution is made by residential zones, followed at some distance by public land and road reserves.

Table 17 Percentage canopy cover by land use type across the urban area metropolitan Melbourne

Planning zone group	% total canopy cover
Residential	58%
Public	18%
Road reserves	16%
Special Purpose	4%
Rural	2%
Industrial	1%
Commercial	1%
Commonwealth	0.3%*

Note: Commonwealth land included to indicate the land use type is considered but effective canopy is zero % is rounding was consistently applied.

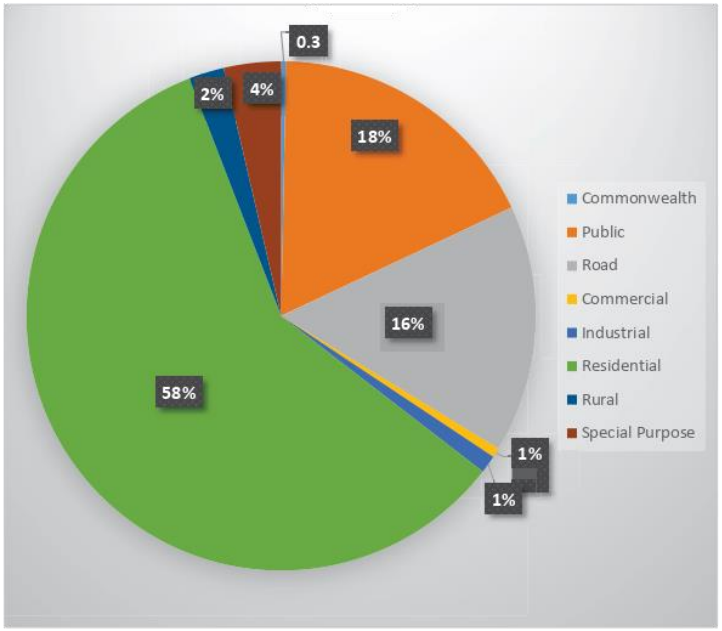


Figure 23 *Percentage canopy cover by land use type across the urban area of metropolitan Melbourne.*

The following tables and graphs provide a region-by-region analysis of the above breakdown by land use type. Land zoned for residential purposes provides the highest level of canopy cover in all regions except the Inner Region. Public land and road reserves commonly provide the next largest proportional representation of cover. In the Inner Region, canopy cover on public land is 44% and on roads reserves 25%.

Please note that land use type (e.g. Commonwealth or rural) with a canopy contribution of zero is not illustrated in the associated pie graph.

Table 18 Percentag canopy cover by land use type across the urban area of the Eastern Region

Planning zone group	% total canopy cover
Residential	61%
Public	17%
Road	14%
Rural	4%
Special Purpose	2%
Commercial	1%
Industrial	1%
Commonwealth	0%

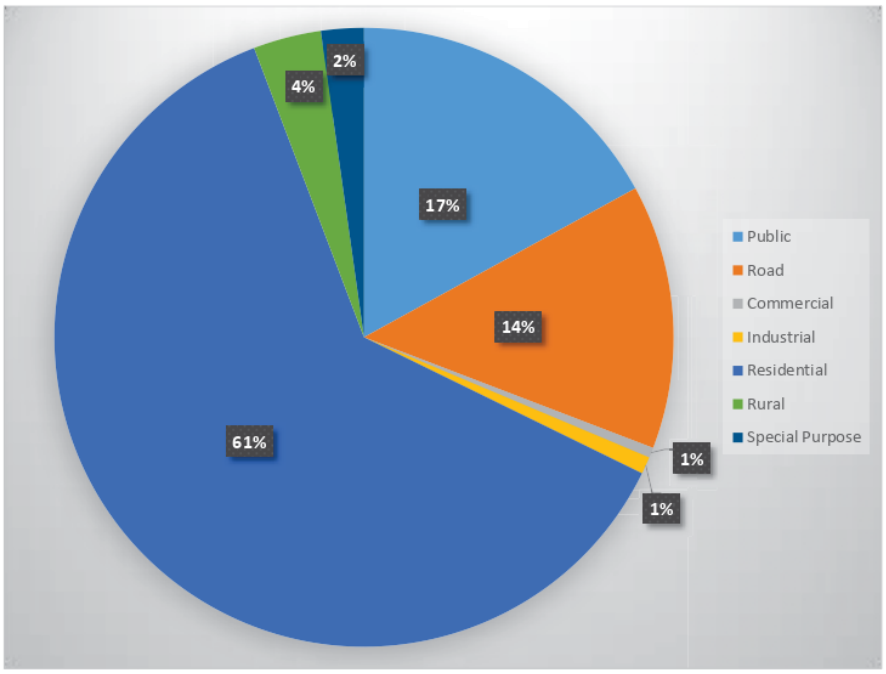


Figure 24 *Percentage canopy cover by land use type across the urban area of the Eastern Region*

Table 19 Percentage canopy cover by land use type across the urban area of the Inner Region

Planning zone group	% total canopy cover
Public	44%
Road	25%
Residential	23%
Special Purpose	5%
Commercial	2%
Industrial	1%
Rural	0%
Commonwealth	0%

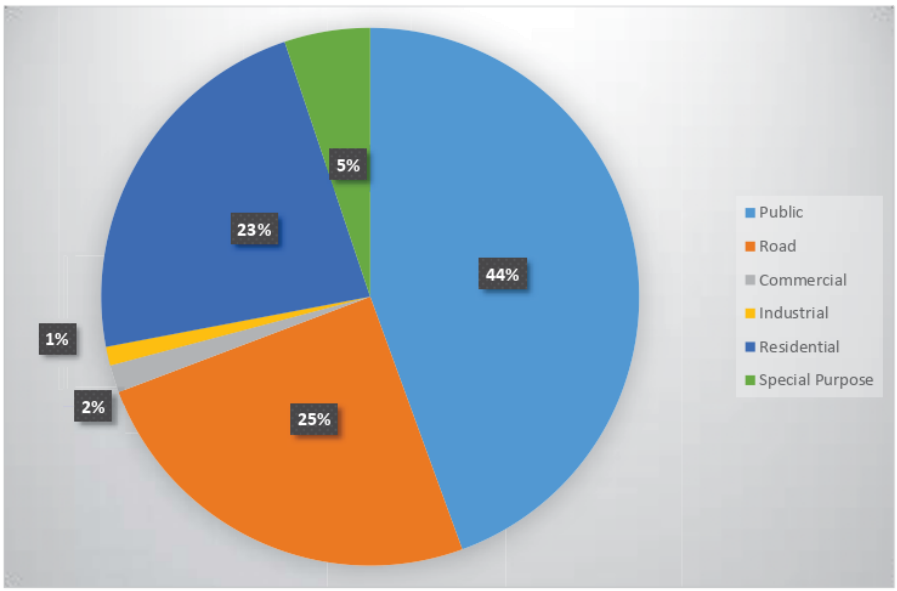


Figure 25 Percentage canopy cover by land use type across the urban area of the Inner Region

Table 20 Percentage canopy cover by land use type across the urban area of the Inner South East Region

Planning zone group	% total canopy cover
Residential	60%
Road	22%
Public	15%
Special Purpose	2%
Commercial	1%
Industrial	0%
Rural	0%
Commonwealth	0%

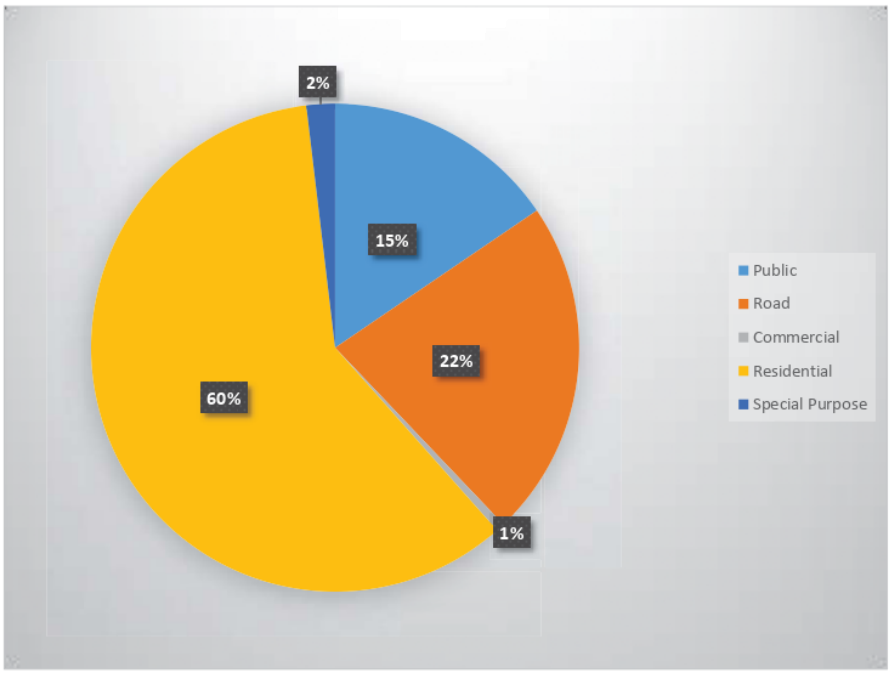


Figure 26 Percentage canopy cover by land use type across the urban area of the Inner South East Region

Table 21 Percentage canopy cover by land use type across the urban area of the Southern Region

Planning zone group	% total canopy cover
Residential	62%
Road	15%
Public	13%
Special Purpose	6%
Rural	2%
Commercial	1%
Industrial	1%
Commonwealth	0%

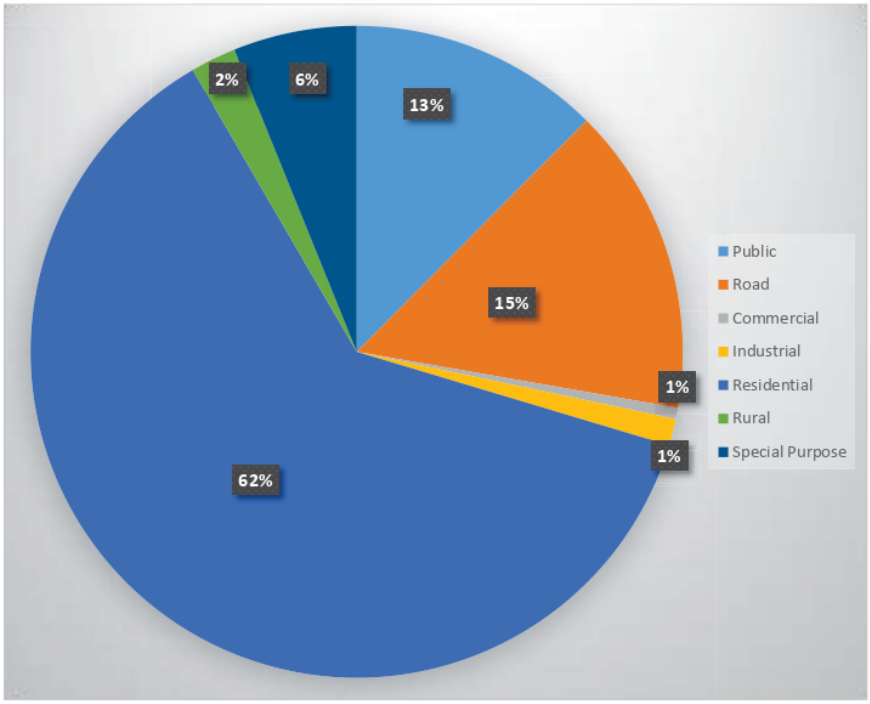


Figure 27 Percentage canopy cover by land use type across the urban area of the Southern Region

Table 22 Percentage canopy cover by land use type across the urban area of the Northern Region

Planning zone group	% total canopy cover
Residential	56%
Public	22%
Road	14%
Special Purpose	3%
Rural	2%
Commercial	1%
Industrial	1%
Commonwealth	1%

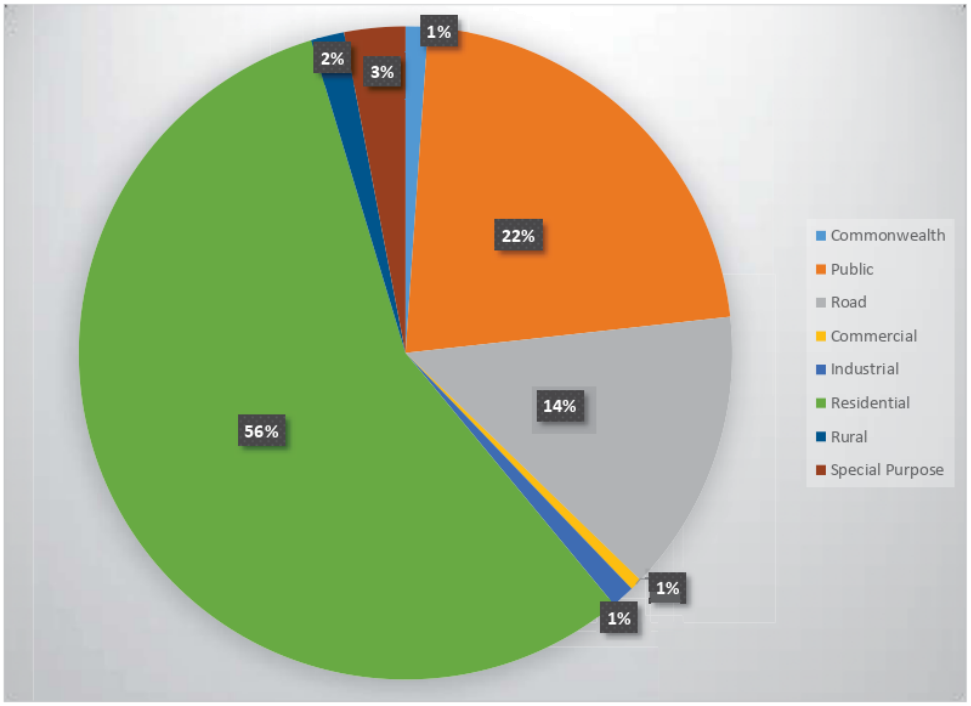


Figure 28 Percentage canopy cover by land use type across the urban area of the Northern Region

Table 23 Percentage canopy cover by land use type across the urban area of the Western Region

Planning zone group	% total canopy cover
Residential	43%
Public	28%
Road	18%
Industrial	4%
Special Purpose	4%
Commonwealth	2%
Commercial	1%
Rural	0%

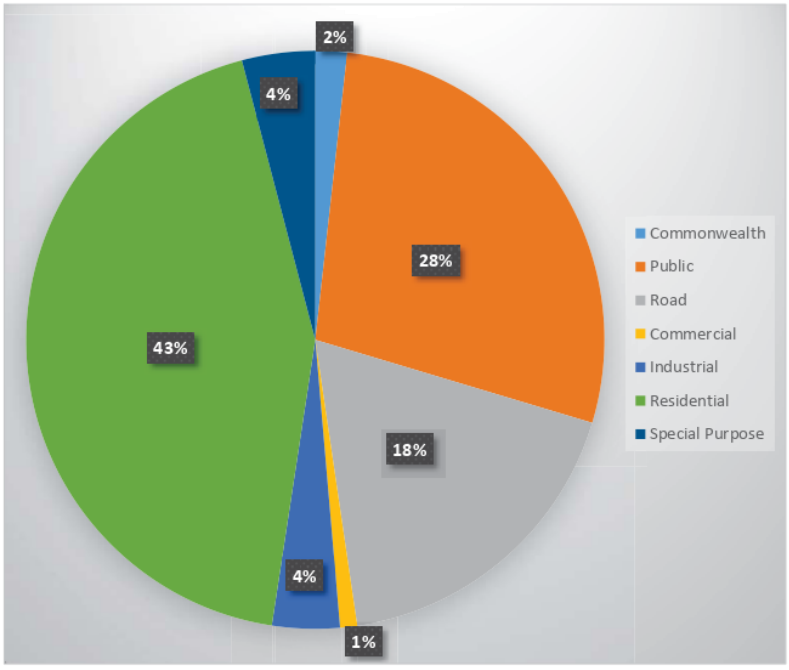


Figure 29 Percentage canopy cover by land use type across the urban area of the Western Region

Figures 30 to 35 provide regional maps of the vegetation height and distribution across Melbourne. Please note that while grass cover (the lowest vegetation height class – 0 to 0.3 metres) is an essential element of the vegetation across Melbourne, the maps do not display grass cover as it provides a distorting effect.

6.2 Methods and accuracy

6.2.1 Source data

The source data utilised for this project were Victorian Government LiDAR datasets (2005-2006, 2008–2009, 2011-12 and 2012–2013), Digital Terrain Model (DTM) and Digital Surface Model (DSM), both with 1 m resolutions, as well as a 2 m resolution Digital Globe 8-Band satellite imagery dataset (2016-2017). None of supplied datasets included accuracy metadata. The spatial accuracy was visually reviewed by comparing the three datasets against each other, and overlaid over a combination of ESRI's basedata imagery and Google Earth (when older aerials were required). Overall the quality was good, and no considerable deviations were found. The following comments were made about the source data.

Lidar- DSM: The DSM dataset was of good quality, yet 10 artefacts were found, which had to be accepted and were deemed not large enough to warrant further actions

Lidar- DTM: The DTM was provided in tiled format, which was mosaiced using ArcGIS prior to analysis.

Satellite Imagery: The Digital Globe satellite imagery was reviewed against existing online imagery and was estimated to be about 1-2 pixels within the comparison imagery. A small strip of data is missing in the North East of the dataset. The satellite imagery was particularly impacted by the dates and times of the imagery being captured. In some circumstances there was as much as two years between the adjoining aerial data sets. This was evident not only in the visual Red Green Blue components of the raster, but also in the Normalised Difference Vegetation Index (NDVI values). These can fluctuate considerably between scenes if recorded at different times of the year when moisture and vegetation is abundant, or not, as it would be after a dry period.

Overall, the source data provided was well suited and of good quality (Ltd, 2018). The data was processed using Trimble eCogntion software. The process involved setting up a workflow that uses various GIS tools and filters to create the final deliverables.

6.2.2 Accuracy

The Overall Accuracy of the Metro Melbourne Urban Vegetation Height Dataset is 82.0% (Table 24), with Producer's Accuracy ranging from 74.3% (Height Class 4) to 90.1% (Height Class 1), and User's Accuracy ranging from 80.0% (Height Class 5) to 85.0% (Height Class 4). When the height classes are condensed down to belonging to Understory Vegetation (< 3.0 m) or Tree Canopy (> 3.0 m), the Overall Accuracy increases to 94.5%, with Producer's Accuracy and User's Accuracy for individual classes above 90% (Table 25).

Table 24 Accuracy by Height Class

	DSM Height Value – equivalent class						Producer's Accuracy
	1	**2**	**3**	**4**	**5**	**Total**	
1	**885**	96	1	0	0	982	90.1%
2	196	**1113**	90	2	0	1401	79.4%
3	20	114	**835**	34	5	1008	82.8%
4	2	0	110	**436**	39	587	74.3%
5	2	0	4	41	**176**	223	78.9%
Total	1105	1323	1040	513	220	4201	
User's Accuracy	80.1%	84.1%	80.3%	85.0%	80.0%		**82.0%**

Table 25 Accuracy By Condensed Height Class (Understory < 3.0 m, Tree Canopy > 3.0 m)

	DSM Height Value – equivalent class			Producer's Accuracy
	1,2	3,4,5	Total	
< 3.0 m	2290	93	982	96.1%
> 3.0 m	138	1680	1818	92.4%
Total	2428	1773	4201	
User's Accuracy	94.3%	94.8%		94.5%

Attachment 1 - Living Melbourne Technical Report

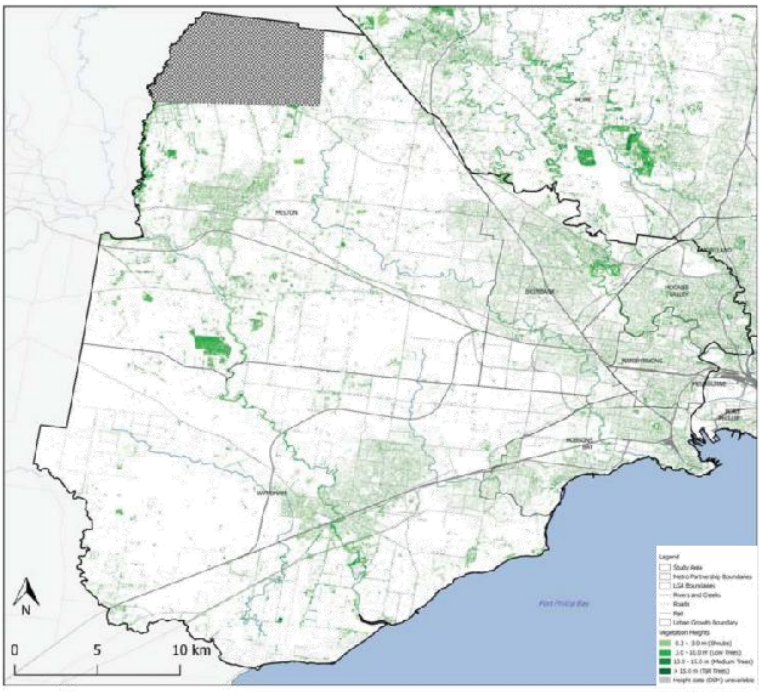


Figure 30 Western Region

Attachment 1 - Living Melbourne Technical Report

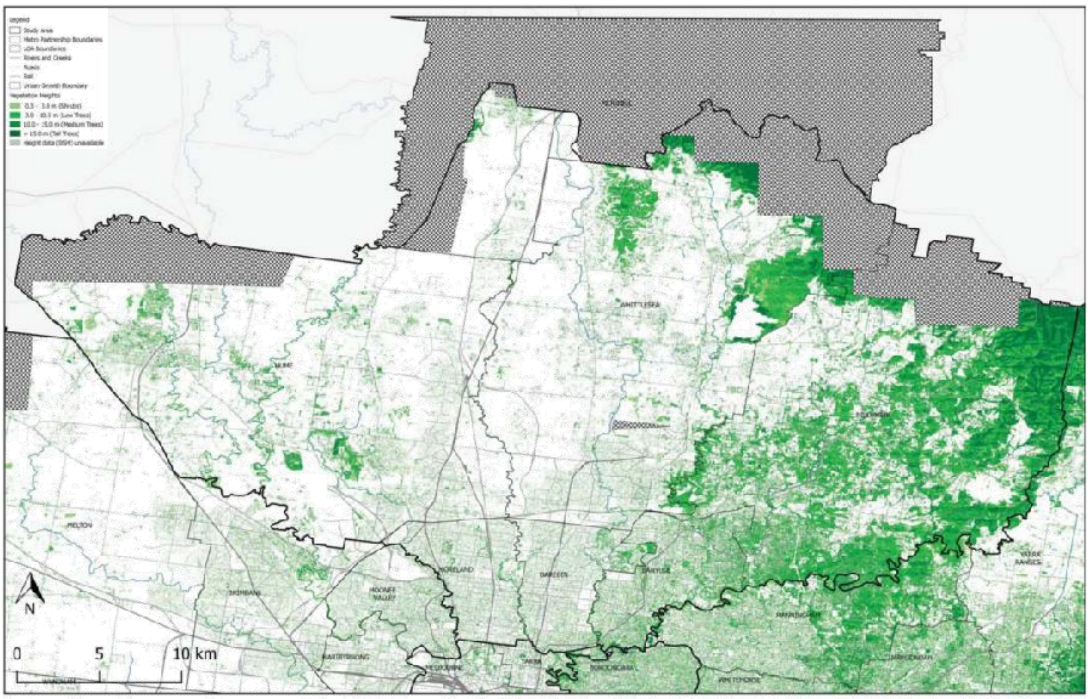


Figure 31 *Northern Region*

Attachment 1 - Living Melbourne Technical Report

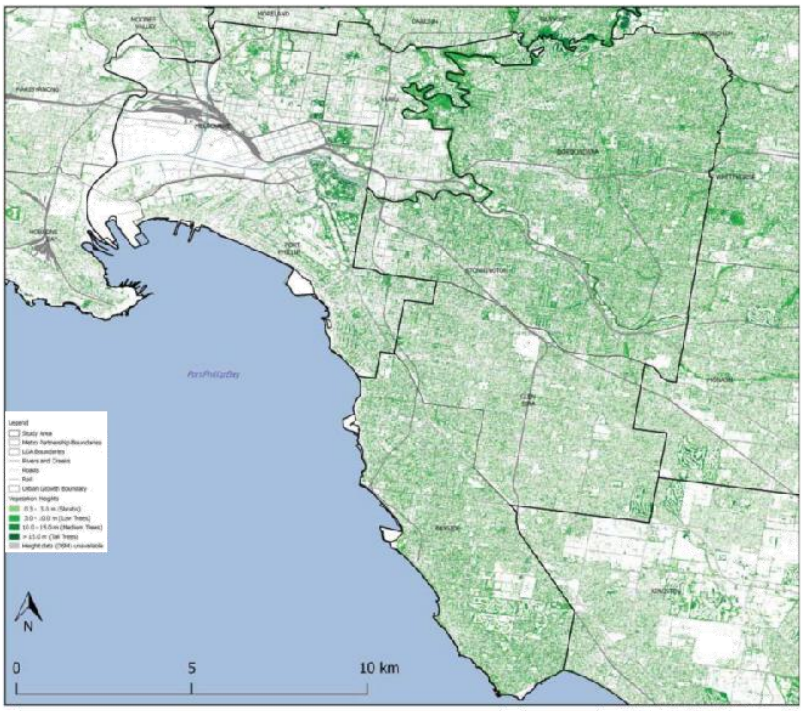


Figure 32 Inner and Inner South East Region

Attachment 1 - Living Melbourne Technical Report

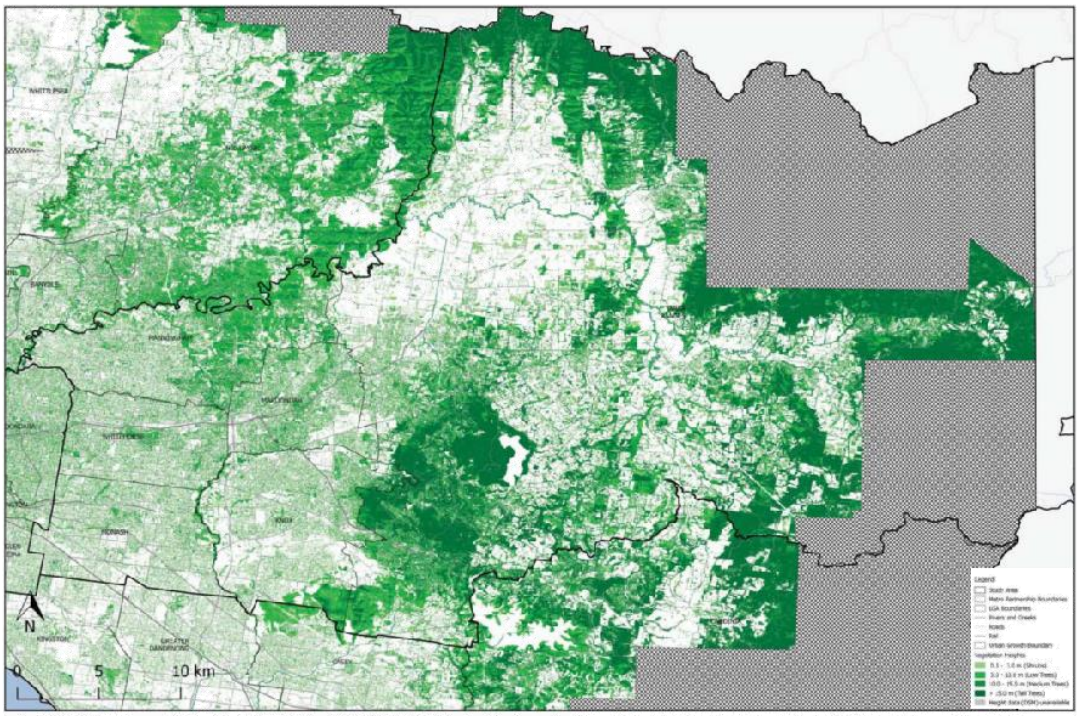


Figure 33 Eastern Region

Attachment 1 - Living Melbourne Technical Report

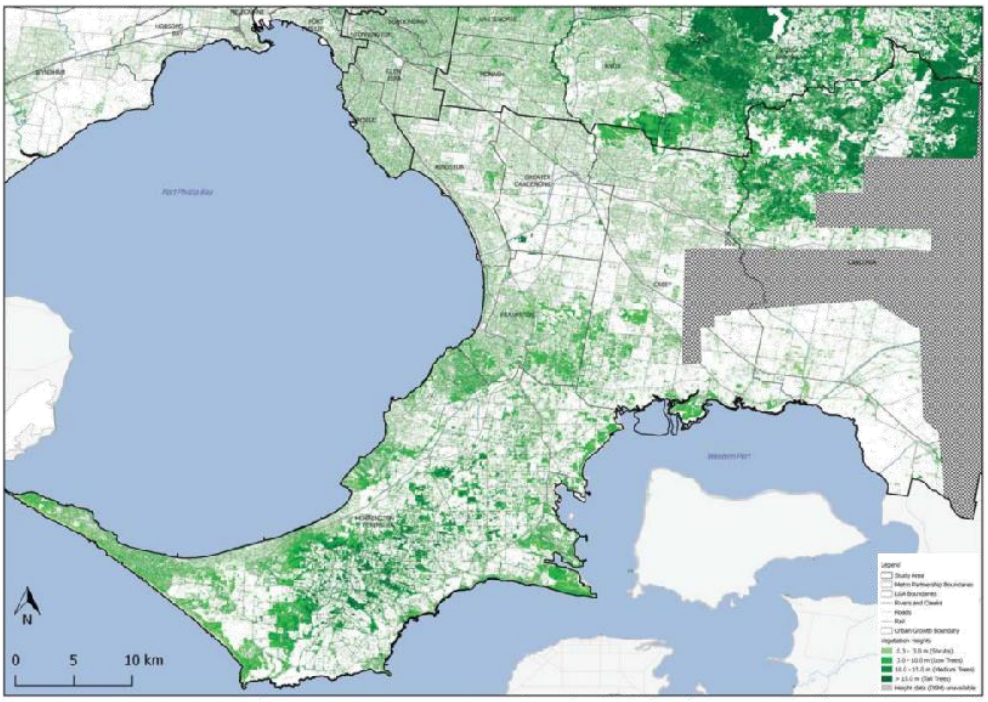


Figure 34 Southern Region

6.2.3 Vegetation modelling

The vegetation mapping was modelled against a range of social and environmental drivers that best explain the patterns of vegetation cover across Melbourne. The aim of this modelling was to understand how vegetation cover (canopy, understory, and total vegetation) relates to six commonly identified drivers of tree and vegetation cover.

Analysis method

A 1km x 1km regular grid was created across the extent of the *Living Melbourne* urban forest structure dataset. Any 1km x 1km grid cells that fell on the boundary of the Melbourne Urban Forest Structure dataset extent were excluded, so that only grid cells with full coverage were considered. For each grid cell, predictor and response variable were calculated.

The predictor variables included:

- Mean annual rainfall – indicates moisture availability
- Bioregion - indicates soil and local climate conditions
- Density of people - indicates urban intensity
- SEIFA Index of Relative Social Disadvantage - indicates access to employment, education, and other services
- Percent of dwellings that are rented - indicates ownership and resident investment
- Percentage cover of surface water - indicates the terrestrial area available for vegetation

The response variables included:

- Percentage cover vegetation canopy - measures the extent of tree canopy > 3 metres height
- Percentage cover vegetation understory - measures the extent of vegetation < 3 metres height
- Percentage cover total vegetation - measures the extent of total vegetation cover

Boosted regression trees were also used. Boosted regression trees are a machine learning technique that can be thought of like a regression equation. The actual model is fitted using two algorithms ('regression trees' and 'boosting'), and the outputs quantify how much of the variation in the response variable can be explained by each of the predictor variables. The most influential drivers will explain the largest percentage of variation.

Results

The results of the modelling found that average annual rainfall was a strong driver of percentage cover of vegetation for all three (canopy, understorey and total vegetation) classes examined. The modelled trends between average annual rainfall and the percentage cover of vegetation classes reflect the well-documented trends of highest tree canopy cover in the eastern and northern parts of the city.

However, understorey vegetation cover was highest in the lower rainfall areas, indicating that much of the vegetation in these drier areas is in the lower height bands. It may also reflect the fact that the metropolitan urban forest height dataset shows the height of the tallest vegetation. There may be understorey vegetation below the taller tree canopies, but it is not represented in the dataset.

The mean density of people per hectare (people/ha) explained approximately 10% of the vegetation cover patterns for all three classes examined here. In all examples, the amount of vegetation cover changed rapidly at low values of people/ha, before levelling off at values above approximately 50 people/ha. At low values of people/ha, total vegetation and understorey vegetation over decreased, reflecting the difficulty of maintaining ground level and low vegetation in areas with higher densities of people. At low values of people/ha, tree canopy cover increased, possibly reflecting the large

areas in the western part of the study area with low people/ha and high understorey vegetation cover.

7 Heat in the landscape analysis

Landscape and demographic characteristics of urban heat island hot spots and cool spots were analysed across the urban area of Melbourne (Figure 36). Regional maps are provided at the end of this chapter (Figures 37-42). This analysis is confined to the 2015 urban area to minimise the the statistical biases of including the large areas of either forest landscape or open farmland. In addition, following the completion of the analysis, a 2017 urban area data layer was identified. However, as the land area difference between the 2015 and 2017 data layers is approximately 2.2% it was considered that this difference was insufficient to warrant re-running the analysis. Any future analysis should seek to use the most recent urban area data layer. As a result, where the term 'Melbourne' is used, it refers to the urban area of Melbourne as described above.

Attachment 1 - Living Melbourne Technical Report

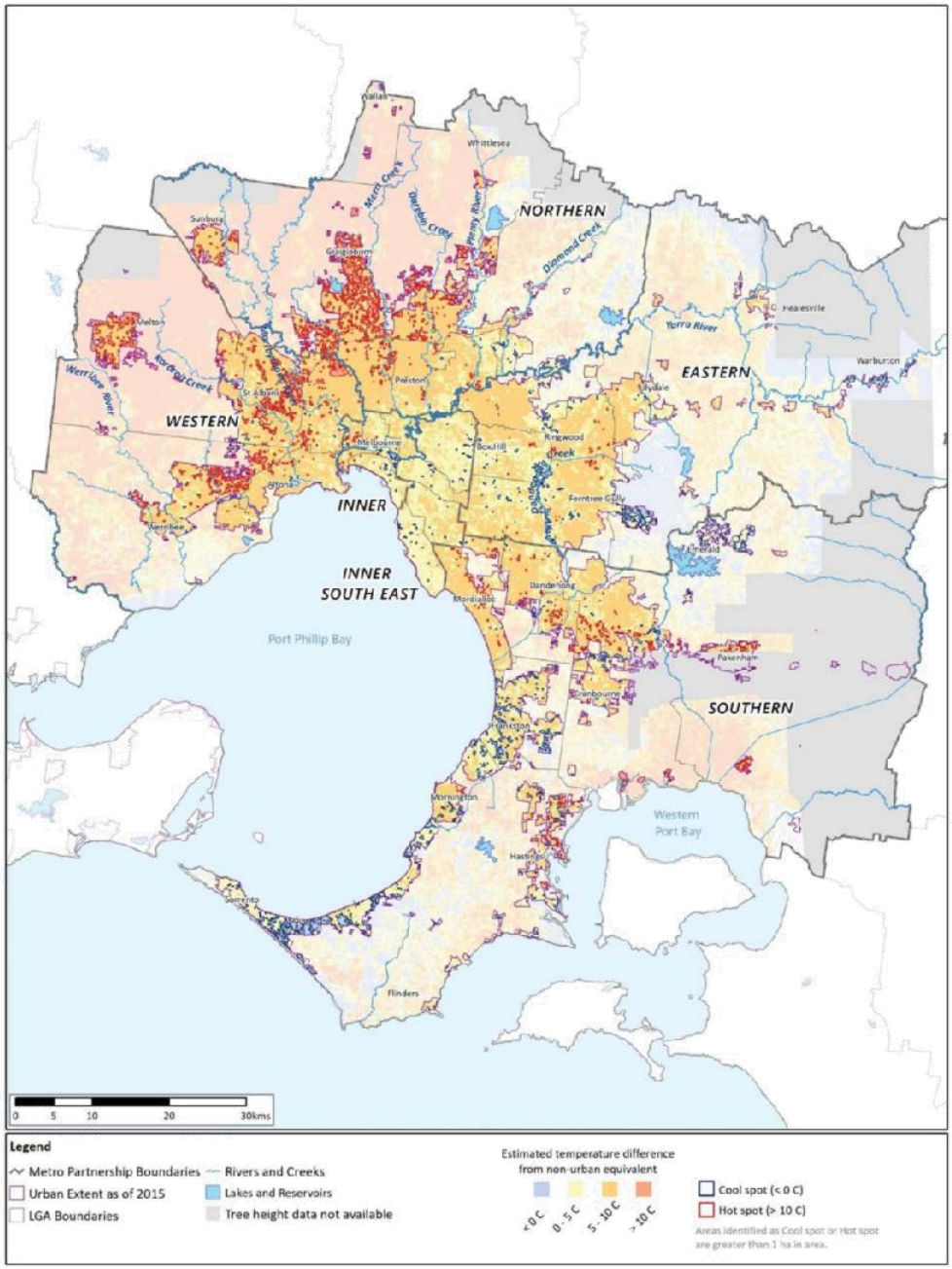


Figure 36 *Map of urban heat island across metropolitan Melbourne, with hot spots (> 10°C warmer than non-urban condition) or urban heat island cool spots (< 0°C cooler than non-urban conditions) features shown in bright red and dark blue respectively. To view these maps by Region see Figures 40-45.*

7.1 Aim of the analysis

1. To understand the geographic distribution of areas within the Melbourne urban area that are either urban heat island hot spots (> 10°C warmer than non-urban condition) or urban heat island cool spots (< 0°C cooler than non-urban conditions), based on the urban heat island data from Caccetta et al. (Caccetta P, 2017)
2. To identify differences in the landscape and demographic characteristics of areas in the landscape that are either urban heat island hot spots (> 10°C warmer than non-urban condition) or urban heat island cool spots (< 0°C cooler than non-urban conditions).

7.2 Background

The built structures and surfaces in urban areas absorb and store higher levels of solar radiation than surfaces covered by plants, creating locations where the temperature is higher than in the surrounding non-urban areas. This phenomenon has been described as an *urban heat island* and can be observed most strongly over-night as the thermal mass of concrete another common building materials release heat more slowly than natural materials or vegetation (Coutts, et al., 2010). The magnitude of the urban heat island can also vary at finer scales across an urban area, depending on the amount of plant cover and the thermal mass of materials in the landscape.

This report uses a publicly available spatial dataset of urban heat island temperatures across Melbourne, which are based on Land Surface Temperatures (absolute temperature values) captured on multiple days between October 2015 -April 2016 at approximately 10 am AEST by Landsat 8 (Amati, et al., 2017). The land surface temperature data for forested areas was used to create a model of non-urban temperatures that approximated how land surface temperatures varied with Latitude, Elevation and distance from the coast. The urban heat island dataset is the residual temperature difference between the actual mean land surface temperature value, and the modelled value of non-urban land surface temperature for that location. **It therefore provides an estimation of how different the temperature is in a location, relative to the temperature than would be there in the absence of urban development**.

Note: As the non-urban baseline was modelled on forested areas, there may be a tendency to over-estimate urban heat island in grassy ecosystems (e.g., native grasslands and pasture in the north and west of the study area). However, due to the consistent nature of the bias and the known prevalence of urban heat island issues in these areas, this is unlikely to affect the trends described in this report.

7.3 Key Findings

- Close to half of the urban area has urban heat island values of > 5°C., indicating substantial challenges in reducing the magnitude and extent of urban heat island in Melbourne.
- Over 80% of the urban area within the of the Northern and Western Regions have urban heat island values > 5°C. These Regions also had the highest number of hot spots (400+ each) with the largest average area (~12 ha), suggesting that these are potential priority areas for action and investment, building upon existing programs such as "Greening the West".
- The largest and greatest abundance of cool spots are in the Eastern and Southern Regions. Preserving these larger consolidated cool spots should be a priority.
- There were relatively few cool spots in the Inner and Inner South East Regions, and the Inner South East didn't have any hot spot features. These Regions were characterized by a large extent of urban heat island values of 0-5°C, which may provide potential insights into how to maintain lower urban heat island values across the Melbourne area. Maintaining these

lower urban heat island values into the future is likely to be a key consideration and potential aspirational benchmark for these regions.

- Cool spots supported a much higher 'Percent Cover of Tree Canopy', highlighting the importance of increasing tree canopy as a critical action for reducing urban heat island across Melbourne. This is particularly important in Melbourne where the capacity for Low Vegetation to deliver a cooling effect is strongly influenced by the moisture content of the soil and vegetation, and thus dependent upon supplemental watering programs.
- Within Regions, hot spots tended to be located in areas with relatively lower Average Annual Rainfall levels. Actions that prioritise water availability in these lower rainfall areas could help to counter these trends.
- Residential Planning Zones were strongly represented within both hot spots and cool spots, particularly in the Northern, Western and Southern Regions. Other Planning Zone groups that were strongly represented in hot spots and cool spots across Melbourne were: Public Land (e.g. Parks and Recreation zones), Roads, Industrial and Special Purpose Zones. Their strong representation reflects both the prevalence of these Planning Zone Groups within Melbourne, but also highlights the important role that the design has on the local urban heat island. Examining characteristics of these areas at a finer scale could offer constructive insights into how to create cooler neighbourhoods in a manner that is compatible with the associated land use.
- The demographic characteristics of hot spots and cool spots support previously identified links between urban heat island exposure risks and social vulnerability factors. Hot spots were generally characterized by lower Average Weekly Household income, lower values of the SEIFA Index of Relative Social Disadvantage (IRSD), higher Percent of Dwellings that were Rentals, and a higher Density of People/ha. These results highlight the opportunities for delivering improved conditions and outcomes for vulnerable communities through actions that reduce the magnitude and extent of the urban heat island. However, some Regions displayed departures from the overall trends, which suggests that the demographic and historical patterns of development are different in these regions and therefore the strategies undertaken to reduce the urban heat island may need to be framed differently to deliver the most effective outcomes.

7.4 Comparison of hot spots and cool spots across metropolitan Melbourne

There were more hot spots than cool spots across the urban area in terms of both the number of features and the total area covered (Table 26).

The Northern and Western Regions had the highest number of hot spots (400+ each), with the largest Average Area (~12 ha), indicating that these are key Regions to focus on for actions to reduce the prevalence of urban heat island hot spots.

The Eastern and Southern Regions had the highest number of cool spots (165 and 380 respectively), as well as the largest Average Area (~10 ha). Preserving these larger consolidated cool spots in these Regions should be a priority.

There were no hot spots located in the Inner South East Region. However, there was a high degree of coverage of urban heat island values of 0-5°C, indicating that these areas are still relatively cool, and providing possible insights into how to maintain low urban heat island values across the Melbourne area. The Inner Region also contained relatively few hot spots, with most of them located in its western half.

Table 26. Number, Average Area (ha) and Total Area (ha) of urban heat island cool spots and hot spots across the Regions, and Total metropolitan area.

	Cool spot			Hot spot		
	No. Features	Average Area (ha)	Total Area (ha)	No. Features	Average Area (ha)	Total Area (ha)
Eastern	*165*	*10.6*	*1754.8*	*55*	*3.0*	*167.0*
Inner	*40*	*5.2*	*209.0*	*20*	*5.0*	*99.8*
Inner South East	*64*	*3.9*	*252.5*	*NA*	*NA*	*NA*
Northern	*47*	*5.6*	*261.4*	*453*	*12.1*	*5476.0*
Southern	*380*	*11.9*	*4529.1*	*243*	*6.6*	*1605.9*
Western	*54*	*3.2*	*174.0*	*401*	*12.7*	*5081.1*
Total metropolitan area	750	9.6	7180.8	1172	10.6	12429.8

7.4.1 Comparison of Demographic Variables between hot spots and cool spots

Density of People

Over the entire Melbourne area, the density of people was similar between hot spots and cool spots. However, there were differences in the densities of people in hot spots compared to cool spots within Regions.

The mean Density of People/ha in Eastern, Northern and Southern Regions was higher in the hot spots compared to cool spots (Table 27). This indicates that urban heat island hot spots may be more likely to coincide with more densely populated areas, where investment and action to reduce the urban heat island could potentially deliver positive benefits to a greater number of people. The exception to this pattern was in the Inner Region, where the hot spots coincided with non-residential land uses, and therefore the mean Density of People/ha was lower in the hot spots compared to the cool spots.

Table 27. Mean Density of People/ha compared between urban heat island cool spots and hot spots across the Regions.

Region	**Density of People/ha**	
	Cool spots (urban heat island < 0°C)	Hot spots (urban heat island > 10°C)
Eastern	*11.5*	*14.3*
Inner	*78.0*	*67.4*
Inner South East	*25.7*	*NA*
Northern	*11.4*	*17.7*
Southern	*11.2*	*13.2*
Western	*15.4*	*16.1*
Total metropolitan area	16.0	16.2

Percent of Dwellings - Rental

The mean Percent of Dwellings that were Rentals was generally higher in hot spots compared to cool spots except for the Inner Region (Table 28). Actions to reduce the extent of these urban heat island hot spots are therefore likely to require mechanisms that provide incentives to land-owners, and some means of positive participation and support from residents living in rental properties. Investment in these actions are also highly likely to deliver additional benefits beyond a reduction in the local urban heat island.

Table 28. Mean Percent Dwellings - Rentals compared between urban heat island cool spots and hot spots across the Regions.

Region	Percent Dwellings- Rentals (%)	
	Cool spots (urban heat island < 0°C)	Hot spots (urban heat island > 10°C)
Eastern	*14.2*	*18.3*
Inner	*35.0*	*25.3*
Inner South East	*22.1*	*NA*
Northern	*16.0*	*23.3*
Southern	*19.4*	*26.6*
Western	*16.7*	*22.5*
Total metropolitan area	18.9	23.5

Average Weekly Household Income and SEIFA Index of Relative Social Disadvantage

Mean Average Weekly Household Income ($) was substantially lower in the urban heat island hot spots compared to the cool spots for all of the Regions (Table 29), and this pattern was also evident in the comparison of mean SEIFA Index of Relative Social Disadvantage (Table 30). This supports previously identified links between urban heat island exposure risks and social vulnerability related to age, ethnicity (Loughnan, et al., 2013) socio-economic disadvantage, and rental status (Urban Forest Consulting, 2018), highlighting the opportunities for reducing the magnitude and inequities in exposure to urban heat island impacts in these regions.

The Western Region was the only one which showed little difference in mean Average Weekly Household Income ($) (Table 29) and a higher mean SEIFA Index of Relative Social Disadvantage in hot spots compared to cool spots (Table 30). This result suggests that the demographic patterns of settlement and urbanization are likely to be different in this region, and the strategies undertaken to mitigate the urban heat island may need to be framed differently for this region.

Table 29. Mean Average Weekly Household Income ($) compared between urban heat island cool spots and hot spots across the Regions.

Region	Ave. Weekly Household Income ($)	
	Cool spots (urban heat island < 0°C)	Hot spots (urban heat island > 10°C)
Eastern	*1503.1*	*778.7*
Inner	*1188.8*	*350.3*
Inner South East	*2008.5*	*NA*
Northern	*2039.0*	*1250.8*
Southern	*1458.0*	*1347.8*
Western	*1284.0*	*1235.5*
Total metropolitan area	1524.1	1228.1

Table 30. Mean SEIFA Index of Relative Social Disadvantage (IRSD) compared between urban heat island cool spots and hot spots across the Regions.

Region	SEIFA Index of Relative Social Disadvantage (IRSD)	
	Cool spots (urban heat island < 0°C)	Hot spots (urban heat island > 10°C)
Eastern	*866.8*	*467.2*
Inner	*692.7*	*224.2*
Inner South East	*967.5*	*NA*
Northern	*983.4*	*761.6*
Southern	*969.4*	*874.4*
Western	*580.6*	*690.6*
Total metropolitan area	904.3	737.7

7.4.2 Comparison of Landscape Characteristics between hot spots and cool spots

Percentage (%) Cover of Vegetation

Hot spots and cool spots both contained ~10 to 30% cover of Low Vegetation (Table 31). The Northern, Southern and Western Regions generally contained higher Percent Cover of Low Vegetation in hot spots compared to cool spots, with the Eastern and Inner Regions contained lower Percent Cover of Low Vegetation in hot spots compared to cool spots.

Percent Cover of Tree Canopy was much higher in cool spots compared to hot spots for all Regions, with the mean Percent Cover of Tree Canopy in hot spots being 2.2% for the Total Area, compared to a mean Percent Cover of 44.2% in cool spots (Table 31).

Percent Cover of Total Vegetation displayed similar trends to Tree Canopy, with higher Percent Cover in cool spots compared to hot spots. The exception was the Western Region which displayed higher mean Percent Cover of Total Vegetation in hot spots compared to cool spots, largely driven by the higher mean Percent Cover of Low Vegetation, and the very low mean Percent Cover of Tree Canopy in this region.

The observed trends in vegetation cover between hot spots and cool spots supports the importance of increasing Tree Canopy as a critical action for reducing the urban heat island across Melbourne. While Percent Cover of Total Vegetation is important, the capacity for Low Vegetation to deliver a cooling effect is strongly influenced by the moisture content of the soils and vegetation, and therefore becomes strongly dependent upon supplemental watering programs.

Table 31. Mean Percent Cover of Vegetation in different Height Classes compared between urban heat island cool spots and hot spots across the Regions.

Region	Low Vegetation (<3m)	Tree Canopy (> 3m)	Total Vegetation
Cool spot			
Eastern	*22.6*	*63.2*	*85.8*
Inner	*22.2*	*36.4*	*58.6*
Inner South East	*24.3*	*37.1*	*61.4*
Northern	*11.9*	*72.2*	*84.1*
Southern	*29.1*	*37.5*	*66.7*
Western	*19.1*	*2.9*	*22.0*
Total metropolitan area	26.3	44.2	70.5
Hot spot			
Eastern	*14.6*	*2.1*	*16.7*
Inner	*2.2*	*0.3*	*2.5*
Inner South East	*NA*	*NA*	*NA*
Northern	*22.7*	*1.6*	*24.3*
Southern	*39.2*	*6.1*	*45.4*
Western	*31.1*	*1.7*	*32.8*
Total metropolitan area	28.0	2.2	30.2

Average Annual Rainfall

Mean values of Average Annual Rainfall were higher in cool spots compared to hot spots (Table 32), indicating the importance of background moisture levels in moderating the urban heat island. Prioritizing actions to increase water availability in areas receiving relatively lower rainfall could help to counter these trends.

Table 32 Mean average annual rainfall compared between urban heat island cool spots and hot spots across the regions

Region	Average Annual Rainfall (mm)	
	cool spots (urban heat island < 0°C)	hot spots (urban heat island > 10°C)
Eastern	*864.5*	*820.3*
Inner	*634.3*	*601.1*
Inner South East	*688.6*	*NA*
Northern	*699.2*	*639.2*
Southern	*791.5*	*772.3*
Western	*537.8*	*530.4*
Total metropolitan area	766.1	637.4

Percent Cover of Surface Water

Larger bodies of surface water have a capacity to reduce the urban heat island, as illustrated by the very low mean Percent Cover of Surface Water in hot spots compared with cool spots. This is particularly apparent in the Western Region where the cool spots strongly coincided with larger areaof surface water, such as at the Western Treatment Plant at Werribee (Table 33).

Table 33 *Mean Percent Surface Water compared between urban heat island cool spots and hot spots across the regions*

Region	Percent Surface Water (%)	
	Cool spots (urban heat island < 0°C)	Hot spots (urban heat island > 10°C)
Eastern	*5.2*	*1.7*
Inner	*18.9*	*0.0*
Inner South East	*3.5*	*NA*
Northern	*5.5*	*0.3*
Southern	*1.7*	*0.5*
Western	*12.8*	*0.1*
Total metropolitan area	4.6	0.3

Planning Zones

Different types of land use display different characteristics in terms of the extent, form and materials used for their built structures and the characteristics of the vegetation. These factors play a major role in determining the temperature of the local urban heat island. Most of the cool spots were characterized by fairly high cover of the Residential Planning Zone Group, followed by Public Land and Roads (Table 34). The exceptions were:

- the Inner region, where cool spots coincided more strongly with Public Land, such as the larger consolidated greenspaces and Special Purpose Planning Zones; and the
- Western Region where the cool spots were more strongly associated with Industrial Planning Zone Group, followed by Public Land and Residential Planning Zone Groups.

Table 34 *Representation (%) of Planning Zone Groups within cool spots (urban heat island < 0°C) and hot spots (urban heat island > 10°C) across the regions and total metropolitan area. Planning zone groups with highest proportion cover are in bold.*

	Commercial	Commonwealth	Industrial	Public land	Residential	Road	Rural	Special purpose
Cool Spot								
Eastern	*0.6*	*0.0*	*1.4*	*34.1*	***44.1***	*11.8*	*6.3*	*1.7*
Inner	*0.1*	*0.0*	*0.0*	***65.5***	*5.8*	*9.5*	*0.0*	*19.0*
Inner South East	*1.8*	*0.0*	*0.1*	*22.4*	***45.9***	*14.2*	*0.0*	*15.7*
Northern	*1.5*	*1.0*	*1.0*	*35.2*	***51.3***	*8.7*	*0.1*	*1.2*
Southern	*0.5*	*0.0*	*3.6*	*11.5*	***59.0***	*17.2*	*2.0*	*6.2*
Western	*5.5*	*0.0*	***38.9***	*21.2*	*15.0*	*7.4*	*0.0*	*12.0*
Total metropolitan area	0.7	0.1	3.6	20.1	**52.0**	15.0	2.8	5.7
Hot Spot								
Eastern	*17.4*	*0.0*	***55.4***	*11.8*	*4.3*	*5.6*	*0.0*	*5.4*
Inner	*0.0*	*0.0*	*29.1*	*18.9*	*2.0*	*7.1*	*0.0*	***42.9***
Inner South East	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
Northern	*3.9*	*6.6*	*17.2*	*9.5*	***29.7***	*16.6*	*1.2*	*15.4*
Southern	*1.7*	*2.1*	*15.8*	*6.9*	***35.6***	*12.0*	*6.0*	*19.9*
Western	*2.4*	*6.2*	*14.7*	*12.2*	***33.8***	*15.0*	*0.0*	*15.7*
Total metropolitan area	3.1	5.7	16.6	10.4	**31.6**	15.1	1.3	16.2

Most of the hot spots in the Northern, Southern and Western Regions were also associated with relative high cover of Residential Planning Zones, and Industrial, Roads and Special Purpose Planning Zone Groups. In the Eastern Region, hot spots coincided more strongly with Industrial Planning Zones, and in the Inner Region, hot spots were more strongly associated with Special Purpose, Industrial and Public Land Planning Zone Groups.

The strong representation of Residential Planning Zones within both hot spots and cool spots can partly be explained by their relatively extensive cover within the Melbourne area. However, their presence in both the hot spots and cool spots suggests that the characteristics of the Residential areas help determine the temperature of the local urban heat island. Examining the distinguishing characters of Residential neighbourhoods at a finer scale than that of Planning Zone Group could offer constructive insights for how to create cooler neighbourhoods. Similar investigations could also help explain the representation of Industrial, Public Land, Roads and Special Purpose Planning Zone Groups in both cool spots and hot spots providing similar insights into how these types of land-uses can be designed and constructed to minimize the local urban heat island.

7.5 Methods

7.5.1 General patterns of urban heat island across metropolitan Melbourne

The urban heat island data used for this analysis was the 'Land surface temperature and urban heat island estimates for Australian urban centres' dataset from (Caccetta, et al., 2017). To characterize the general patterns of urban heat island values across Melbourne, the urban heat island values were categorised into four groups: < 0°C, 0-5°C, 5-10°C and > 10°C, and the proportion of each group within a feature was calculated. The features used to characterize general patterns were:

1. the extent of the Melbourne Urban Vegetation Height dataset
2. the 2015 Urban Extent (Victorian State Government, 2016)
3. Melbourne Regions
4. their associated Local Government Areas

7.5.2 Urban heat island hot spots and cool spots comparison

Areas within the Urban Extent 2015 dataset that had urban heat island values > 10°C were converted to a polygon spatial data theme in QGIS (Anon., n.d.), and labelled as 'hot spots'. The same process was repeated for areas with urban heat island values < 0°C, which were then labelled as 'cool spots'. All polygons with an area less than 1 ha in size were excluded and all of the remaining features was given a unique identifier within the dataset.

For each cool spot and hot spot polygon, the variables shown in Table 35 were calculated. The mean value for each variable was then summarized for hot spots and cool spots in each of the Regions, and the metropolitan Melbourne area.

Table 35 List of Landscape and Demographic variables calculated to describe the differences between urban heat island hot spots and cool spots across

Predictor Variable	Source Data and Calculation Method
Density of People *Indicator of urban intensity*	Mean value calculated from raster dataset using Zonal Statistics. Raster dataset created from 2016 ABS Census measure of Usual Resident Numbers per Statistical Local Area (SLA1), divided by area of SLA1
Percent of Dwellings that are Rented *Indicator of ownership and resident investment*	Mean value calculated from raster dataset using Zonal Statistics. Raster dataset created from 2016 ABS Census measure of Percent Dwelling Rental per Statistical Local Area (SLA1)
Average Weekly Household Income ($) *Indicator of relative wealth*	Mean value calculated from raster dataset using Zonal Statistics. Raster dataset created from 2016 ABS Census measure of Average Weekly Household Income per Statistical Local Area (SLA1)
SEIFA Index of Relative Social Disadvantage (IRSD) *Indicator of access to employment, education and other services*	Mean value calculated from raster dataset using Zonal Statistics. Raster dataset created from 2016 SEIFA measure of Index of Relative Social Disadvantage (IRSD) per Statistical Local Area (SLA1), divided by area of SLA1
% Cover Low Vegetation *Measure of extent of vegetation less than 3.0 m height*	Percent cover calculated by intersecting urban heat island polygon features with Melbourne Urban Forest Structure dataset (features in Height Class 1 and 2)
% Cover Vegetation Canopy *Measure of extent of Tree canopy greater than 3.0 m height*	Percent cover calculated by intersecting urban heat island polygon features with Melbourne Urban Forest Structure dataset (features in Height Class 3,4 and 5)
% Cover Total Vegetation *Measure of extent of total vegetation cover*	Percent cover calculated by intersecting urban heat island polygon features with Melbourne Urban Forest Structure dataset (features in all Height Classes (1-5))
Average Annual Rainfall *Indicator of moisture availability*	Mean value calculated from raster dataset using Zonal Statistics
Percent Cover of Surface Water *Indicator of the terrestrial area available for vegetation*	Percent Cover calculated by intersecting urban heat island polygon features with Surface water dataset created from VMHydro dataset, and VMAdmin Coast_temp.shp
Percent Cover of Planning Zone Groups *Indicator of types of land-uses present*	Percent Cover calculated by intersecting urban heat island polygon features with Planning Zone Group dataset, which included road partition features from CAUL (2018) (Hub, 2018)

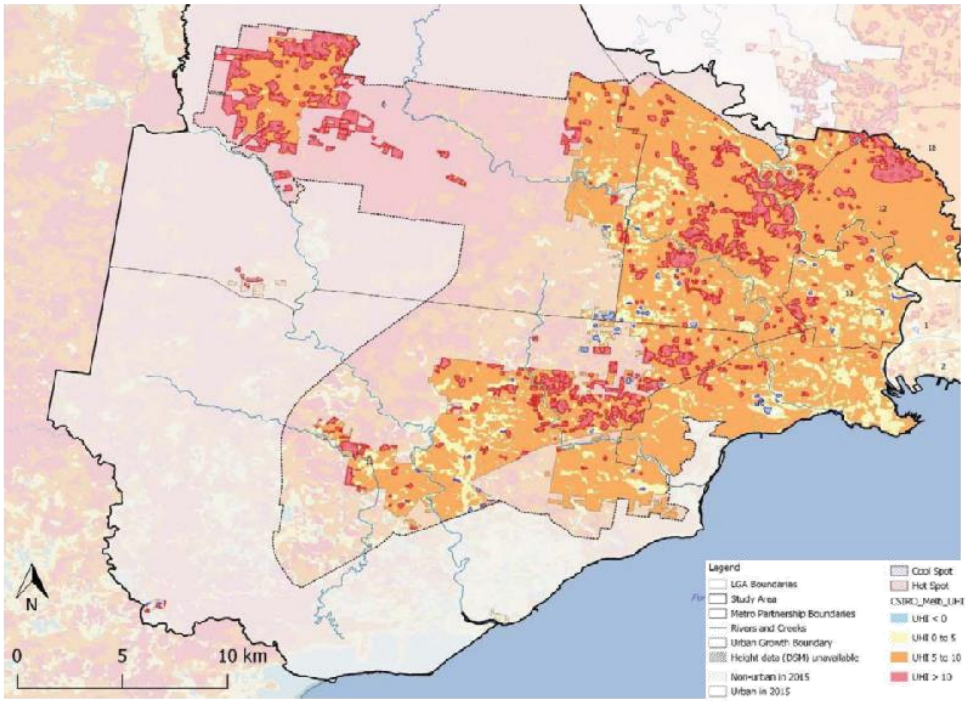


Figure 37 *Western Region hot spot and cool spot land surface temperatures*

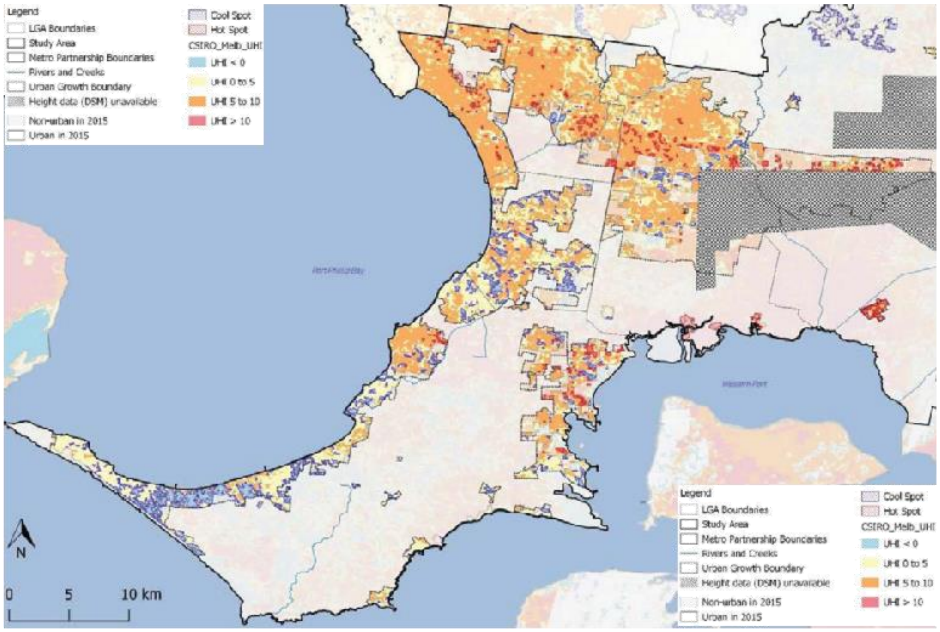


Figure 38 Southern Region hot spot and cool spot land surface temperatures

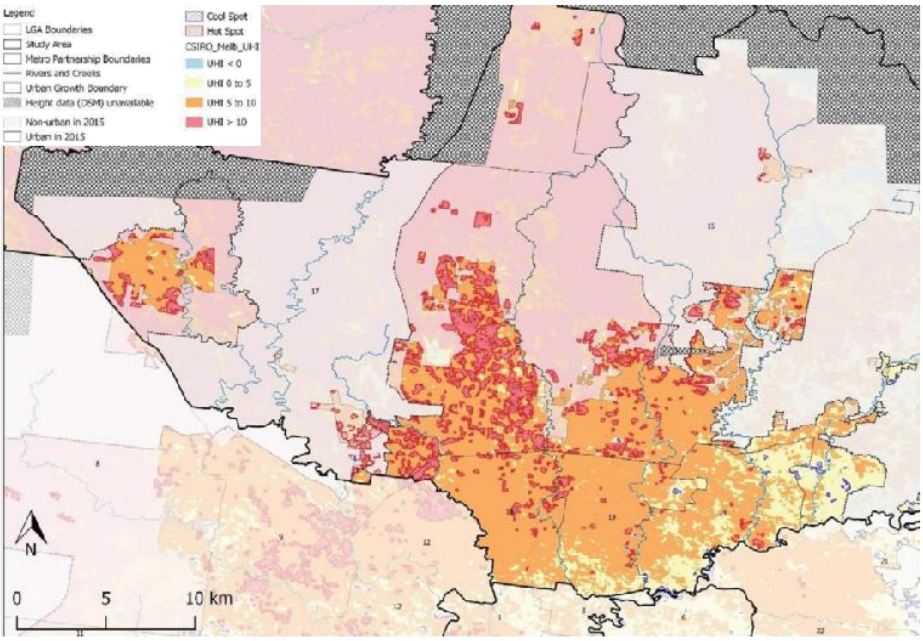


Figure 39 *Northern Region hot spot and cool spot land surface temperatures*

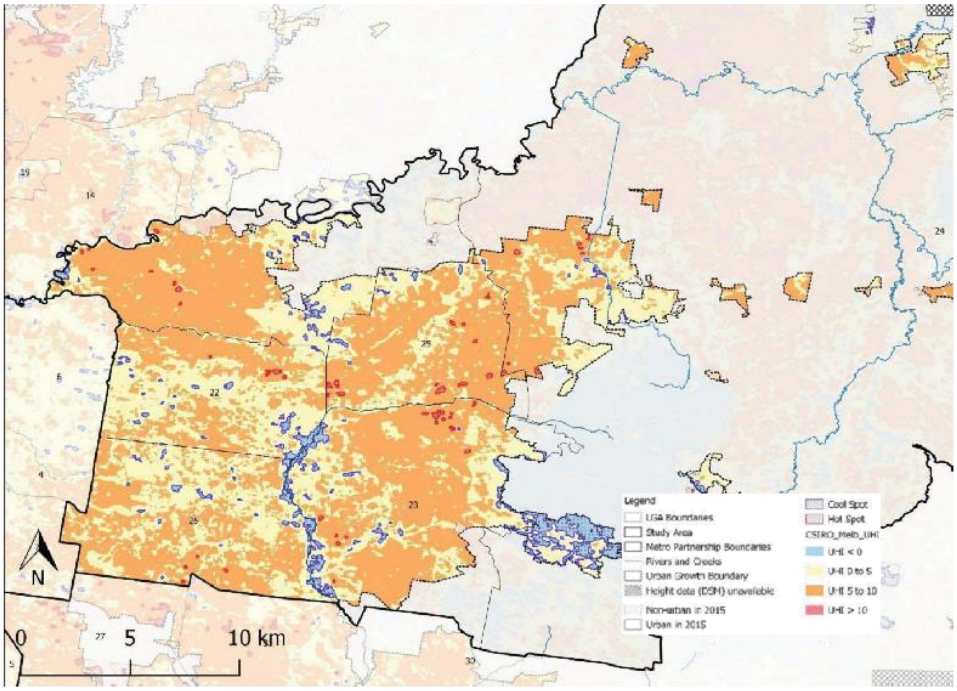


Figure 40 Eastern Region hot spot and cool spot land surface temperatures

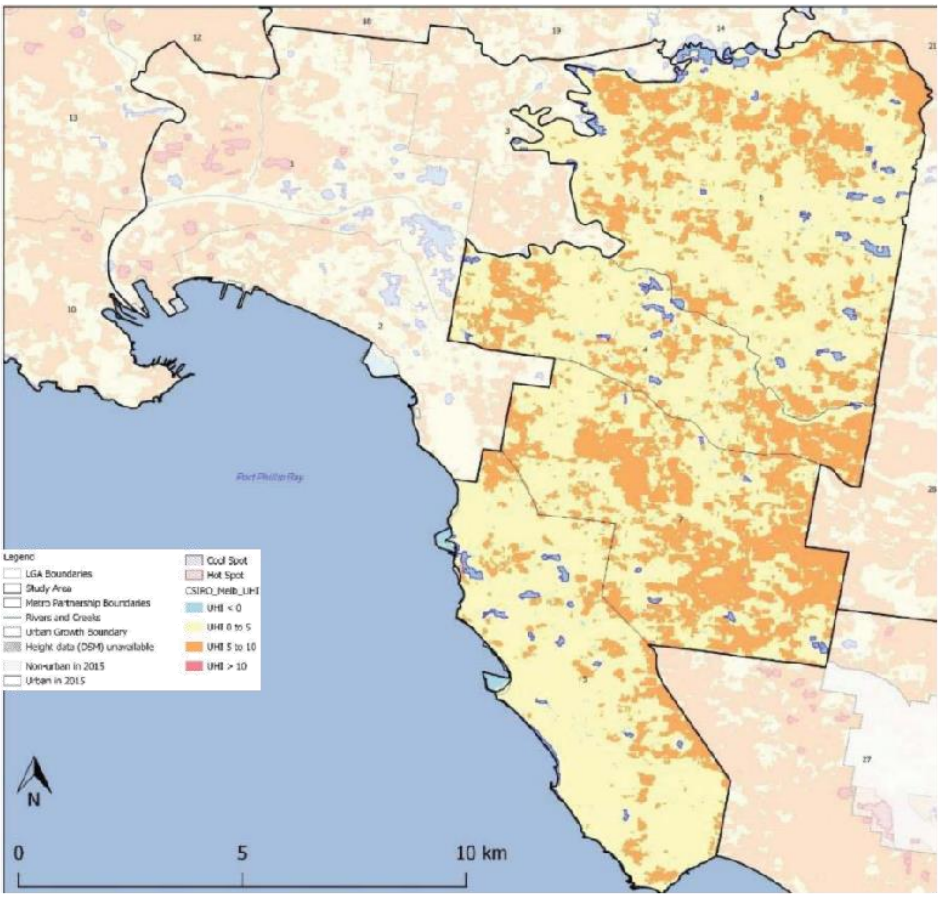


Figure 41 *Inner South East Region hot spot and cool spot land surface temperatures*

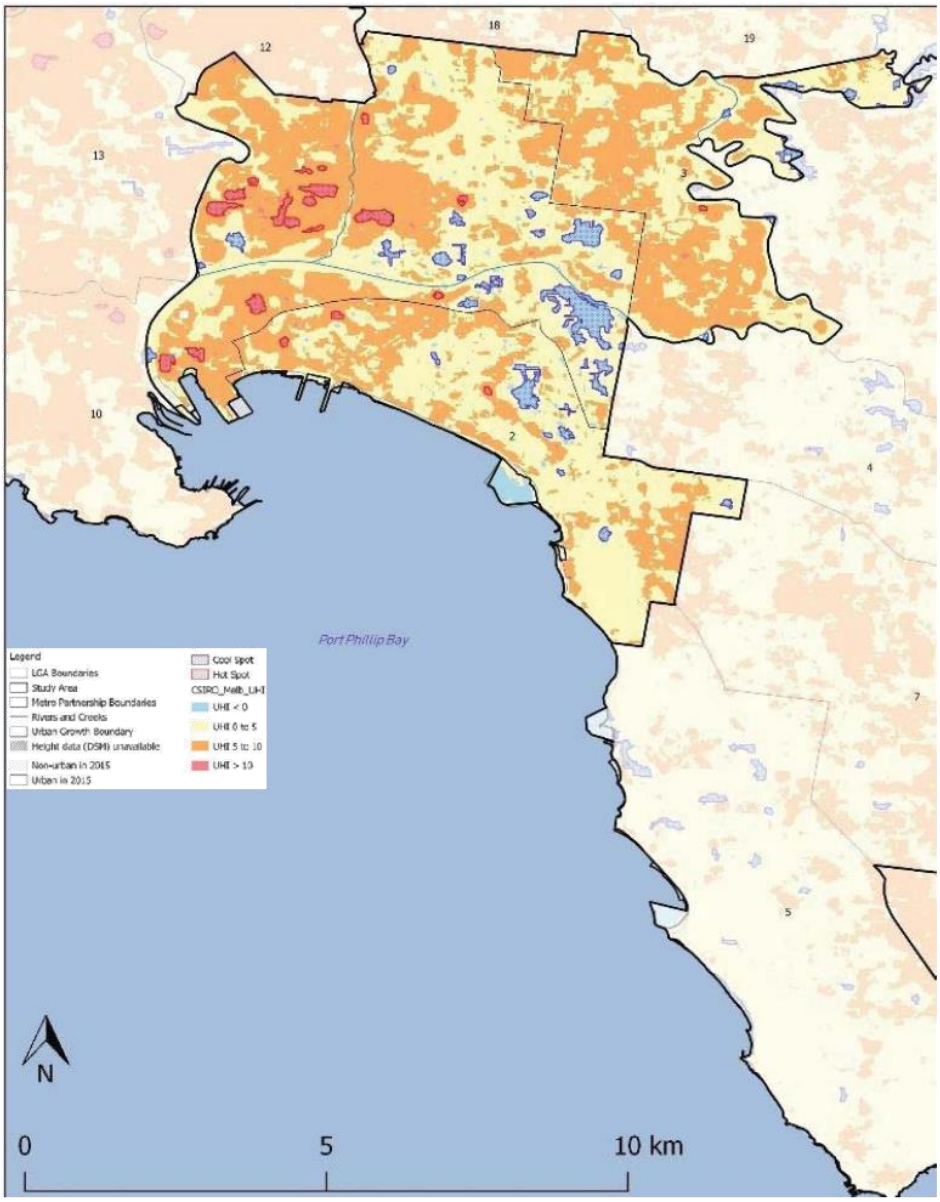


Figure 42 Inner Region hot spot and cool spot land surface temperatures

8 Biodiversity analysis

Melbourne's urban forest is rich in biodiversity. The metropolitan region in its entirety is positioned at the confluence of seven bioregions (broad geographical regions composed of a cluster of interacting ecosystems that share common physical and biological features, such as climate, geology, landforms, soils and vegetation), resulting in a rich mosaic of different plant communities. Most of Melbourne sits in the bioregion of the Gippsland Plain (in the east and south-east), Highlands Southern Fall (in the outer east) and Victorian Volcanic Plain (in the north and west). A total of 93 recognised ecological vegetation classes occur across almost 28% of this land, many of which are endangered or vulnerable. Rivers, creeks, wetlands and swamps add to the complexity and richness of habitats.

Metropolitan Melbourne supports a diverse array of native plant and animal species. More than 2,000 native plant species grow in the Melbourne region. The backyards and streetscapes of our city and suburbs are also home to many plant species that are not native to the region or Australia. Reflecting the significant changes that have occurred in the region since European settlement in 1788, there are 34 species of plants and 52 species of animals that are listed as threatened under the national *Environment Protection and Biodiversity Conservation Act 1999*, and 64 species of plants and 95 species of wildlife listed under Victoria's *Flora and Fauna Guarantee Act 1988* (Victoria State Government, n.d.).

In Melbourne, streetscapes with native trees support significantly more diverse and abundant populations of native birds than do streets with mostly exotic trees (White, et al., 2005). Although many local government authorities maintain good inventories of their street trees, there is no comprehensive picture of street trees across the entire metropolitan area. There is limited data about the trees in our parks and open spaces, and almost no information about the species of trees and other vegetation on privately owned land such as backyards (see 'Opportunities for the urban forest', below). At the neighbourhood level, the highest number of native bird species per hectare is found in native vegetation in parks and reserves[1]. The size of urban remnant vegetation in Melbourne is a major determinant of bird diversity (the larger the area, the greater the diversity) (Palmer, et al., 2008). Large old trees are disproportionate providers of the structural elements (such as hollows, and coarse woody debris) that are crucial habitat resources for many fauna species. But in urban areas these large old trees are particularly susceptible to loss. (Le Roux, et al., 2014).

Most of those natural areas that are located in urban landscapes are fragmented. In order to survive, many species populations must be able to disperse, as this facilitates gene flow. A common conservation approach is to create or improve connectivity by restoring habitat using corridors, stepping stones and buffer zones (Department of Sustainability, 2012). Effective connectivity comprises structural connectivity (physical linkages and proximity of landscape components) and functional connectivity (species movement needs and behavioural responses to the structural connectivity) (Landscape Institute, 2016). Some species may need to move very little, while others may require greater freedom but are constrained by hard barriers such as fences or roads.

Depending on the movement needs of different species, functional connectivity may or may not require physical habitat patch connectivity. Therefore the same landscape will have different levels of functional connectivity for different species. We need to consider connectivity at various scales: local, regional, metropolitan-wide and beyond. Understanding and designing ways to maintain and restore structural and functional connectivity in cities is complex and still in its infancy, although some local government authorities have been working on this concept (O'Malley, 2017).

Encouragingly, there are many good examples across Melbourne where the creation of corridors and the restoration of quality habitat have resulted in the return of animal species that are otherwise susceptible

to urban development. Hume City Council and Brimbank City Council used the 'guild approach' to determine the connectivity priorities for their Ecological Connectivity Plans. An important part of this work was a series of expert workshops to decide on parameters such as:

- broad habitat types across the council districts and bounding areas (for instance, woodlands, riparian, grasslands)
- the appropriate guilds (groups of species with common attributes) and structural connectivity needs (for instance, species-specific movement capabilities, thresholds, needs, and minimum habitat patch size)
- selection of the focal species for each guild, *highlighted in bold in the table below.* The result of the analysis was a matrix, comprising four main habitats, two dispersal capabilities (longer and shorter relative distances) and 10 focal species. A fifth general habitat for a long disperser was included, to represent species less affected by fragmentation and capable of greater dispersal.

Table 36 Focal species considered and selected (bold) by experts (Source: North-west Ecological Connectivity Investigation 2017)

Habitat	Disperser capability	
	Longer disperser	**Shorter disperser**
Grassland	Brown Songlark	Australasian Pipit
	Fat-tailed Dunnart	**Golden Sun Moth**
	Plains-wanderer	Grassland Earless Dragon
	Red-chested Button-quail	Little Whip Snake
	Stubble Quail	**Stripped Legless Lizard**
		Tussock Skink
Woodlands and forest	**Brown Treecreeper**	Cunningham's Skink
	Agile Antechinus	Diamond Firetail
	Grey-crowned Babbler	Fuscous Honeyeater
		Grey Shrike-thrush
		Speckled Warbler
		White-throated Treecreeper
		Yellow-faced Honeyeater
Riparian	Azure Kingfisher	Eastern Yellow Robin
	Common Ringtail Possum	Southern Water Skink
	Common Wombat	**Sugar Glider**
	Nankeen Night-Heron	Swamp Rat
	Southern (Large-footed) Myotis	White-browed Scrubwren
	Swamp Wallaby	
	Common Wombat	

Habitat	Disperser capability	
Wet habitat	Baillon's Crake	Brown Toadlet
	Buff-banded Rail	**Growling Grass Frog**
	Eastern Long-neck Turtle	Leseur's Tree Frog
	Lowland Copperhead	
	Rakali	
Generalist	Eastern Grey Kangaroo	
	Long-beaked Echidna	

Connectivity and the ability of animals to move, and plants to disperse, within or between patches of habitat is critical for conservation. Many individual patches are too small and widely dispersed to support viable populations. It is therefore important that gardens are not viewed at the individual scale, but instead considered collectively with other gardens and public open spaces as interconnected networks of green spaces across the urban landscape. By extending the urban forest, we can link and create an interconnected matrix of green spaces across our diverse urban landscape.

Using the urban forest canopy cover mapping layer with bird atlas data (supplied by BirdLife Australia) and other important datasets (such as ecological vegetation classes), enables the modelling of different levels of connectivity and landscape permeability for different bird species and bird groups.

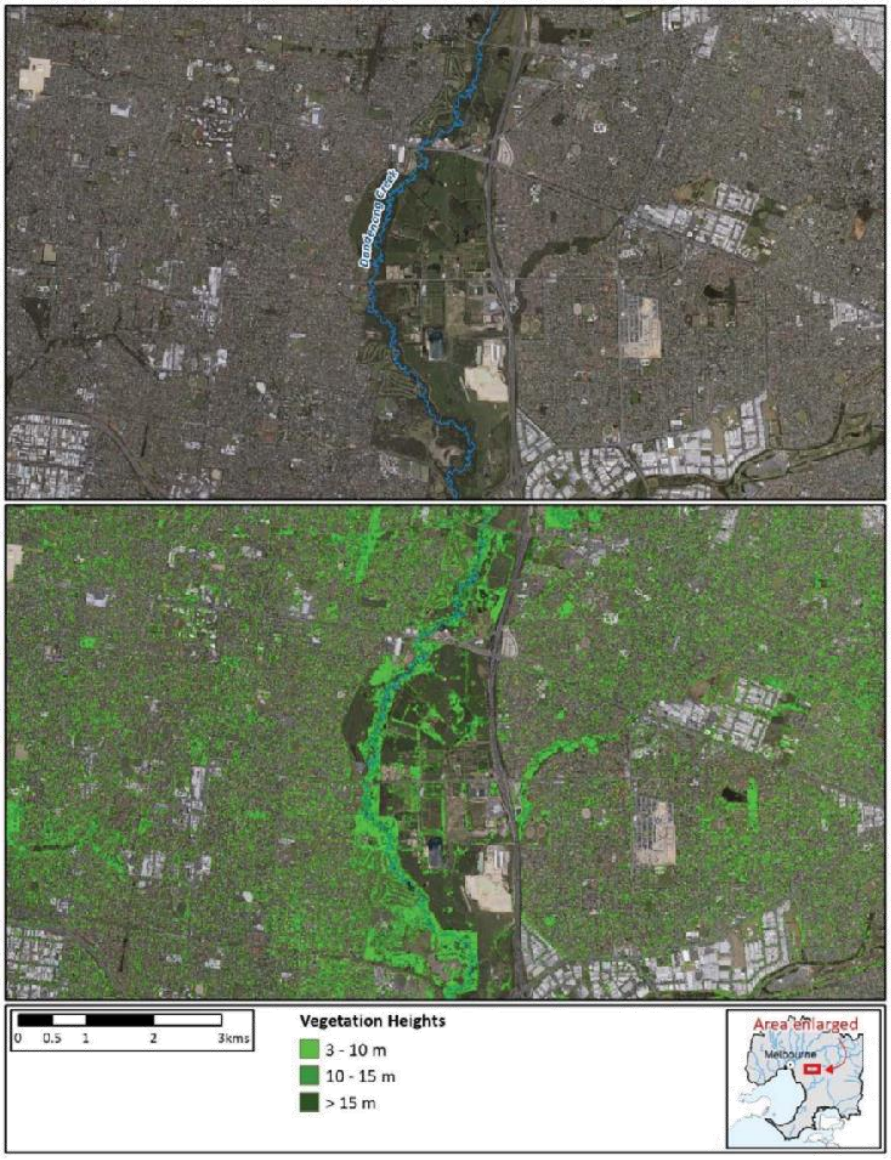
The high suitability of particular riparian corridors (such as along the Yarra River and Dandenong Creek) for many of these species highlights the importance of these features for the persistence of some species in the urban landscape, and the importance of connectivity. However, for species that are better able to exist in the urban environment, suitable habitat and connectivity are also provided by streetscapes and backyards.

Identifying a network of existing and potentially new habitat corridors at different scales for a range of species (and protecting and improving these corridors) will be an important step in creating an enhanced urban forest for Melbourne. For example, by combining habitat models based on species records and known habitat preferences with canopy mapping can reveal areas for future corridor improvement, as illustrated in **Error! Reference source not found.**43.

The following images illustrate that the Dandenong Creek Valley Parklands in eastern Melbourne (map a), has patchy canopy cover (map b), but has relatively high likelihood of occurrence for a suite of hollow-nesting bird species (darker shading) (map c), revealing areas suitable for connectivity improvement (visible black and dark grey areas) (map d).

Attachment 1 - Living Melbourne Technical Report

Maps a) and b)



Maps c) and d)

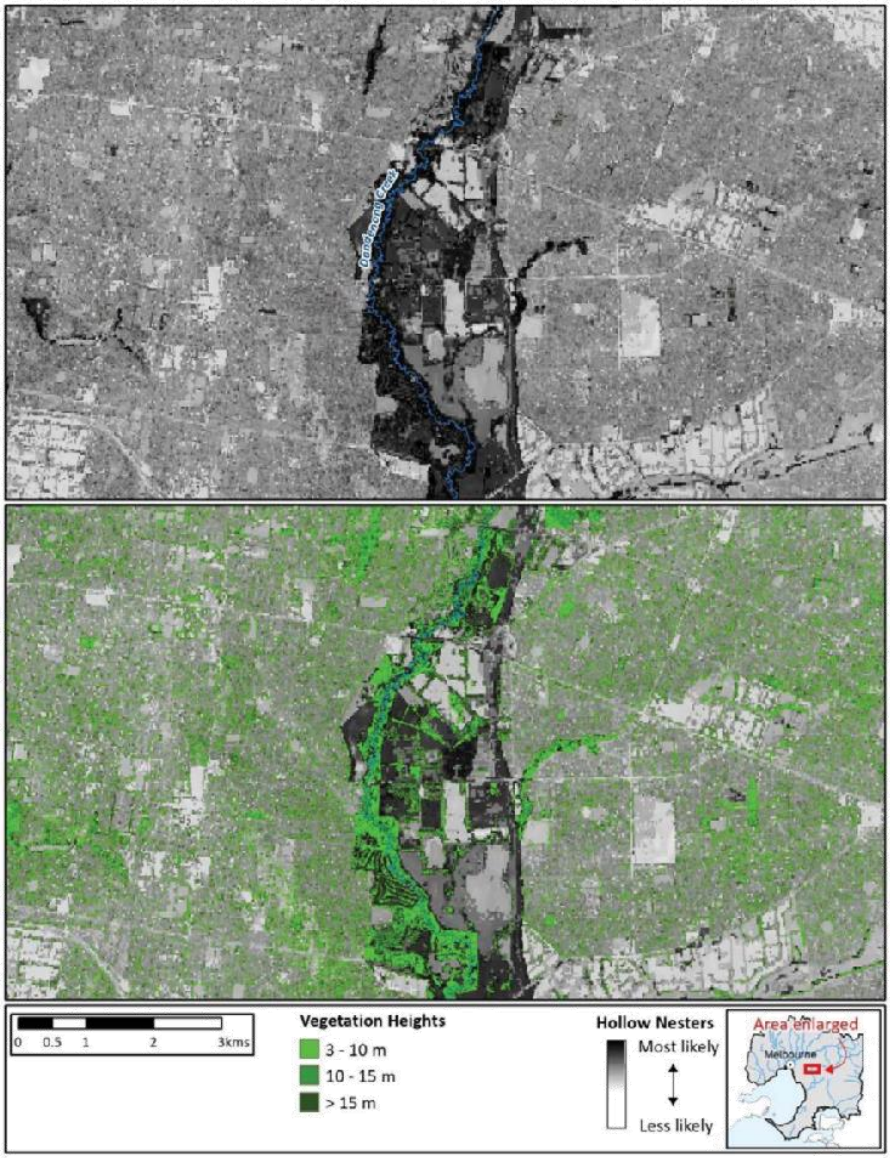


Figure 46. Canopy mapping and species habitat modelling used together to highlight areas of future corridor enhancement through enhancing the urban forest.

8.1.1 Modelling of bird species or bird group distribution

Modelling of bird species or bird group distribution was undertaken using the Maxent software (https://biodiversityinformatics.amnh.org/open_source/maxent/), and was based on BirdLife Australia's bird atlas (sourced on 10 May 2017) and a range of other datasets (outlined below). The model predicts the likelihood of parts of the urban landscape being suitable for particular bird species or communities, ranging from 'most likely' to 'least likely'.

Data Layers Used

1. Bird Data: The bird survey data was obtained from Birdlife Australia. It was determined that the most suitable dataset that could be validly used for the modelling process (taking into account spatial extent) was the 20-minute, two hectare bird survey point file. This data set had 11,137 bird records from 2,237 sites inside the study area. Other survey data where of a much larger area and/or a transect distance and considered too general for this type of analysis.

This dataset was subsetted to the different species (and one group of species composed of hollow nesters). The following individual species where modelled:

- Superb Fairy-wren
- Eastern Spinebill
- White-browed Scrubwren
- Brown Thornbill
- Eastern Yellow Robin
- Spotted Pardalote
- Noisy Miner
- Musk Lorikeet
- Crimson Rosella
- Eastern Rosella
- Yellow-tailed Black-Cockatoo

The following group of hollow nesters was modelled:

- Laughing Kookaburra
- Owl species (Southern Boobook, Powerful Owl)
- Australian Owlet-nightjar
- Striated Pardalote

2. Digital elevation model: A 30 m digital elevation model for Australia was derived as a subset for the Melbourne area. Data as obtained here: http://www.ga.gov.au/scientific-topics/national-location-information/digital-elevation-data

3. Slope: Slope was derived from the above Digital Elevation Model.

4. Climate data: Mean annual climate data for Australia from 1981 to 2012 was obtained and a subset produced for the Melbourne study area. This data came in the form of a point file grid at a resolution lower than 30 metres; hence a kriging technique was used to resample it to the required spatial resolution. The data was obtained here: https://data.bioregionalassessments.gov.au/datastore/dataset/02418c67-f8bb-48a8-88a3-2a5c6b485f78 (Jones, 2009)

5. Tree data: This came from the vegetation maps produced to inform *Living Melbourne*. The mapping was undertaken using the eCognition Essential software, with the key inputs being 2016 2 metre by 2 metre, eight-band multispectral satellite imagery, and Victorian Government LiDAR information from 2008–2009 to 2012–2013.

6. Melbourne natural vegetation cover/land-use: Two datasets where used in this effort to create the best, latest, and highest resolution data possible – a land-use layer (a) from 2017 and a natural vegetation layer (b) from 2005. This combined layer produced a complete vegetation land cover layer, which was critical for modelling bird species.

(a) The Victorian Land Use Information System (VLUIS) from 2017 was used to obtain land-use classes for the entire Melbourne region (http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vluis). The following classes where used from LC_desc_16 and combined as follows:

- Urban/Built-up
- Bare
- Agriculture Brassicas/Legumes
- Pasture and Grassland
- Horticulture – Deciduous/Evergreen/non-woody Woody Horticulture
- Softwood Plantation
- Hardwood Plantation
- Water
- Native Vegetation (expanded using natural vegetation land cover below)

(b) The natural vegetation land cover was used to differentiate the native vegetation class. The data used were the older Native Vegetation (2005) - Modelled 2005 Ecological Vegetation Classes (https://www.data.vic.gov.au/data/dataset/native-vegetation-modelled-2005-ecological-vegetation-classes-with-bioregional-conservation-status). The eight classes below were substituted into the native vegetation land-use class (#8) above.

The classes where combined as follows:

- Wetlands
- Riparian/Riverine Grass/Wood/Forests
- Salt Tolerant and Succulent Shrublands
- Plains Grasslands/Woodlands
- Box Forests/Dry Woodlands/Plains Woodlands
- Heathlands/Herb-rich/Heathy woodlands
- Lowland Forests/Lower Slope Woodlands
- Wet/Damp/Rain Forests

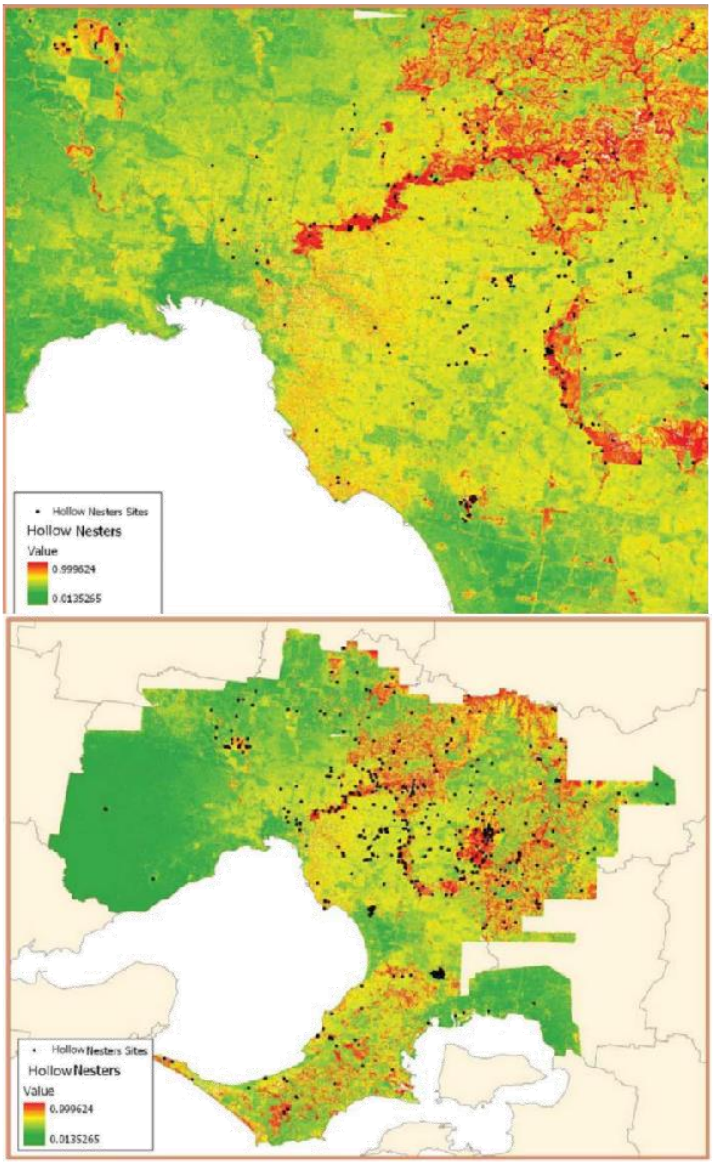


Figure 47 *Modelled distribution for hollow nester species (Laughing Kookaburra, Southern Boobook Owl, Powerful Owl, Australian Owlet-nightjar, Striated Pardalote) in the urban landscape, with suitability ranging from most likely (red) to least likely (dark green) at two scales.*

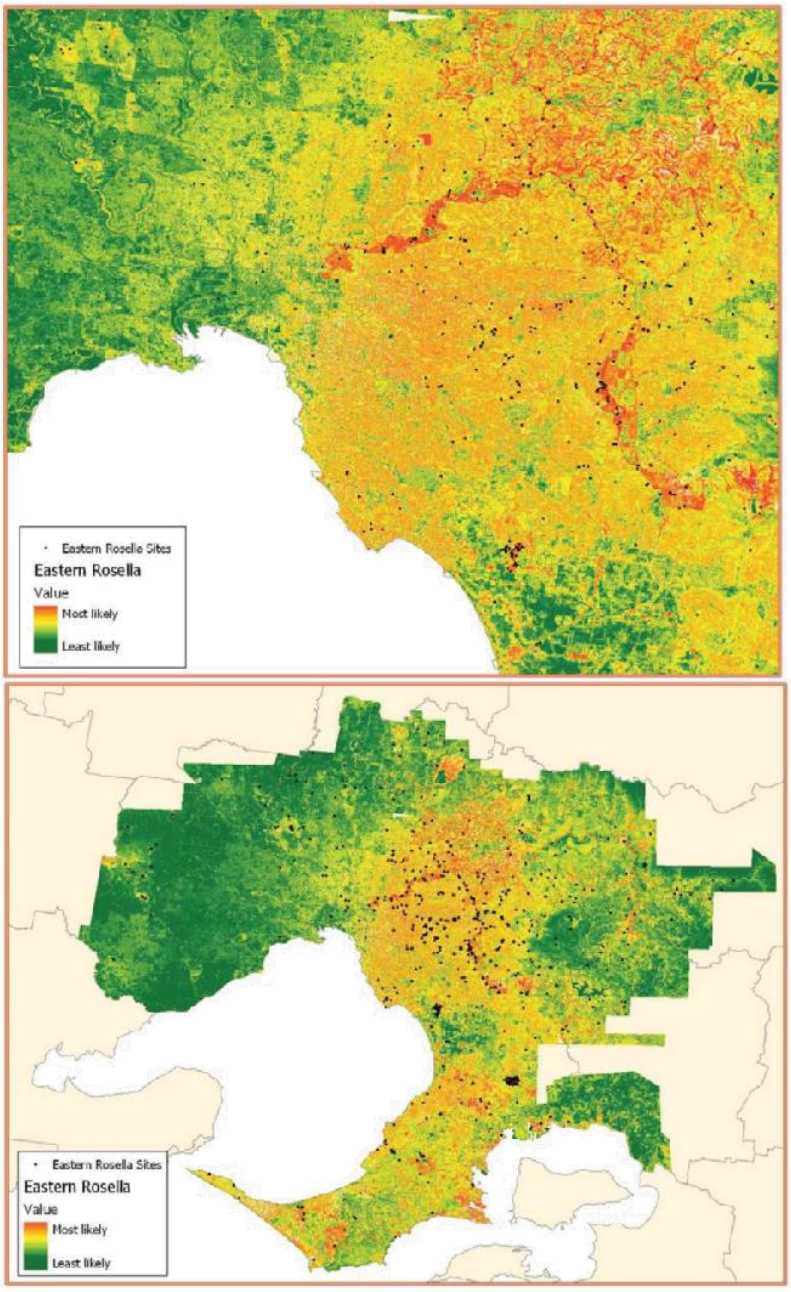


Figure 48 *Modelled distribution for the Eastern Rosella in Melbourne's urban landscape, with suitability ranging from most likely (red) to least likely (dark green) at two scales.*

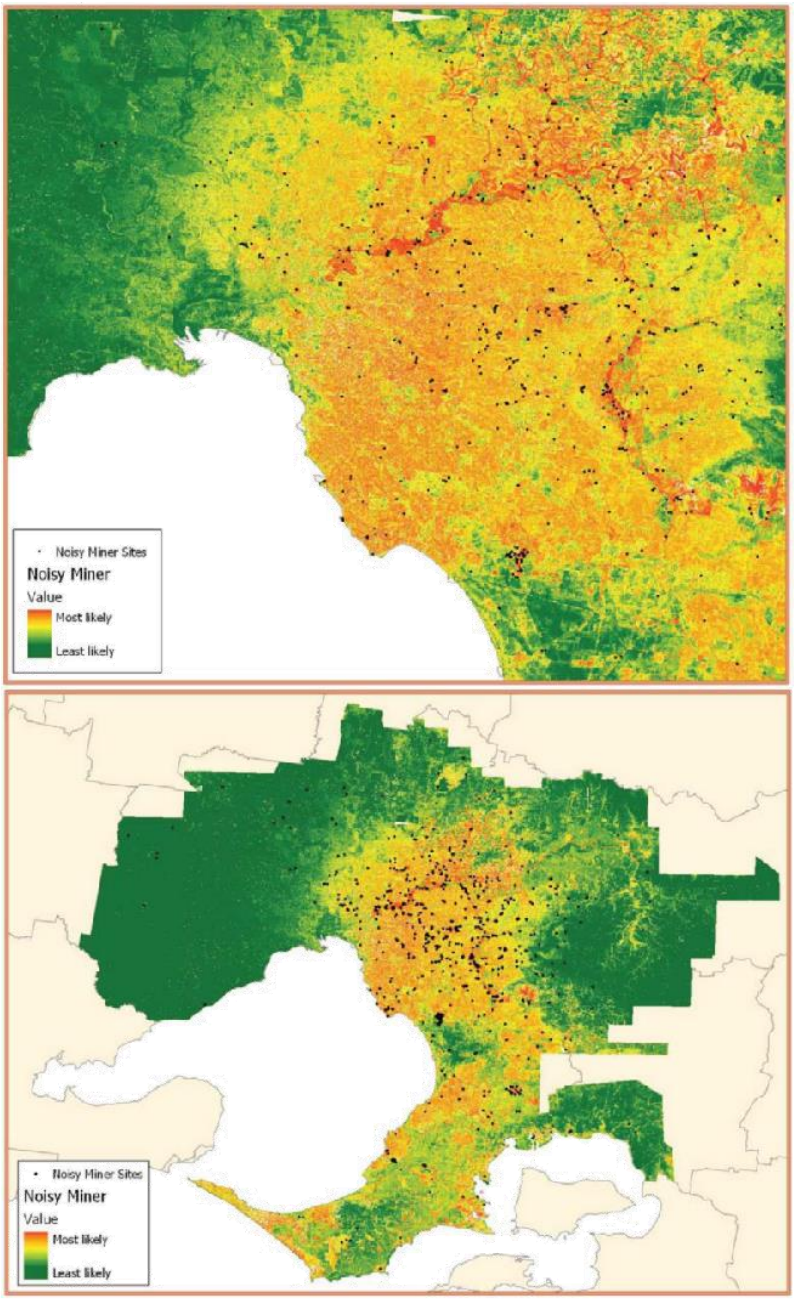


Figure 49 *Modelled distribution for the Noisy Miner in Melbourne's urban landscape, with suitability ranging from most likely (red) to least likely (dark green) at two scales.*

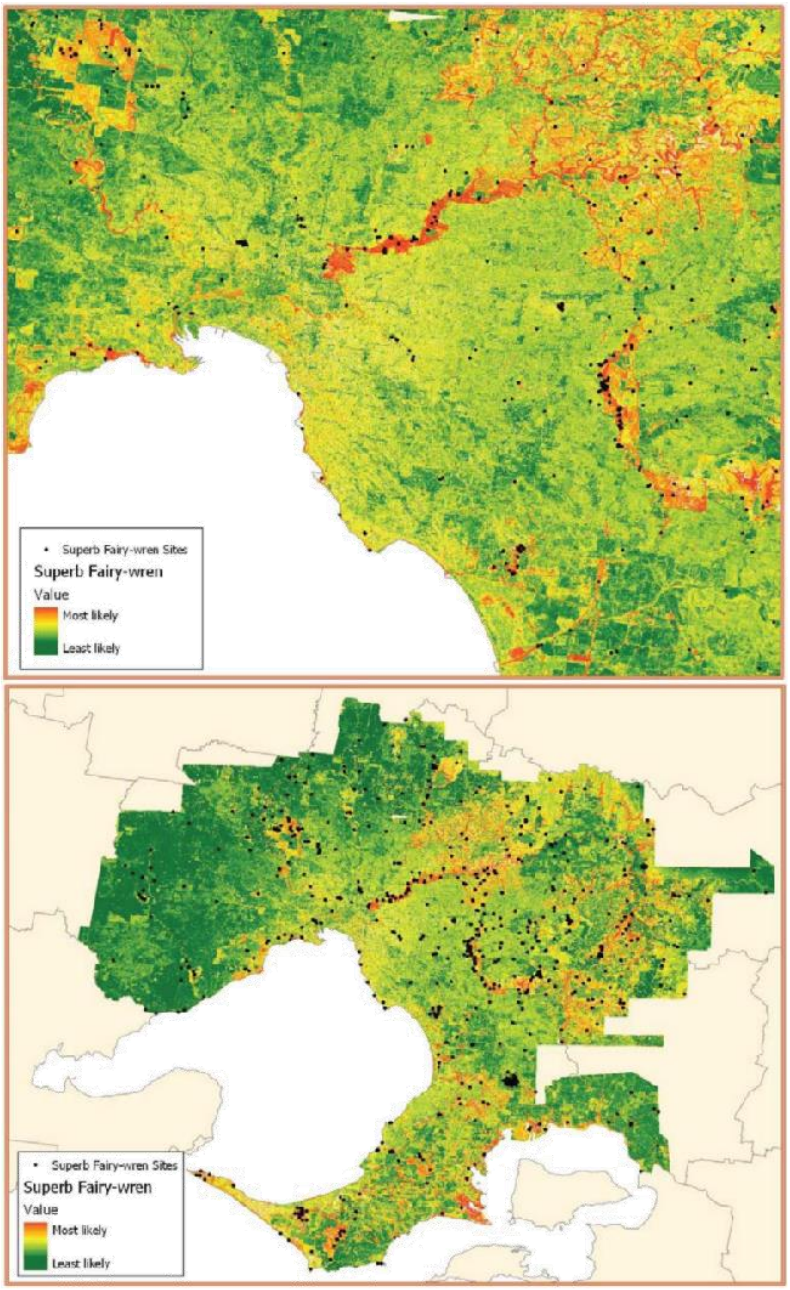


Figure 50 Modelled distribution – at two scales - for the Superb Fairy-wren in Melbourne's urban landscape, with suitability ranging from most likely (red) to least likely (dark green).

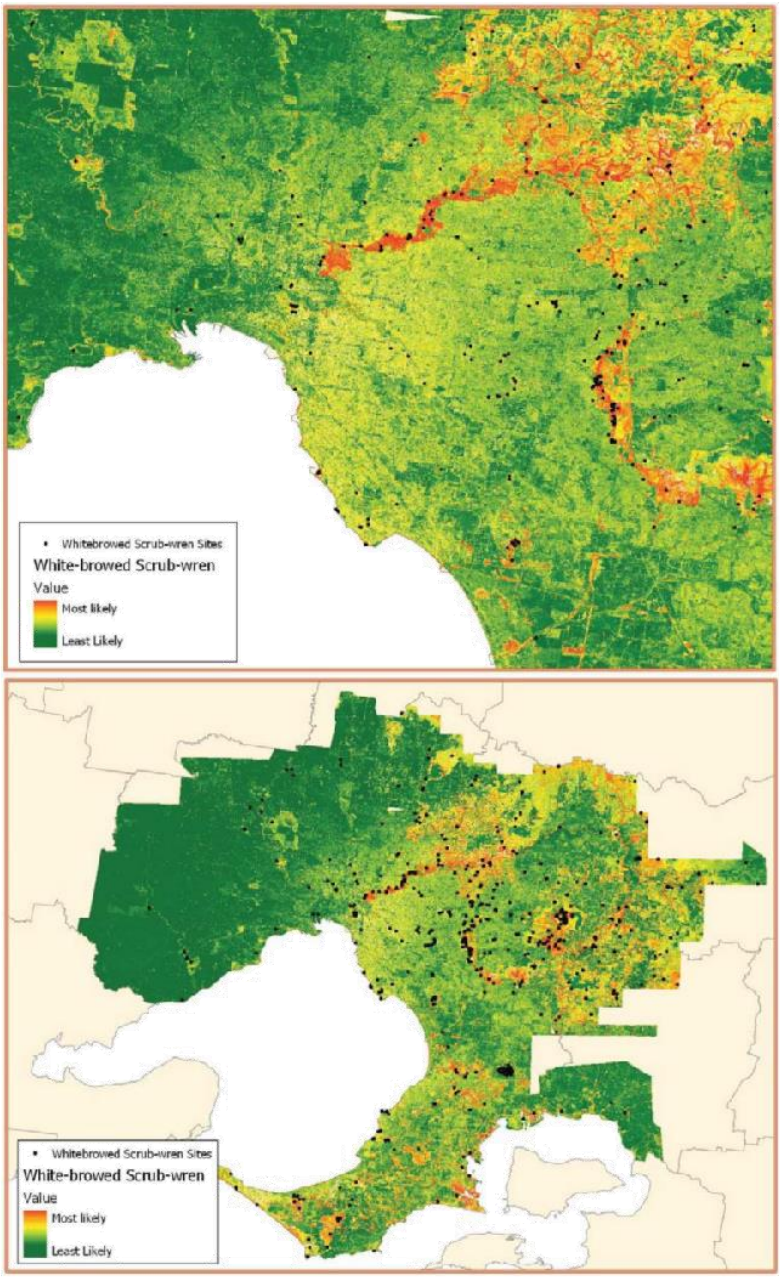


Figure 51 Modelled distribution for the Superb Fairy-wren in Melbourne's urban landscape, with suitability ranging from most likely (red) to least likely (dark green) at two scales.

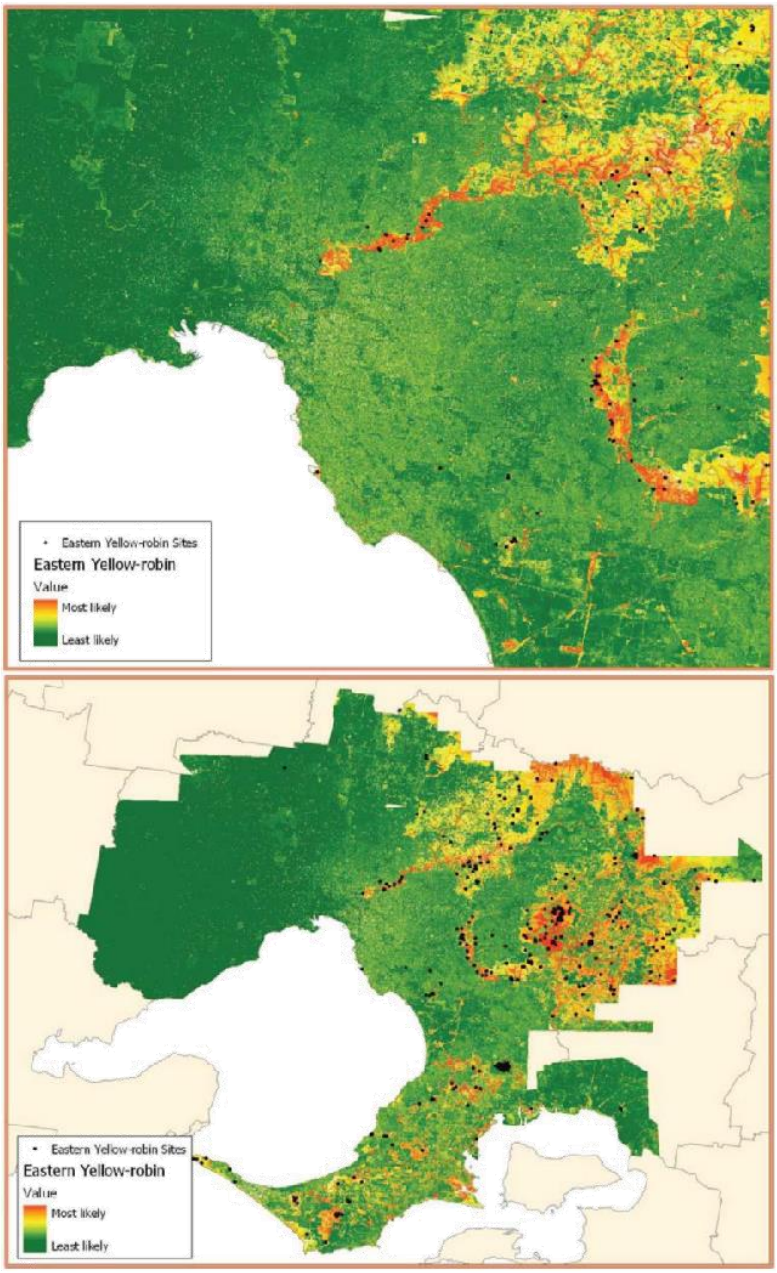


Figure 52 *Modelled distribution for the Eastern Yellow Robin in Melbourne's urban landscape, with suitability ranging from most likely (red) to least likely (dark green) at two scales.*

9 Monitoring, measurement, and metrics

An urban forest plan requires a measuring and monitoring system to ensure that its goals are implemented successfully. A significant component of such a system must focus on the physical urban forest. Measuring and monitoring are two distinct activities: measuring refers to a single activity, such as counting the number of trees at a specific location and point in time, while monitoring relates to repeated measurements with the goal of identifying change. In the long term, repeated measurement of both individual trees and forest sections is vital for understanding the state of an urban forest and for determining the impact of tree planting, husbandry, and stewardship programs. Measuring, monitoring, and maintaining an inventory of urban trees is not a new activity and has occurred for longer than urban forestry has been a discipline (Morgenroth & Ostberg, 2017). However, given the recent technological advances in measuring and modelling, it is now possible to go beyond simple inventory keeping and quantify the many benefits of the forest (Nowak, 2018).

Many diverse stakeholders interact with the urban forest, including citizens, researchers, and government bodies (e.g. transport, planning, environment, and water). These groups require a range of current and historical data for informed decision making. Data such as tree location, height, diameter, and species may be sufficient for the routine care of transport street tree plantings, but park and reserve plantings require information that goes beyond age and health to include provenance, dependent wildlife, and genetic and horticultural data. Given the value of the urban forest services, ecosystem variables are needed for departments that manage the delivery of stormwater services, air quality, biodiversity, and climate change mitigation programs. Last but not least, information such as urban forest management budgets, time, and materials are also required as part of a city's asset and accounting responsibilities. Hence, defining an urban forest dataset that enables strategic progress to be measured needs to incorporate the information that is currently collected, build in flexibility to cater for technological improvements and opportunities, and provide interfaces for the many potential contributors and users.

Urban forest data gathering is a combination of top-down assessments (aerial photography, global positionings systems, light detection, and ranging systems) and bottom-up ground assessments as these provide different types of information. Top-down assessments provide basic metrics on tree cover, distribution, and types. Bottom-up assessments are field-based assessments of the physical structure of the forest (e.g. species, numbers). These assessments can be conducted by citizen scientists, student interns, and trained experts using paper or mobile devices and entering a range of numerical, sketched, and photographic material. Data can be uploaded online and offline. Bottom-up assessments may be done by sampling or as complete inventories, and can be one-off activities or part of an ongoing monitoring program.

9.1 Examples of what is being monitored in metropolitan Melbourne

9.1.1 City of Melbourne Urban Forest Strategy monitoring and measuring

The City of Melbourne Urban Forest Strategy acknowledges that data collection needs to go beyond species, life expectancy, and infrastructure constraints for tree health and include an extensive suite of urban forest structure and impact information. Collected data need to address the six strategic performance targets:

- Increase canopy cover
- Increase urban forest diversity
- Improve vegetation health
- Improve soil moisture and water quality
- Improve urban ecology
- Inform and consult the community

Areas for information development include structural measurements (e.g. canopy cover, density, private and public vegetation, recognition of corridors), physical benefit measurements (e.g. climate amelioration, carbon storage and sequestration, air quality improvements, soil and water conservation), and socioeconomic measures (e.g. outdoor activity, sense of wellbeing, property values, community connection).

9.1.2 Darebin City Council

The City of Darebin 2013 Urban Forest Strategy outlines a range of indicators for measuring the urban forest and strategic progress with its management. Currently, the council collects data on its street trees every two years and is building up a data base of tree health, species, size, structure, and life expectancy. Every five years, a flyover of the council district enables canopy cover measurements to be conducted. Thermal data are collected to assist with measuring the urban heat island effect and to determine where additional trees could be beneficial. The main database is a geographic information system (GIS) that has been modified to log data for each tree.

9.1.3 Boroondara City Council

The Boroondara Tree Strategy 2017 outlines five key performance indicators for its public realm trees. They are the number of trees planted and removed every year, and the canopy cover change, tree age profile, and species tree profile, which are measured every five years. The council also intends to align existing and new tree data with its asset management plan, and to maintain tree data to inform decisions on risk, maintenance, and renewal planning.

9.1.4 Port Phillip City Council

The City of Port Phillip will report every five years on the progress of its urban forest strategy and has highlighted five key indicators. They are the number of hot spots, tree canopy cover, number of trees, community satisfaction with council action being taken about trees, and alternative greening activity (that is, new greening activity where trees are not an option).

9.1.5 Moreland City Council

The City of Moreland's Urban Forest Strategy 2017-2027 has identified three key performance indicators that will be reported on every four years. They are canopy cover, urban forest health, and community satisfaction with council action being taken to maintain the urban forest.

9.1.6 City of Sydney

The City of Sydney Urban Forest Strategy 2013 identifies four strategic areas for monitoring:

- Protect Existing Forest
- Increase Canopy Cover
- Improve Forest Diversity
- Community Engagement

Along with the associated performance parameter/s and frequency of measurement that varies, depending on the monitoring program element, from annually to every 5 years prior to the review of the urban forest strategy.

9.2 Best Practice for Urban Forest Canopy Targets

Increasing the urban forest results in many benefits. They include managing the urban heat island effect, controlling stormwater runoff, and improving air quality. Regardless of the enhancement sought, increasing canopy cover is a key performance measure (Ordonez & Duinker, 2013). While it is important to set a canopy cover target that will satisfy the objective/s, is ambitious and attainable, there is no universal standard. "Numeric targets are ultimately arbitrarily set, as there is no standard as to what, for instance, canopy cover should be for all cities" (Ordonez & Duinker, 2013).

A commonly quoted canopy cover target is 40%. This target was established in 1997 by American Forests, the oldest national conservation organisation in the U.S. "after analysing the tree canopy in dozens of cities over the [prior] five years and working closely with the research community" (American Forests, 2017). However, American Forests no longer supports a universal 40% target. Rather, the organisation supports a target that is specific to a city and incorporates constraints such as development density, land use, ordinances, and climate. It states that, under ideal conditions, realistic urban forest canopy cover targets across the U.S. are 40-60% in cities in forested states, 20% in grassland cities, and 15% in desert cities. American Forests recently launched their Vibrant Cities Lab website (Vibrant Cities Lab, 2018), which summarises the latest urban forestry research, provides cases studies, and incorporates The Sustainable Urban Forest: A Step-by-Step Approach (U.S. Forest Service and Davey Institute, 2016) guide (Leff, 2016) into an online toolkit.

The first step of the guide is canopy cover. It states that, while there is no magic number for cover as this can depend upon many variables, setting a goal is important.

The Sustainable Urban Forest guide highlights that, while there are many parameters to consider when establishing a canopy target, in reality, political forces or educated guesses often direct the final decision. The guide is based on the premise that more cover is usually better than less (assuming that the cover is adequately maintained), and that setting ambitious targets has the added advantage of providing a simple message to motivate the community and officials and secure funding. The document stresses that the elements that go into setting, achieving, and maintaining the goal are as equally important as the goal itself (Leff, 2016).

The guide also states that the most meaningful measure of canopy cover is 'relative cover'. This means that, after identifying the optimal potential cover based on local parameters (e.g. plantable space, soil type, practical constraints such as maintenance, timeframes), the aim should be to achieve 100% of this level. If a community determines that its tree canopy cover should be 30% and its existing cover is 20%, then the target should be 30%, and progress measured relative to its 20% starting point. A single overarching canopy target may be feasible and simple to communicate and promote, but tree canopy cover does not need to be uniform across a municipality, or even across a neighbourhood. Finer scale analysis by land ownership, watershed, or other land use designations may be more practical. The Chicago Regional Tree Initiative (CRTI) (Chicago Regional Tree Initiative, n.d.) identified the land cover types and available planting space for each of Chicago's municipalities (and subsets of the municipalities) and overlaid constraints such as plant stock availability and time frames to determine targets (Darling, 2018).

A United Kingdom research project undertaken in 2017 by the Institute of Chartered Foresters set out to assess the canopy cover of over 265 towns and cities in England to establish canopy cover baselines. The project provided comparisons with Scottish, Welsh, and international towns and cities, and determined guidelines for setting canopy cover targets to improve human health and wellbeing (Doick, et al., 2017). The review of international targets found that the minimum target was 20%, while a common target was 25-35%. The highest international target was 40% and applied to the City of Melbourne and Toronto. The time frame set to achieve the increased canopy cover was typically 20-25 years. The project notes that, while an assessment of parameters such as plantable space, local context, and geography provides a canopy cover target that is attainable, it does not address whether the cover should be higher to attain overall objectives. A range of other considerations related to canopy targets included establishing deadlines, monitoring, and tree protection programs, and prioritising areas to ensure social equity and maximum benefit.

A 202020 Vision for Australia initiated by Hort Innovation in 2013 aims to create 20% more and better urban green space across Australian cities by 2020. To date, the project has produced several reports, including a *How to Create an Urban Forest Guide* (2015) based on the approach taken by the City of Melbourne. While the Guide stresses that recognising the importance of canopy targets does

not assist with identifying an appropriate target, it provides examples of targets set by other cities and municipalities.

Setting goals for private canopy cover is particularly challenging as it directly impacts land development. However, several municipalities have done so regardless. For example, the City of Banyule's goal is to increase canopy cover on non-council managed land by 20% within 15 years, while the City of Moreland's goal is to ensure its current private realm canopy remains at 9%. The City of Wyndham acknowledges the differences between established private realm and new developments and has set two targets: 15% canopy cover for established areas, and 10% canopy cover for new areas by 2040.

An examination of the current urban forest targets reveals that targets can include the following parameters:

- percentage total tree canopy cover
- percentage total vegetation cover (understorey and trees)
- ownership (private land, public land by land manager)
- land use types (e.g. residential, other private, public open space, roads and streets)

The City of Sydney Urban Forest Strategy target is to increase the total canopy cover from 15.5% to 23.25% by 2030, and to 27.13% by 2050. These targets are based on the USDA Guidelines that recommend canopy cover targets for different land uses.

The Nature Conservancy recently released a review that summarised and compared urban forest plans across the USA and internationally (Hinch, et al., 2018). As part of the review, the metrics used to monitor urban forests were considered, and the report identified 23 metrics, both qualitative and quantitative (Table 37).

Table 37 Common urban forest metrics for a range urban forest strategies

	Urban Forest Metric
Quantitative	Number of trees
	% canopy cover
	% canopy cover in neighbourhoods
	% canopy cover by land use
	Rate of change of canopy cover
	% tree diversity
	% potential planting space
	% invasive tree species
	Tree density
	Carbon storage/sequestration potential
	Stormwater capture/filtration potential
	Park acres per 1000 people
	% land as park
	Number of neighbourhoods involved in urban forestry efforts
Qualitative	Existence of and if so quality of urban forest plan
	Existence of and if so quality of urban canopy goal
	Quality of urban forest relative to other regions
	Existence of and if so quality of tree inventory
	Existence of and if so quality of tree species diversity plan
	Existence of and if so quality of tree ordinances
	Existence of and if so quality of comprehensive greening plans
	Types of greening initiatives
	Quality of civic engagement

One of the key recommendations from the analysis was that more research was required to identify which urban forest monitoring, reporting and communicating metrics are most appropriate.

10 Funding and financing mechanisms

Since the establishment of Melbourne as a European-style city, governments at state and local levels, as well as many corporate entities and private citizens, have placed sufficient value on nature and green space within the metropolitan realm to have consistently invested in it. However, it is only in more recent years that people have started ascribing actual financial value not simply to trees, parks, waterways, and other natural elements, but additionally to the kinds of benefits – that is, ecosystem services – that such natural assets provide.

This section highlights some of the funding approaches taken in Victoria to date and outlines more innovative financing mechanisms being implemented locally and round the world.

10.1 Valuation of Melbourne's Urban Forest

To fund any undertaking, it is important to have a clear sense of its value. As has been stated earlier, the metropolitan urban forest is made up of much more than trees alone. However, trees are iconic figures within any forest, and are also by far the easiest flora to value within the urban forest.In the context of the urban forest, communities benefit from public street-, park- and private trees through their aesthetics, recreation, carbon sequestration, air purification, avoided stormwater runoff, and heat reduction (The Nature Conservancy, 2016). Putting an appropriate value on these many benefits is complex, but doing so provides a monetary measure to assist with critical decision making (e.g. care, removal, investment). The United States Department of Agriculture Forest Service has developed a software program "to help communities of all sizes to strengthen their forest management and advocacy efforts by quantifying the structure of trees and forests and the environmental services that trees provide (i-Tree, n.d.)." The software, called i-Tree Eco, has been used extensively within the United States and internationally. End-users include government agencies, universities, and not for profit organisations. More recently, the program has also been adapted for the Australian environment.

While there is currently no total valuation for Melbourne's metropolitan trees, several local councils (e.g. City of Melbourne, Moreland and Banyule) have used iTree Eco to value aspects of their urban trees. More recently, a Melbourne University Masters study attempted to value the benefits of Melbourne's total metropolitan street trees using i-Tree Eco (Mooney, 2018). Incomplete data sets meant that the value of the street trees could be calculated in only 13 of the 32 local government areas. For these 13 local government authorities, the structural street tree value came to A$2.5 billion, based on the replacement cost with a similar tree in terms of size, species, health, and location. In addition, the ecosystem services values calculated included air pollution removal, carbon storage and sequestration, and avoided runoff, and the annual ecosystem services savings were determined to be A$6.2 million.

10.2 What is the value of Victoria's parks?

Parks Victoria commissioned a review of international research into the health benefits of interacting with nature in parks and natural spaces (Townsend, et al., 2015). The report identified over two hundred studies that showed that contact with nature made people physically and mentally healthier.

The key findings of the review included:

- Ready access to parks leads to increased physical activity levels and improved physical and mental health outcomes.
- Parks foster social connections that support social wellbeing vital to urban community cohesion.

- Contact with nature can enhance spiritual health ('meaning in life'), which underpins all other aspects of health.
- Accessible and safe parks foster active play and associated physical, cognitive, and social benefits for children. For older children, parks can improve mental and social health.
- Parks can provide indigenous peoples with vital physical, mental, social, and spiritual health.
- Barriers such as crime, safety concerns, disability access, gender-related concerns, social and cultural norms, proximity/accessibility, weather, and pollution can diminish the potential of parks.
- Better promotion and design help to ensure that parks are accessible, inclusive, and encourage visitation and use by a diverse range of citizens.

As part of the Healthy Parks, Healthy People program, Parks Victoria and the Department of Environment, Land, Water, and Planning (DELWP) used world-leading environmental accounting to understand the value and benefits that parks and their ecosystems provide to the Victorian community.

The study considered:

- The benefits of parks to the economy from tourism, water supply, honey production, and local port management.

  For example:

  - Annual tourist spend on visiting parks was approximately A$1.4 billion.
  - Approximately 16% of the total state water demand is runoff from nine parks. The annual market value of this water was estimated to be A$244 million.
  - Bees in parks and reserves produce around 1200-1600 tonnes of honey worth an estimated annual A$3.4-4.6 million.
  - Parks Victoria manages the Port Phillip, Western Port, and Port Campbell built infrastructure and recreational facilities, with an estimated annual gross value added of A$300 million.

- The benefits of parks to Victoria's productivity and sustainability through water purification, flood and stormwater protection, climate regulation (carbon storage), coastal protection, pollination, and the maintenance of genetic diversity and species.

  For example:

  - In non-metropolitan areas, national and state parks reduce silt entering waterways by 92% when compared with alternative land uses, and metropolitan parks reduce the nitrogen entering waterways by 85% compared to urban development.
  - The value attributed to stormwater retention by Melbourne's metropolitan parks is an estimated annual A$45 million.

- The benefits to Victoria's liveability through recreation and health, landscape and neighbourhood amenity, indigenous cultural connection, social and community cohesion, historic place conservation, and scientific and educational benefits.

  For example:

  - Approximately 50 million visits are made to Victoria's national, state, and metropolitan parks every year, with an enjoyment value of between A$600-1000 million.

- Avoided healthcare costs and productivity benefits from the physical activity associated with Victorian parks is in the region of A$200 million.

A recent study in the United Kingdom (Anon., 2018) calculated an economic value for parks and green spaces in the U.K. The study concluded that the 'wellbeing value' alone, aggregated across the U.K., provided an estimated equivalent benefit of over $A60 billion per year. Compensation to an individual would be in the order of $A1,700 per year to replace the life satisfaction they would have gained from using their local park or green space more than once per month.

10.3 Funding

Funding is an amount of money provided by government or by organisations for an express purpose without expectation of the repayment of capital. The provision of funding is generally based on an agreement to undergo a project or produce a certain outcome for the common good. (Waqar, 2015)

Currently, every council across metropolitan Melbourne funds the protection, creation, and maintenance of vegetation and green space that, in aggregate, contribute to the urban forest. This is among the reasons why the creation of the metropolitan urban forest was the Resilient Melbourne strategy action most supported by councils. Based on data gathering for this project, in the financial year 2017-2018, it is estimated that somewhere in the range of $256 - $384 million – approximately $8 - $12 million per council – were spent on contributions to the urban forest.

In part, this considerable range stems from the lack of a consistent approach to defining contributions. Some council respondents included all spending on open space, while others included only tree planting, maintenance, and contributions focused on specifically agreed urban forest work. Nonetheless, at an aggregated and averaged level, this presents a reasonable estimate of the annual amount local government is contributing to the metropolitan urban forest.

In addition to local government contributions, critical state agencies such as Parks Victoria and Melbourne Water reported collectively funded activities contributing to the metropolitan urban forest in excess of $27 million. This does not include contributions from VicTrack and VicRoads.

However, with some notable exceptions mentioned in Chapter 4, there is little coordination across municipal boundaries and no unified approach to enhancing the urban forest at metropolitan scale.Despite the significant expenditure in the urban forest, only about 40% of metropolitan Melbourne's existing green space and potential forest vegetation is in the public realm. This further underlines the importance of creating mechanisms that either force private contributions, as outlined in Section 5.3 on planning and legislation, or incentivise it through both existing and potential new mechanisms discussed below.

10.3.1 Victorian Government Sustainability Fund

The Victorian Government's Sustainability Fund was established under the Environmental Protection Act 1970 (Section 70) (Department of Environment, Land, Water and Planning, 2019). The purpose of the Fund is to foster sustainable resource use and best practice for waste management, climate change adaptation and mitigation initiatives across the state.

The Sustainability Fund retains remaining Victorian Municipal and Industrial Landfill Levy (MILL) revenue, after funds are distributed to state environmental agencies such as the Environment Protection Authority and Sustainability Victoria.

In 2017-18, $419 million was provided to Sustainability Fund expenditure over the next five years, a record high contribution from the state budget. This includes sizeable investments throughout Victoria in:

- waste and resource recovery
- climate change adaptation

- biodiversity protection

10.3.2 Renewable energy procurement, storage and National Energy market reformOpen Space Contributions

Open space contributions are a primary source of municipality income, specifically for the purpose of supporting the development, management, and maintenance of new and existing open space. It is levied on new urban development. The open space contribution rate is contained in the Melbourne Planning Scheme's Clause 52.01 (% of undeveloped land value). Funding for open space is also provided through a development contributions plan in the Melbourne Planning Scheme's Clause 45.06. Table 38 provides a comparative analysis of open space contributions between the City of Melbourne and 20 other metropolitan councils based on 2011 population statistics. Contribution rates range from 0- to 20% of the value of undeveloped land. Additional open space and improvements are occasionally delivered through Section 173 agreements between councils and developers. This information is beyond the scope of the planning scheme.

Table 38 Open Space Contribution Rates by Local Government Area

Municipality	Forecast no. of residents 2011	Forecast no. of residents 2026	Forecast change 2011-2026	Forecast % Change 2011-2026	The open space contribution rate contained in the Melbourne Planning Scheme (% of undeveloped land value) *Clause 52.01*	Funding for open space is also provided through a development contributions plan in the Melbourne Planning Scheme *Clause 45.06*
Melbourne	**98,162**	**159,882**	**61,720**	**63**	**None**	**No**
FRINGE AND						
Cardinia	76,338	140,526	64,188	84	8%	Yes
Melton	108,839	196,012	87,173	80	3.21% to 9%	Yes
Wyndham	172,101	302,907	130,806	76	2.65% to 3.1%	Yes
Whittlesea	162,067	268,013	105,946	65	8% to 11.3%	Yes
Casey	253,116	359,452	106,336	42	1.61% to 10%	Yes
Hume	175,001	248,409	73,408	42	2.86% to 4.48%	Yes
Mornington	150,642	180,258	29,616	20	5% to 12%	No
Nillumbik	63,674	71,442	7,768	12	5% to 7.9%	Yes
ESTABLISHED URBAN AREA COUNCILS						
Yarra	78,592	97,854	19,262	25	4.5%	No
Moreland	152,001	179,186	27,185	18	2.5% to 6.8%	No
Darebin	142,901	166,075	23,174	16	2% to 5%	Yes
Port Phillip	94,736	109,752	15,016	16	5%	No
Maroondah	107,125	120,591	13,466	13	5% to 8%	No
Stonnington	100,537	113,889	13,352	13	2% to 5%	No
Knox	155,620	172,494	16,874	11	5% to 8%	No
Manningham	118,633	131,364	12,731	11	5%	Yes
Monash	175,959	187,298	11,339	6	2% to 5%	No
Whitehorse	155,175	160,803	5,628	4	4%	No
Glen Eira	n/a	n/a			0.25% to 3.5%	No
Greater Dandenong	n/a	n/a			2% to 20%	Yes

Source: Melbourne Open Space Strategy 2012 (City of Melbourne, 2012)

10.3.3 Growth Areas Infrastructure Contribution

Established by the Victorian Government, the growth areas infrastructure contribution (GAIC)aims to help provide infrastructure in growth areas in metropolitan Melbourne's outer fringe (State Revenue Office Victoria, 2019).The GAIC is "a one-off contribution payable onurban development events".The

contribution can apply to buying, subdividing and applying for building permits within the contribution area.

https://www.sro.vic.gov.au/growth-areas-infrastructure-contribution

This includes growth area land zoned for urban use and development in the following municipalities:

- Cardinia
- Casey
- Hume
- Melton
- Mitchell
- Whittlesea
- Wyndham

While the GAIC and similar contributions are usually linked to the provision of traditional 'grey' infrastructure, significant opportunity exists to also apply these funds to natural infrastructure. This could contribute to water sensitive urban design and the metropolitan urban forest in outer growth areas, and the multiple benefits these types of infrastructure offer.

10.3.4 City of Melbourne Urban Forest Fund

The City of Melbourne is working to expand its green networks. Through its Urban Forest Fund, the City seeks to engage with the broader community to leave a 'great, green legacy for Melbourne, now and into the future' (City of Melbourne, 2019).

By 2022, the City aims to grow the Urban Forest Fund to $10 million by seeking contributions from other organisations and individuals seeking to promote urban greening within the City of Melbourne.Contributions will be distributed for the purpose of enabling new greening projects including parks, trees and green roofs and walls within the City of Melbourne.

The City of Melbourne has provided $1,000,000 in seed funding to date, with a further $215,000 donated from VicRoads.

10.3.5 Melbourne Water Grants

Corridors of Green Grants Program

Melbourne Water provides grants of up to $20,000 through the Corridors of Green Program to support implementation of projects addressing management of natural resources, in public spaces adjacent to waterways (Melbourne Water, 2017).

The program aims to support, both financially and technically, the conservation and improvement of riparian green space. The improvement of these natural assets will:

- Foster an understanding of waterway health amongst the community
- Promote biodiversity
- Strengthen native vegetation (quality and quantity)
- Provide habitat for returning native species.
- Reduce impacts from processes which threaten the health of waterways

The grants help local councils across Melbourne, as well as public land managers, to improve the health of their waterways and strengthen riparian habitat corridors.

Living Rivers

Melbourne Water also provides funding to councils via the Living Rivers program, designed to fund projects which specifically improve the quality and reduce the quantity of stormwater in Melbourne waterways (Melbourne Water, 2019). Engaging local governments to contribute toward stormwater management is a primary goal of the program, as councils are better placed to attend to the physical landscape at a local scale, and have greater opportunity to connect with the local community.

Grants of up to $300,000 are available twice yearly, to projects including capital works, strategy development and educational programs. Prioritisation is given to capacity building projects which instil Integrated Water Management and Water Sensitive Urban Design principles in standard practice. The Living Rivers program aims to fund projects and programs which continue to support stomwater management beyond the timeline of funding.

10.3.6 National Landcare Program

The National Landcare Program is the primary commitment to natural resource management funded by the Australian Government. Since the 2014—2015 financial year over $1 billion has been invested via four main avenues, the Natural Heritage Trust being the largest (Commonwealth of Australia, 2017).

The National Landcare Program is structured to enable long-term, on-ground planning and investment in natural resource management by engaging communities in land management practices and incentivising industry to contribute to improving natural conditions and promoting the health of waterways, soil and biodiversity.

The funding made available through the grant program supports sustainable agriculture practices and conservation of the local environment, and complements funding for other trusts including the Reef Trust and Land Sector Package. A number of sub-programs exist under the National Landcare Program, which support natural resource management bodies across Australia, as well as contributing to sub-program initiatives such as 20 Million Trees and the Indigenous Protected Areas program.

In 2017—2018, the program provided a total of $5 million to various groups seeking to fulfil the objective of the National Landcare Program: 'to protect and conserve Australia's water, plants and animals and the ecosystems in which they live and interact, in partnership with local communities'.

20 Million Trees

The 20 Million Trees Program, established in 2014 and operated under the National Landcare Program, aims to partner the Australian Government with the broader community to plant 20 million new trees by 2020. Three rounds of competitive grant allocations were held under the program, providing over $12.4 million combined to communities and organisations to re-establish green corridors and deliver urban forest outcomes at a local level (Australia, 2019).

While funding opportunities aligned with the initiative have ceased, the 20 Million Trees Program remains aligned with other initiatives under the National Landcare Program.

Indigenous Protected Areas Program

The New Indigenous Protected Areas Program is the Australian Government's commitment to assist indigenous groups in establishing and maintaining Indigenous Protected Areas. A $15 commitment has been made to 2021 and will include the provision of funding for groups looking to establish new areas of indigenous cultural, historical and biodiversity significance across Australia (Australia, 2019). The first competitive funding round under the Program ran from February 2018 to April 2019.

10.3.7 Victorian Landcare Grants

The Victorian Landcare Grant program exists to support Landcare and other environmental volunteer groups in order to undertake land restoration efforts. In 2018, the Victorian Government committed $1.8 million for Victorian Landcare Grants for the 2018-19 financial year (Department of Environment, Land, Water and Planning, 2018).

Applications closed in June 2018, and amounts of up to $20,000 were granted to 363 applicants for on-ground works, education, and capacity-building projects. Additional support and start-up grants of $500 were also made available for new and existing groups.

Grants were open to all Victorian Landcare and environmental volunteer networks that pursued to advance the Landcare ethic. These include, but are not limited to:

- Coastcare groups
- Conservation Management Networks
- 'Friends of' groups
- Landcare groups and networks

10.4 Financing

In contrast to funding, which is provided without any expectation of the return of capital, financing is the provision of capital on the expectation that it is to be repaid over a certain time frame with interest. Financing is usually provided by a financial institution or by investors, and the financed organisations are held liable for repayment under the provisions of the repayment agreement. (Waqar, 2015)

As the cost of assets, including land and nature, has increased globally in recent decades while the cost of capital has generally fallen, there has been a notable move away from simply funding the protection and maintenance of urban parks, street trees, and green space to using financial mechanisms instead. These allow for increased up-front investment, attracting capital from a range of sources, with interest repaid over time. This option allows governments, in particular, to achieve notable outcomes for reduced initial funding.

There are a range of considerations and options for pursuing greening and urban forestry outcomes through innovative financing. An overview of this is presented in Figure 53 below.

Figure 53 *Options for pursuing greening and urban forestry outcomes through innovative financing*

The diagram below indicates the types of issues that an urban forest can help to address, making it attractive to financing.

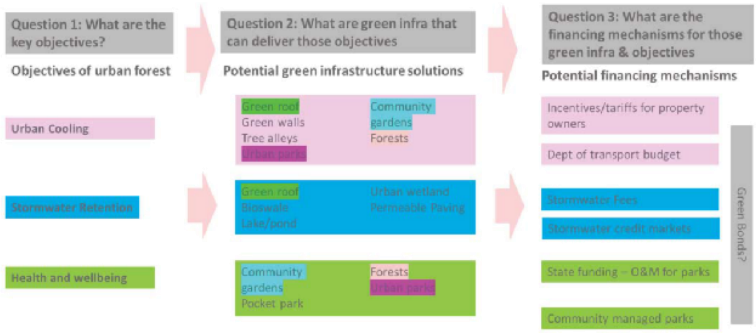


Figure 54 Financial response options to funding the urban forest

10.4.1 Local financing mechanisms

In 2016, the Victorian State Government issued 'green bonds' through the Victorian Treasury Finance Corporation to the total value of $300 million (Victorian Government Department. Department of Treasury and Finance, 2016). Green bonds are used to finance new and existing projects which make efforts to combat climate change, such as low carbon buildings, renewable energies, and water and transport infrastructure upgrades. Victoria has become the first Australian state Government to issue green bonds, and the first state or federal government worldwide to issue green bonds certified with the international Climate Bond Certification.

In their current form, the existing green bonds are not designed to support urban greening and forestry. They also have two further limitations with regards to the work they support: firstly, the bonds requires local government to take on the debt, which many resist; and secondly, they do not direct the outcome towards a shared metropolitan goal. A more specifically designed form of government-backed debt is required to enable such finances to achieve metropolitan wide urban forestry outcomes.

10.4.2 International financing models for environmental and broader outcomes

Below is a list of incentive mechanisms currently being used by municipalities around the United States. The incentives have been organised categorically by type; the following are the primary types of green infrastructure incentives as identified by the United States Environmental Protection Agency (United States Environmental Protection Agency, 2014):

Stormwater Fee Discount: Require a stormwater fee that is based on impervious surface area. If property owners reduce need for service by reducing impervious area and the volume of runoff discharged from the property, the municipality reduces the fee.

Development Incentives: Offered to developers during the process of applying for development permits, to encourage practices which improve water quality and reduce stormwater runoff in urban developments Examples include: zoning upgrades, expedited permitting, reduced stormwater requirements and increases in floor area ratios.

Grants: Provide direct funding to property owners and/or community groups for implementing a range of green infrastructure projects and practices.

Rebates & Installation Financing: Provide funding, tax credits or reimbursements to property owners who install green infrastructure and water sensitive urban design projects particularly in areas most in need of green infrastructure provision, such as those with limited green space or low surface permeability.

Awards & Recognition Programs: Provide marketing opportunities and public outreach for exemplary projects. May include monetary awards.

Some case studies of such financing mechanisms locally and from around the world are presented in the following subsections.

10.4.3 Finance models for metro-wide greening - Portland, OR, USA

Since 1995, the Portland metro region has implemented four funding measures for urban nature projects via voter investments (Oregon Metro, 2019). The provision of 'local share', distributed to the 32 local jurisdictions as negotioated by the jurisdictions, has afforded voters the opportunity to invest in a network of parks and natural spaces. All four measures included competitive grants to fund urban greening at different scales.

Bond measures: A democratic vote approving capital bond measures in 1995 and 2006saw Portland's Metro acquire land, provide funding to community nature projects and parks providers, and protect 13,000 acres of open green space. Local cities and counties have received grants using these bond measures to go towards hundreds of community nature projects across the metropolitan region.The 1995 bond measure raised $136 million to support clean water, healthy habitat and biodiversity, and the 2006 bond measure raiseda further $227 million.

Local option levies: In 2013, voters across greater Portland approved a five-year levy raising approximately $10 million per year to care for the region's parks and trails., supporting restoration and park improvements while also contributing to volunteer programs and community grants. In 2016, citizens voted to approve a five-year renewal of the levy to 2023, raising approximately $16 million per year over the renewed period.

10.4.4 Funding tree planting for public health - The Nature Conservancy

A potential avenue currently being explored to fund urban forestry is to link funding for trees and parks to human health goals and objectives. The impact of trees on particulate matter reduction, alone, is hypothesised to result in health benefits offsetting roughly 13% of the costs of planting and maintatining trees (McDonald, et al., 2017). Air pollution is only one of many observed health improvement pathways provided by nature – others include the promotion of physical activity, refuge from extreme heat, and overall happiness and mental wellbeing from connection with nature.

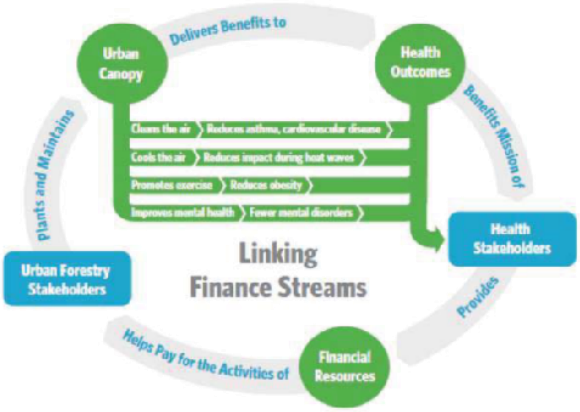


Figure 55 *Conceptual model of the linkage between urban forestry funding and health funding* (McDonald, et al., 2017)

The concept of linking finance streams for nature and health is straightforward in theory (Figure 52). Funds spent on planting and maintaining trees and other urban vegetation make urban areas greener, in turn delivering significant benefits to both physical and mental health. This aids the health sector to enhance its mission of improving the health and wellbeing of the human population.

It makes sense, therefore, that the health sector could pursue the promotion of the urban forest sector and greater urban vegetation, in order to make full value of the health outcomes of the urban forest. Financial resources put towards urban vegetation by the public health sector may greatly improve preventative health benefits provided by the urban forest, and further strengthen the link between a healthier environment and positive human health outcomes.

10.4.5 Private Markets for green stormwater infrastructure - Philadelphia, PA, USA

Philadelphia's ambitious *Green City, Clean Waters* plan, adopted in 2011, saw the city commit to transforming over 9600 acres of impervious surface area, incorporating green infrastructure designed to capture the first one inch of rainfall from any given storm.

This city-scale plan was determined to cost approximately $2.4 billion USD (equivalent to $250,000 per acre) over its 25 year lifespan, saving billions of dollars over traditional grey infrastructure to produce similar results. However, an even cheaper pathway to achieving the plan's ambitions has been suggested – leveraging private investment and facilitating installation of green infrastructure on private as well as public land, in order to save money for the city as well as taxpayers (Valderrama, et al., 2013).

An analysis in NatLab's "Creating Clean Water Cash Flows" identifies the potential for Philadelphian homeowners to retrofit their residences with green infrastructure and see a return on investment within 4 to 10 years, all the while contributing to the city's stormwater retention capacity. Private investment therefore has the potential to dramatically reduce the cost to the City of maintaining their waterways.

Due to the large variation in costs for green infrastructure retrofits, the analysis by NatLab suggests only low-cost raingardens and bioswales as stable investments to repay residential investors in runoff fee savings within ten years. However, public policies may be used to improve the private market for green infrastructure as well as the payback period for investment while still keeping costs to the City lower than those projected in the *Green City, Clean Waters* plan.

Tools for broadening the market and making investment more attractive include:

- For green infrastructure investment, project aggregation can reduce upfront capital costs through economies of scale
- Credit trading programs throughout the city and offsite mitigation schemes can incentivise private investment in retrofits
- Taking advantage of vacant land for green infrastructure opportunities can be cheaper than retrofits and make land more attractive

Reducing risk for private investment in green infrastructure can be achieved through:

- Reducing regulatory uncertainties (long-term stormwater fee schedule; renewal process for stormwater fee discount; re-approval process and re-approval criteria)
- Reducing project risk (lack of collateral, high transaction costs relative to project size, and lack of a track record) for stormwater retrofit financing repayment

Reducing risk with a loan loss facilityCity-scale investment could also be bolstered through the use of a pay-for-performance structure, modeled on private-public partnerships currently seen in a number of traditional infrastructure projects globally. This may provide significant incentive to invest in some of the more economically appealing retrofits on public as well as private land.

10.4.6 Stormwater Fees and Offsets Melbourne Water

Melbourne Water operates a stormwater offset service, ie. A financial contribution paid by residential developers in order to fund offsite stormwater management projects. These projects are deisgned to offset impacts from stormwater which is unable to be treated within new developments (Melbourne Water, 2018).

A key role in Melbourne Water's operations, stormwater management and waterway health throughout greater Melbourne is achieved by working and engaging with councils, home owners and relevant authorities as well as industry. Melbourne Water also supports developers to ensure receiving waters are protected and maintained, as required by the Victoria Planning Provisions (Department of Environment, 2018).

In developments where compliance with stormwater management requirements is impractical, Melbourne Water offers the flexible offset service to enable developers to comply with the Victorian Planning Provisions. Adopters of a development services scheme who are unable to meet best practice within their development are able to fund stormwater management works offsite either through the offset scheme or as an additional 'stormwater offset' component to their scheme.

Currently, the offset provides funds for capital works only, while Melbourne Water and various agencies fund the ongoing maintenance and operational expenditure of assets. The current rate offered for offsets is $6,645 per kg of annual total nitrogen load; the program and rate are under review.

10.4.7 Green bonds China

Published by the Climate Bonds initiative and China Central Depository & Clearing Co. Ltd (with support from HSBC), the China Green Bond Market 2017 report details China's progress on issuance of green bonds and market growth for green infrastructure (Xiangrui Meng, Alan; Lau, Ivy; Boulle, Bridget; Chen, Sen; Liu, Xiaoyi; Liu, Tianyu, 2018). The second annual flagship report on policy development for green bonds, the report shows a record total green bond issuance of over $37.1 billion (USD) throughout 2017.

A total $22.9 billion USD of this total was aligned with international definitions, and accounts for a total of 15% of green bond issuance worldwide. China, now the second largest green bond market globally, aims to reach $1 trillion USD total in green bond issuance by 2020.

2017 also saw the first greening opportunities idenitified in the Belt and Road initiative, which could attract even further investment into natural infrastructure through green bonds. Over $126 billion USD has been commited to short-term infrastructure projects under the Belt and Road Initiative, marking the importance of natural infrastructure investment in the cross-continental Belt and Road.

10.4.8 'Resilience Insurance'- Quintana Roo, Mexico

Another financial mechanism for biodiversity protection and conservation is through insurance. Collaboration by the Quintana Roo state government in Mexico, The Nature Conservancy and science community partners has culminated in the development of the Coastal Zone Management Trust (The Nature Conservancy, 2018).

The Trust has two roles; It aims to fund the continuous maintenance and ongoing restoration of the coral reef and local beaches of Cancun and Puerto Morelos areas, while also funding an insurance policy for approximately 60km of coast. Triggered when severe weather (wind speeds exceeding approximately 100 knots) hits and damages the reef,the insurance policy will release funds which can then be used to enable restoration efforts to help rehabilitate the reef, and return it to its full protective capacity more quickly, in order to protect the local area's $10 billion tourism economy.

The implementation of this innovative policy will protect a valuable industry and invaluable assets along Mexico's coast, encourage and bolster coastal conservation and ensure a resilient local economy in Quintana Roo – all while creating a new avenue for the insurance industry which may be compatible with other global regions and ecosystems.

Partnership between The Rockefeller Founation and the State Government of Quintana Roo has allowed the execution of the Trust after over two years in development.

10.5 Financial analysis methodology

The financial analysis of *Living Melbourne* is designed to quantify the costs of achieving user-specified, urban tree canopy goals. It is designed as a simple estimate of costs that can be refined as and when more specific and detailed planting plans are available.

The analysis model is contained in an Excel spreadsheet. It is designed so that the user inputs information on the tree canopy target as a percentage of an area. Metropolitan Melbourne is divided into regions (Eastern, Inner, Inner South East , Northern, Southern, and Western), and the tree canopy targets are pre-set at ambitious levels based on parameters such as the climate and the existing (baseline) tree cover of the region (Table 39).

Table 39 Baseline and target canopy cover for metropolitan Melbourne for vegetation heights greater than 3 metres

Region	Baseline canopy cover (% vegetation canopy >3m)	2050 Target (% vegetation canopy >3m)
Eastern	25.2	30.0
Inner	12.5	27.5
Inner SE	21.7	30.0
Northern	12.1	27.1
Southern	16.4	30.0
Western	4.2	20.2

For each council, within each of the regions, the algorithm used in the model calculates the amount of forest canopy cover required to reach the target, and partitions this needed canopy cover across three land-cover types (private, open space, and Crown Road Reserve) in proportion to their area within the council. The importance of this partition is that, as actual greening plans in a particular council or region may concentrate planting in particular land cover types, significantly changing the distribution of new urban forest cover from what is assumed in the analysis model.

The user then inputs the stocking density (stems/ha), and a range of planting costs per stem (low, medium, and high cost scenarios). In the current calculation in the spreadsheet, these values are pre-set at reasonable values based on a review of available data for the Melbourne area (see the 'Planting and maintenance cost base' and 'Stocking density analaysis' below) (Table 40).

Table 40 Stocking density and cost estimates for stems to be planted

Land-use type	Stocking density (stems/ha)	Costs, med. ($/stem)	Costs, low ($/stem)	Costs, high ($/stem)
Private	103	371.00	236.00	440.00
Open Space	71	14.50	13.50	27.00
Crown Road Reserve	109	371.00	236.00	440.00

For each council, the algorithm then simply calculates the total cost of tree planting plus two year's maintenance for planting on open space and Crown Road Reserves. This results in three cost scenarios (low, medium, and high) and three cost estimates generated for each council. These are then summarised by region, or by tree target. If planting costs are assumed to be spread over about 30 years (to 2050), and with some assumptions about likely maintenance costs, capital expenses and operation and maintenance costs over time can be estimated.

It is emphasised that the spreadsheet is merely an algorithm for calculation. It is only as meaningful and realistic as the tree planting targets and cost estimates that users input. For the purpose of *Living Melbourne*, a single target (to 2050) has been applied to the model. However, the model can be amended to accept a range of targets (e.g. low, medium and high) which can be used to test additional cost estimates i.e. three targets and three cost scenarios would result in nine cost estimates for each local government authority and region.

10.5.1 Planting and maintenance cost base

Open Space

It is acknowledged that costs will be affected by parameters such as site-area and local circumstances and needs. The costs assumptions associated with the Melbourne analysis have been drawn from the following sources:

- Council Arboriculture Victoria – a network of local government authority arborists
- A riparian land management organisation
- Personal comments from local government authority open space managers
- Nursery and Garden Industry Victoria

Based on the information from the above sources tube stock are assumed to be used for park / reserve trees, and costs input to the model are inclusive of purchase, planting and two year's maintenance. Additional comparative information was provided by a riparian land manager from example project costs for larger riparian vegetation restoration works.

Cost level	$AUS per unit (tree)
Low cost	$13.50
Medium cost	$14.50
High cost	$27.61

Crown Road Reserve

The Stocking Density analysis was undertaken by The Nature Conservancy using:

- ArcGIS
- The eCognition Essentials metropolitan vegetation mapping developed to inform *Living Melbourne*
- 10cm aerial imagery provided by Victorian Government

Based on the information from the above sources, street trees are assumed to be 45L pots and costs input to the model are inclusive of purchase, planting and two year's maintenance.

Cost level	$AUS per unit (tree)
Low cost	$236.00
Medium cost	$371.00
High cost	$440.00

Private

It is assumed that householders/residents would be planting semi-mature trees rather than tube stock. Therefore, private planting costs are assumed to be the same as planting of street trees [this assumption under review by NGIV – and may be substantially revised downward]. However, it is recognised that:

- householders are (probably) purchasing single trees from a retail nursery and that supplementary products (soil, mulch etc.) may add to initial prices
- there is a substantial variation in the price of retail nursery trees depending on size, species and vendor

10.5.2 The Stocking Density analysis

Undertaken by The Nature Conservancy in September 2018.

Analysis method

The analysis was undertaken on the following three key elements: open space, residential lots and Crown Road Reserves (roads). In summary, the method was to provide multiple examples for each landuse type, measure the canopy area within that area of land and count the stems under that canopy. The canopy data was derived from the eCognition vegetation mapping (August 2018).

Whilst a random analysis was undertaken there were some essential elements that influenced the choice of spaces assessed, including:

- Canopy cover that was representational in terms of that particular spatial area
- Only vegetation >3m was considered as it is difficult to price/cost the benefits of shrubs/small vegetation
- canopy cover that was not contiguous. That is, specific stems could be identified in the landscape. It is difficult to measure the stems of a large bush / forest area such as in a conservation reserve or natural/semi-natural riparian environment.
- Areas where the eCognition mapping software clearly identified canopy cover within a specific area.

Open space

30 reserves were analysed across metropolitan Melbourne Councils

- Parks and reserves (0.5 ha – 5 ha)
- Active Recreation reserves – e.g. where trees are part of the landscape surrounding a sports oval or other recreational facility

The average number of stems per hectare of canopy = 71. The range was from 11 to 185 stems per hectare of canopy cover.

Note: A limitation to the Open Space analysis was that there were larger open space reserves where stems could not be counted because the canopy cover was total (e.g. natural and semi natural open space, conservation reserves, riparian reserves, parks with large patches of forest cover).

Crown Road Reserves

Analysis was undertaken based on the road widths as divided into classes. A 'road casement layer' was used to determine the road boundaries and help identify whether a tree stem was within the crown road reserve or on private land.

Various designated classes of roads were analysed from across metropolitan Melbourne including

- Highways
- Arterial and sub-arterial roads
- Local and collector (generally residential) streets

19 roads were analysed in total

The Average number of stems per hectare of canopy = 109. The range was from 29 to 194 stems per hectare of canopy cover.

Residential lots

28 test sites were analysed across metropolitan Melbourne using a variety of spatial areas and numbers of allotments. A sample was taken from 28 municipalities. Stems per hectare of canopy cover were averaged for each residential type.

The Average number of stems per hectare of canopy cover = 103. The range was from 32 to 240 stems per hectare of canopy cover.

11 Commonly asked questions

What is the urban forest?

Our urban forest comprises all the trees, shrubs, grasslands and other vegetation growing on public and private land across metropolitan Melbourne. It includes urban parks, street trees, landscaped boulevards, river corridors, green walls and roofs, wetlands, greenways and gardens.

Why does the *Living Melbourne* strategy focus so much on trees?

Many elements make up our urban forest, and it is important for planners and decision makers to understand the importance of them all. Nevertheless, measuring and monitoring all the elements is prohibitively complex and costly. The presence of trees, measured by their canopy cover, remains a good indicator of the overall extent and ecological value of the urban forest. It is currently the best way to measure the urban forest's ability to benefit the community and the environment.

What is resilience?

100RC defines urban resilience as the capacity of individuals, institutions, businesses and systems within a city to adapt, survive and thrive no matter what kind of chronic stresses and acute shocks they experience.

What are shocks and stresses?

Shocks are sudden, often unexpected, events – such as bushfires, floods and heatwaves. Stresses are longer-term problems, such as climate change, governance fragmentation, and urbanisation.

How is the *Living Melbourne* strategy different from other urban forest strategies?

Current urban forest strategies exist at the local government level, but the urban forest does not follow administrative boundaries, and the risks it faces are too complex and interconnected for local governments to meet on their own. This strategy builds on existing strategies by bringing together a wide range of organisations to work together towards a common vision for the urban forest – across the whole of metropolitan Melbourne.

Who prepared this strategy?

Development of the *Living Melbourne* strategy is a 'flagship action' under the Resilient Melbourne strategy. Resilient Melbourne and The Nature Conservancy developed this strategy in cooperation with a wide range of organisations, and with advice from a Senior Reference Group and a Technical Advisory Group.

Who is *Living Melbourne* for?

Just as the urban forest is something we all benefit from and enjoy, we all have a role to play in supporting our urban forest. Local and state governments have the greatest influence over the urban forest on public land, but all sectors, communities, institutions and individuals can – and should – contribute.

How can I get involved?

As an individual you can join a local Landcare or 'Friends of' community group, plant trees and shrubs in your garden, talk to your friends and neighbours about the benefits of the urban forest and the risks it is facing, and contribute to advocacy, monitoring and research through programs such as the Citizen Forest Program.

12 Tools and resources

- **The CRC for Water Sensitive Cities: Tools and Products (TAP) Program**
  This includes design tools for assessing benefits and costs, including surface and air temperature associated with green infrastructure initiatives.
  https://watersensitivecities.org.au/content/tools-products-tap/#1510192420464-09fcdea3-1be2
- **MUSIC and Melbourne Water's STORM calculator**
  Used by private developers to demonstrate best practice water-sensitive urban design, but often also benefit urban ecology, typically by building raingardens in new developments.
- **Clearwater** website contains links to tools, guidelines and case studies and may be an effective way to provide centralised access to information in a location that is already well supported by local government and industry. Page 49 of the Strategy may benefit from a breakout box about this resource.
  Hydra https://www.clearwatervic.com.au/resource-library/factsheets-and-tools/hydra-a-collaborative-mapping-tool-for-iwm.php
- **Meeting of the Minds** https://meetingoftheminds.org/a-research-toolkit-for-building-the-ultimate-urban-forest-29208
- **202020 Vision** http://www.202020vision.com.au/help-hub/
- **CAUL Hub** https://nespurban.edu.au/research-projects/
- **Greening the West** http://greeningthewest.org.au/resources/
- **Built Environment Sustainability Scorecard (BESS) tool** The Municipal Association of Victoria's tool is used by developers to demonstrate best practice environmentally sustainable design, including for urban ecology.
- **How well are we adapting tool – WAGA**
- **Embedding Green Infrastructure Best Practice Toolkit – City of Yarra**
  https://www.yarracity.vic.gov.au/about-us/sustainability-initiatives/embedding-green-infrastructure-toolkit
- **Australian standards for tree-planting in zones unencumbered by services and infrastructure**
  http://www.gazette.vic.gov.au/gazette/Gazettes2016/GG2016S117.pdf
- **Protection of trees on development sites – AS 4970-2009**
  https://infostore.saiglobal.com/preview/as/as4000/4900/4970-2009(%2Ba1).pdf?sku=1133290
- **Citizen science apps**
  For example, BirdLife Australia *Bird Count*, CAUL *Urban Wildlife*
- **Community information app**
  Healthy Trees Healthy Cities is a TNC US-based tree management app.

13 References

2009 Victorian Bushfires Royal Commission, 2010. *Final Summary Report,* s.l.: Government Printer for the State of Victoria.

Accuracy Assessment performed by Morphum Environmental Pty Ltd

AECOM, 2017. *Brilliant Cities Report. Green Infrastructure: A vital step to Brilliant Australian cities ,* s.l.: AECOM.

Alvey, A., 2016. Promoting and preserving biodiversity in the urban forest. *Urban Forestry & Urban Greening,* 5(4), pp. 195-201.

Amati, M. et al., 2017. *Where should all the trees go? Investigating the impact of tree canopy cover on socio-economic status and wellbeing in LGA's.,* Sydney: Prepared for Horticulture Innovation Australia. Centre for Urban Research, RMIT University.

American Forests, 2017. *Loose Leaf. The Offical Blog of American Forests.* [Online] Available at: https://www.americanforests.org/blog/no-longer-recommend-40-percent-urban-tree-canopy-goal/ [Accessed 26 September 2018].

Anderson, J., Thundiyil, J. & Stolbach, A., 2012. Cleaning the air: A Review of the Effects of Particulate Matter Air Pollution on Human Health. *Journal of Medical Toxicology,* Volume 8, pp. 166-175.

Andreou, E., 2014. The effect of urban layout, street geometry and orientation on shading conditions in urban canyons in the Mediterranean. *Renewable Energy.,* Volume 63, pp. 587-596.

Anon., 2018. *Revaluing Parks and Green Spaces. Measuring their economic value and wellbeing to individuals: Fields in Trust*. [Online] Available at: http://www.fieldsintrust.org/research [Accessed 18 May 2018].

City of Sydney Urban Forest Strategy, s.l.: s.n.

Anon., n.d. *National Museum Australia.* [Online] Available at: http://www.nma.gov.au/online_features/defining_moments/featured/black-saturday-bushfires [Accessed 27 July 2018].

Anon., n.d. *QGIS version 3.2.3-Bonn,* s.l.: GNU General Public License https://qgis.org/.

Aronson, M. et al., n.d. A global analysis of the impacts of urbanisation on bird and plant diversity reveals key anthropogenic drivers. *Proceedings of the Royal Society of Biological Sciences,* 281(1780).

Astell Burt, T., Feng, X. & & Kolt, G., 2013. Mental health benefits of neighbourhood green space are stronger among physically active adults in middle to older age: evidence from 260,061 Australians. *Preventive Medicine,* 57(5), pp. 601-606.

Astell Burt, T. F. X. &. K. G., 2013. Mental health benefits of neighbourhood green space are stronger among.

Australia, C. o., 2019. *20 Million Trees Program.* [Online] Available at: http://www.nrm.gov.au/national/20-million-trees [Accessed 19 February 2019].

Australia, C. o., 2019. *New Indigenous Protected Areas Program.* [Online] Available at: http://www.environment.gov.au/land/indigenous-protected-areas/new-ipa-program [Accessed 19 February 2019].

Australian Government. Poductivity Commission, 2004. *Intergovernmental Agreement on a National Water Agreement: Australian Government. Poductivity Commission.* [Online] Available at:

https://www.pc.gov.au/inquiries/completed/water-reform/national-water-initiative-agreement-2004.pdf [Accessed 20 June 2018].

Ballinas, M. & Barradas, V., 2016. The urban tree as a tool to mitigate the urban heat island in Mexico City: a simple phenomenological model. *Journal of Environmental Quality,* 45(1), pp. 157-166.

Barradas, V., 1991. Air temperature and humidity and human comfort index of some city parks of Mexico City. *International Journal of Biometeorology,* 35(1), pp. 24-28.

Barron, S., Sheppard & Condon, P., 2016. "Urban Forest Indicators for Planning and Designing. *Forests,* 7(9).

Baur, J. W. R., Gómez, E. & Tynon, J. F., 2013. Urban nature parks and neighborhood social health in Portland, Oregon.. *Journal of Park and Recreation Administration,* 31(4), pp. 23-44.

Bealey, W. et al., 2007. Estimating the reduction of urban PM10 concentrations by trees within an environmental information system for planners. *Journal of Environmental Management,* 85(1), pp. 44-58.

Blanchet-Cohen, N. & Elliot, E., 2011. Young children and educators engagement and learning outdoors: a basis for rights based programming. *Early Education and Development,* 22(5), pp. 757-77.

Bowler, D., Buyung-Ali, L., Knight, T. & Pullin, A., 2010. Urban greening to cool towns and cities: A systematic review of the empirical evidence. *Landscape and Urban Planning,* 97(3), pp. 147-155.

Boyd, J. & Banzhaf, S., 2006. What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics,* 63(2-3), pp. 616-626.

Boyer, D. et al., 2016. *Data Management for Urban Tree Monitoring - Software Requirements.,* Philadelphia, PA: Azavea.

Brimbank City Council , 2016. *Urban Forest Strategy 2016-2046.* [Online] Available at: https://www.brimbank.vic.gov.au/plans-policies-and-strategies/strategies/urban-forest-strategy-2016-2046 [Accessed 25 June 2018].

Bush, J., 2017. *Cooling cities with green space: policy perspectives. PhD Thesis,* Melbourne: University of Melbourne.

Bush, J. & Hes, D., 2018. Urban green space in the transition to the eco-city: policies, multifunctionality and narrative. In: *Enabling Eco-cities.* Singapore: Palgrave Pivot, pp. 43-64.

Caccetta, P. et al., 2017. *Land surface temperature and urban heat island estimates for Australian urban centres. v2.,* s.l.: Commonwealth Scientific and Industrial Research Organisation (CSIRO).

Carpentieri, M., 2013. Pollutant dispersion in the urban environment. *Reviews in Environmental Science and BioTechnology,* 12(1), pp. 5-8.

Caryl, F. et al., 2014. Continuous predictors of species distribution support categorically stronger inference than ordinal and nominal classes: an example with urban bats. *Landscape Ecology,* 29(7), pp. 1237-1248.

Caryl, F., Lumsden, L., van der Ree, R. & Wintle, B., 2015. Functional responses of insectivorous bats to increasing housing density support 'land-sparing' rather than 'land-sharing' urban growth strategies. *Journal Of Applied Ecology,* 53(1), pp. 191-201.

Caryl, F., Thompson, K. & van der Ree, R., 2013. Permeability of the urban matrix to arboreal gliding mammals: Sugar gliders in Melbourne, Australia. *Austral Ecology,* 38(6), pp. 609-616.

Cavanagh, J.-A. E., Zawar-Reza, P. & Wilson, J., 2009. Spatial attenuation of ambient particulate matter air pollution within an urbanised native forest patch. *Urban Forestry & Urban Greening,* Volume 8, pp. 21-30.

Ca, V., Asaeda, T. & Abu, E., 1998. Reductions in air conditioning energy caused by a nearby park. Energy and Buildings. *Energy and Buildings,* 29(1), pp. 83-92.

Chang, C.-R. a. M.-H. L., 2014. Effects of urban parks on the local urban thermal environment. *Urban Forestry & Urban Greening,* 13(4), pp. 672-681.

Chang, C., Li, M. & Chang, S., 2007. A preliminary study on the local cool-island intensity of Taipei city parks. *Landscape and Urban Planning,* 80(4), pp. 386-395.

Cheng. JC-H, M. M., 2012. Connection to nature: children's affective attitude toward nature. *Environment and Behaviour,* 44(1), pp. 31-49.

Chicago Metropolitan Agency for Planning, n.d. *Green Infrastructure: CMAP.* [Online] Available at: http://www.cmap.illinois.gov/programs/sustainability/open-space/green-infrastructure-vision [Accessed 18 May 2018].

Chicago Regional Tree Initiative, n.d. *Interative Canopy Map.* [Online] Available at: http://maps.fieldmuseum.org/CRTI/MuniCanopy/Marengo/Marengo.PDF [Accessed 26 September 2018].

Choo, F., 2017. *Singapore tops list of 17 cities with highest greenery density: Straits Times.* [Online] Available at: http://www.straitstimes.com/singapore/environment/singapore-tops-list-of-17-cities-with-highest-greenery-density [Accessed 1 February 2018].

City of Ballarat, 2017. *Our Living City. A Discussion paper about greening Ballarat as an urban forest.,* s.l.: s.n.

City of Boulder Colorado, 2016. *City of Boulder Resilience Strategy. Draft for Public Comment: City of Boulder Colorado.* [Online] Available at: https://www-static.bouldercolorado.gov/docs/Resilience_Strategy_Draft_Low_Res-1-201604281108.pdf [Accessed 18 May 2018].

City of Greater Geelong, 2015. *City of Greater Geelong Urban Forest Strategy 2015-2025,* s.l.: City of Greater Geelong.

City of Melbourne, Department of Environment, Land, Water and Planning, 2015. *How to Grow and Urban Forest. A ten-step guide to help councils save money, time and share practical knowledge,* s.l.: s.n.

City of Melbourne, 2011. *Urban Forest Diversity Guidelines. 2011 Tree Species Selection for the City of Melbourne: City of Melbourne.* [Online] Available at: City of Melbourne. (2011). Urban Forest Diversity Guidelines. 2011 Tree Species Selection for the City of Melbourne. Retrieved June 26, 2018 from https://www.melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest-diversity-guidelines.pdf [Accessed 26 June 2018].

City of Melbourne, 2012. *Open Space Strategy. Planning for Future Growth.* [Online] Available at: https://www.melbourne.vic.gov.au/SiteCollectionDocuments/open-space-strategy.pdf [Accessed 26 June 2018].

City of Melbourne, 2014. *Total Watermark: City as a Catchment Strategy: City of Melbourne.* [Online] Available at: http://www.melbourne.vic.gov.au/about-council/vision-goals/eco-city/pages/total-watermark-city-catchment-strategy.aspx [Accessed 26 June 2018].

City of Melbourne, 2014. *Zero Net Emission: City of Melbourne.* [Online]
Available at: http://www.melbourne.vic.gov.au/about-council/vision-goals/eco-city/pages/zero-net-emissions-strategy.aspx [Accessed 26 June 2018].

City of Melbourne, 2015. *Urban Forest Precinct Plans: City of Melbourne.* [Online] Available at: http://www.melbourne.vic.gov.au/Pages/Plans-and-publications.aspx?k=Urban%20Forest%20Precinct%20Plans [Accessed 26 June 2018].

City of Melbourne, 2016. *Future Melbourne 2026.* [Online] Available at: http://www.melbourne.vic.gov.au/SiteCollectionDocuments/future-melbourne-2026-plan.pdf [Accessed 18 May 2018].

City of Melbourne, 2016. *Resilient Melbourne.* [Online] Available at: https://resilientmelbourne.com.au/wp-content/uploads/2016/05/COM_SERVICE_PROD-9860726-v1-Final_Resilient_Melbourne_strategy_for_web_180516.pdf [Accessed 6 May 2018].

City of Melbourne, 2017. *Climate change adaptation strategy refresh: City of Melbourne.* [Online] Available at: http://www.melbourne.vic.gov.au/sitecollectiondocuments/climate-change-adaptation-strategy-refresh-2017.pdf [Accessed 26 June 2018].

City of Melbourne, 2017. *Nature in the City. Thriving biodiversity and healthy ecosystems.* [Online] Available at: http://www.melbourne.vic.gov.au/community/parks-open-spaces/urban-nature/pages/nature-in-the-city-strategy.aspx [Accessed 26 June 2018].

City of Melbourne, 2019. *Support the Urban Forest Fund.* [Online]
Available at: https://www.melbourne.vic.gov.au/community/parks-open-spaces/urban-forest-fund/Pages/support-urban-forest-fund.aspx [Accessed 29 January 2019].

City of Melbourne, n.d. *Urban Forest Strategy. Making a Great City Greener 2012-2032.* [Online] Available at: https://www.melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest-strategy.pdf [Accessed 18 May 2018].

City of New York, 2011. *New York City Green Infrastructure Plan. A sustainable strategy for clean waterways: City of New York.* [Online] Available at: http://www.nyc.gov/html/dep/pdf/green_infrastructure/NYCGreenInfrastructurePlan_ExecutiveSummary.pdf [Accessed 18 May 2018].

City of New York, 2017. *Cool Neighbourhoods NYC A Comprehensive Approach to Keep Communities Safe in Extreme Heat: City of New York.* [Online] Available at: http://www1.nyc.gov/assets/orr/pdf/Cool_Neighborhoods_NYC_Report_FINAL.pdf [Accessed 18 May 2018].

City of Port Phillip, 2017. *City of Port Phillip Council Plan 2017-2027: City of Port Phillip.* [Online] Available at: http://www.portphillip.vic.gov.au/E68609_17__Council_Plan_and_Budget_document(1).pdf [Accessed 9 May 2018].

City of Sydney, 2012. *Development Control Plan: City of Sydney.* [Online] Available at: http://www.cityofsydney.nsw.gov.au/development/planning-controls/local-environmental-plans

City of Sydney, 2012. *Greening Sydney Plan: City of Sydney.* [Online] Available at: http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0009/135882/GreeningSydneyPlan.pdf [Accessed 26 June 2018].

City of Sydney, 2013. *City of Sydney Urban Forest Strategy: City fo Sydney.* [Online]
Available at: http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0003/132249/Urban-Forest-Strategy-Adopted-Feb-2013.pdf [Accessed 26 June 2018].

City of Sydney, 2013. *City of Sydney Urban Forest Strategy: City of Sydney.* [Online] Available at: http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0003/132249/Urban-Forest-Strategy-Adopted-Feb-2013.pdf [Accessed 26 June 2018].

City of Sydney, 2016. *Sydney Landscape Codes. Volume 2 Landscaping Guidelines for all Except Single Dwellings: City of Sydney.* [Online] Available at: http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0009/277848/Landscape-Code-Volume-2_Web.pdf [Accessed 26 June 2018].

City of Sydney, 2017. *Sustainable Sydney 2030. Community Strategic Plan 2017–2021: City of Sydney.* [Online] Available at: http://www.cityofsydney.nsw.gov.au/vision/sustainable-sydney-2030/resources/community-strategic-plan [Accessed 26 June 2018].

City of Vancouver, 2014. *City of Vancouver. Urban Forest Strategy: City of Vancouver.* [Online] Available at: http://vancouver.ca/files/cov/Urban-Forest-Strategy-Draft.pdf [Accessed 18 May 2018].

Clearwater, 2006. *Best Practices Environmental Guidelines for Urban Stormwater (BPEG): Clearwater.* [Online], Available at: https://www.clearwatervic.com.au/resource-library/guidelines-and-strategy/urban-stormwater-best-practice-environmental-management-guidelines-bpem.php [Accessed 20 June 2018].

Cohen, P., Potcher, O. & Matzarakis, A., 2012. Daily seasonal and climatic conditions of green urban open spaces in the Mediterranean climate and their impact on human comfort. *Building and Environment,* Volume 51, pp. 285-295.

Cohen, P., Potchter, O. & Matzarakis, A., 2012. Daily and seasonal climatic conditions of green urban open spaces in the Mediterranean climate and their impact on human comfort. *Building and Environment,* Volume 51, pp. 285-295.

Commonwealth of Australia, 2017. *The Report on the Review of the National Landcare Program,* Canberra: Commonwealth of Australia.

Community, M. C., n.d. *Murundaka: About.* [Online] Available at: www.murundakacohousing.org.au [Accessed April 2018].

Cook, M., 2015. *Forests as places of mental well-being.* Edinburgh: Forestry Commission Scotland.

Cook, N. et al., 2015. *Shading Liveable Cities: exploring the ecological, financial and regulatory dimensions of the urban tree canopy. Working Paper 1: Community Indicators.* [Online] Available at: http://www.communityindicators.net.au/files/docs/SLCReport2016_FINAL.pdf [Accessed 20 June 2018].

Council, T. A. S. B. E., 2016. *Building Energy Performance Standards Project Issues Paper,* s.l.: The Australian Sustainable Built Environment Council.

Coutts, A. M. et al., 2012. Watering our cities: The capacity for Water Sensitive Urban Design to support urban cooling and improve human thermal comfort in the Australian context. *Progress in Physical Geography: Earth and Environment,* Issue 37, pp. 2-28.

Coutts, M., Beringer, A. & Tapper, N. J., 2010. Changing urban climate and CO2 emissions: Implications for the development of policies for sustainable cities.. *Urban Policy and Research,* 28(1), pp. 27-47.

Cowherd, C., Muleski, G. & Gebhardt, D., 2006. *Development of an emission reduction term for near-source depletion.* New Orleans, s.n.

Crooks, K. & Sanjayan, M., 2006. *Connectivity Conservation.* New York: Cambridge University Press.

Darling, L., 2018. *GIS Analyst Chicago Regional Tree Initiative* [Interview] (15 September 2018).

Davey Resource Group, 2015. *Louisville urban tree canopy assessment: City of Louisville, Kentucky.* [Online] Available at: https://louisvilleky.gov/sites/default/files/community_forestry/community_foresty_files/louisvilleutcreport-24march2015_draft.pdf [Accessed 18 May 2018].

de Witt, A., 2013. Pathways to environmental responsibility: a qualitative exploration of the spiritual dimension of nature experience. *Journal for the Study of Religion, Nature & Culture.,* 7(2), pp. 154-86.

Department of Environment Land Water and Planning, n.d. *Biodiversity. Bioregions and EVC benchmarks.* [Online] Available at: https://www.environment.vic.gov.au/biodiversity/bioregions-and-evc-benchmarks [Accessed 31 August 2018].

Department of Environment, Land, Water & Planning, 2016. *Victoria's Climate Change Framework,* Melbourne : Victorian State Government Victorian State Government Department of Environment, Land, Water & Planning.

Department of Environment, Land, Water and Planning , n.d. *About.* [Online] Available at: http://planning-schemes.delwp.vic.gov.au/about [Accessed 12 September 2017].

Department of Environment, Land, Water and Planning, 2018. *Victorian Landcare Grants 2018-2019.* [Online] Available at: https://www.environment.vic.gov.au/grants/victorian-landcare-grants-2018-19 [Accessed 29 January 2019].

Department of Environment, Land, Water and Planning, 2019. *Sustainability Fund.* [Online] Available at: https://www.environment.vic.gov.au/sustainability/sustainability-fund [Accessed 29 January 2019].

Department of Environment, L. W. a. P., 2018. *Victoria Planning Provisions.* [Online] Available at: http://planningschemes.dpcd.vic.gov.au/__data/assets/pdf_file/0007/481723/VPPs_All_Clauses.pdf [Accessed 19 February 2019].

Department of Sustainability, E. W. P. a. C., 2012. *National Wildlife Corridors Plan: A framework for landscape-scale conservation,* Canberra: Australian Government.

Dimoudi, A. & Nikolopoulou, M., 2003. Vegetation in the urban environment: microclimatic analysis and benefits. *Energy and Buildings,* 35(1), pp. 69-76.

Doick, K. et al., 2017. *The Canopy Cover of England's Towns and Cities:baselining and setting targets to improve human health and well-being,* s.l.: Institute of Chartered Foresters .

EPA, n.d. *Heat Islands.* [Online] Available at: www.epa.gov/heat-islands [Accessed 11 November 2017].

Ersoy, E., (2016) . Landscape Ecology Practices in Planning: Landscape Connectivity and Urban Networks. . In: *Sustainable Urbanization (ed Ergen, M.).* Rijeka: Intech, pp. 291-316.

Escobedo, F., Kroeger, T. & Wagner, J., 2011. Urban forests and pollution mitigation: Analyzing ecosystem services and disservices. *Environmental Pollution,* Volume 159, pp. 2078-2087.

Estavillo, C., Pardini, R. & da Rocha, P., 2013. Forest Loss and the Biodiversity Threshold: An Evaluation Considering Species Habitat Requirements and the Use of Matrix Habitats. *PLoS One,* Volume 8.

Ezzati, M., Lopez, A., Rodgers, A. & Murray, C., 2004. *Comparative Quantitative of Health Risks. Global and regional burden of disease attributable to selected major risk factors.,* Geneva: World Health Organisation.

Feyisa, G., Dons, K. & Meilby, H., 2014. Efficiency of parks in mitigating urban heat island effect: An example from Addis Ababa. *Landscape and Urban Planning,* Volume 123, pp. 87-95.

Filho, W. et al., 2017. Coping with the impacts of urban heat islands. A literature-based study on understanding urban heat vulnerability and the need for resilience in cities in a global climate change conte. *Journal of Cleaner Production,* Issue 171, pp. 1140-1149.

Fisher, B. et al., 2006. Meteorology applied to urban air pollution problems: concepts from COST 715. *Atmospheric Chemistry & Physics,* Volume 6, pp. 555-564.

Fitzsimons, J., Antos, M. & Palmer, G., 2011. When more is less: Urban remnants support high bird abundance but diversity varies. *Pacific Conservation Biology,* 17(2), pp. 97-109.

Freer-Smith, P., 2005. Deposition velocities to Sorbus aria, Acer campestre, Populus deltoides × trichocarpa 'Beaupré', Pinus nigra and × Cupressocyparis leylandii for coarse, fine and ultra-fine particles in the urban environment, 2005. *Environmental Pollution,* 133(1), pp. 157-167.

Friess, D., 2016. Singapore as a long-term case study for tropical urban ecosystem services. *Urban Ecosystems,* Volume 20, pp. 277-291.

Furlong, C., Gan, K. & De Silva, S., 2016. Governance of Integrated Urban Water Management in Melbourne, Australia. *Utilities Policy,* Volume 43, pp. 48-58.

Furlong, C., Guthrie, L., De Silva, S. & Considine, R., 2015. Analysing the terminology of integration in the water management field. *Water Policy,* Volume 15, pp. 46-60.

Goddard, M., Dougill, A. & Benton, T., In proof. Scaling up from gardens: biodiversity conservation in urban environments. *Trends in Ecology and Evolution.*

Government of Australia. Department of Agriculture and Water Resources, 2016. *Nation Urban Water Planning Principles.* [Online] Available at: http://www.agriculture.gov.au/water/urban/policy-reform-urban-water/planning-principles [Accessed 20 June 2018].

Greater London Authority, 2017. *London Environment Strategy. Draft for Public Consultation. Executive Summary: Mayor of London.* [Online] Available at: https://www.london.gov.uk/sites/default/files/draft_environment_strategy_-_executive_summary.pdf [Accessed 18 May 2018].

Greening the West, n.d. *About Greening the West.* [Online] Available at: About Greening the West [Accessed 5 September 2018].

Gromke, C. et al., 2015. CFD analysis of transpirational cooling by vegetation: Case study for specific meteorological conditions during a heat wave in Arnhem, Netherlands. *Building and Environment,* Volume 83, pp. 11-26.

Hahs, A., 2017. *Soft cities: Making room for nature in our urban future: Fore-ground. Environment.* [Online] Available at: https://www.foreground.com.au/environment/biodiversity-in-our-urban-future/ [Accessed 3 September 2018].

Hahs, A., 2019. *Landscape and demographic characteristics of Urban Heat Island Hot Spots and Cool Spots across Metro Melbourne,* Melbourne : s.n.

Hahs, A., 2019. *Landscape and demogrpahic characteristics of urban heat island hot spots and cool spots across metropolitan Melbourne: Analysis conducted by Urban Ecology in Action for The Nature Conservancy,* Melbourne: s.n.

Hahs, A. et al., 2009. A global synthesis of plant extinction rates in urban areas. *Ecology Letters,* 12(11), pp. 1165-1173.

Hahs, A., McDonnell, M., Holland, K. & Caryl, F., 2009. *Biodiversity of the Metropolitan Melbourne Investigation Area. Australian Research Centre for Urban Ecology (ARCUE), Royal Botanic Gardens Melbourne.,* s.l.: s.n.

Hales, S., Kovats, S., Lloyd, S. & Campbell-Lendrum, D., 2014. *Quantitiative Risk Assessment of the effects of Climate Change on Selected Causes of Death, 2030s and 2050s.* , Geneva: World Health Organisation .

Hall, T., 2007. *Where have all the gardens gone? An investigation inot the disappearance of back yards in the newer Australian suburb,* Brisbane: Griffin University .

Hall, T., 2010. 'Goodbye to the backyard? —The minimisation of private open space in the Australian outer-suburban estate. *Urban Policy and Research,* 28(4), pp. 411- 433.

Hamada, S. & Ohta, T., 2010. Seasonal variations in the cooling effect of urban green areas on surrounding urban areas. *Urban Forestry & Urban Greening,* 9(1), pp. 15-24.

Hamer, A. & McDonnell, M., 2010. The response of herpetofauna to urbanization: Inferring patterns of persistence from wildlife databases. *Austral Ecology,* 35(5), pp. 568-580.

Hamer, A. & Parris, K., 2011. Local and landscape determinants of amphibian communities in urban ponds. *Ecological Applications,* 21(2), pp. 378-390.

Hasham, N., 2016. *Turnbull government's plan to make cities cooler and greener: Sydney Morning Hearld.* [Online] Available at: https://www.smh.com.au/politics/federal/turnbull-governments-plan-to-make-cities-cooler-and-greener-20160118-gm8fdz.html [Accessed 3 October 2018].

Hean, T., 2017. *The four pillars of Singapore's sustainable development success: Eco-Business.* [Online] Available at: http://www.eco-business.com/opinion/the-four-pillars-of-singapores-sustainable-development-success/ [Accessed 29 January 2018].

Hinch, R., Maxwell, E. & Chen, N., 2018. *A summary of current urban forest plans and metrics,* s.l.: The Nature Conservancy.

Hobbs, R., Higgs, E. & Harris, J., 2009. Novel ecosystems: Implications for conservation and restoration. *Trends In Ecology & Evolution,* 24(11), pp. 599-605.

Honda, Y. et al., 2014. Heat-related mortality risk model for climate change impact projection.. *Environmental Health Preventative Medicine,* 19(1), pp. 56-63.

Ho, P., 2014. *Working Paper Series No. 2. The Planning of a State City: Lee Kwan Yew Centre for Innovative Cities.* [Online] Available at: https://lkycic.sutd.edu.sg/wp-content/uploads/sites/7/2014/06/LKYCIC_Working-Paper-No-2_Peter-Ho_June-2014-no-cropmarks.pdf [Accessed 31 January 2018].

http://creativecommons.org/licenses/by/4.0/, (. V. S. G. a. l. f. r.-u. u. t. C. C. A. 4. I. l. C. a. A. T. o. U., n.d. *Data.vic.gov.au.* [Online] Available at: http://services.land.vic.gov.au/catalogue/metadata?anzlicId=ANZVI0803002864&publicId=guest&extractionProviderId=1 [Accessed 27 July 2018].

Hub, C. A. a. U. L. (., 2018. *Melbourne Vegetation and land use cover 2014,* s.l.: Victorian Government Department of Environment, Land, Water and Planning, access via https://services.land.vic.gov.au/SpatialDatamart/index.jsp.

Hunt, G., 2013. *Australia has three and a half levels of government?,* Melbourne , s.n.

Institute, L., 2016. *Connectivity and Ecological Networks.,* London: Landscape Institute.

I-Tree, 2014. *UFORE Methods,* Syracuse, NY: US Forest Service.

i-Tree, n.d. *A guide to assessing urban forests: i-Tree.* [Online] Available at: https://www.itreetools.org/resources/content/guide_to_assessing_urban_forests_nrs_inf_24_13.pdf [Accessed 5 September 2018].

i-Tree, n.d. *i-Tree. Tools for Assessing Forests and Community Trees.* [Online] Available at: https://www.itreetools.org/about.php [Accessed 18 May 2018].

iTree, n.d. *What is i-Tree: i-Tree.* [Online] Available at: https://www.itreetools.org/index.php. [Accessed 19 May 2018].

Ives, C. et al., 2013. Local assessment of Melbourne: The biodiversity and social-ecological dynamics of Melbourne, Australia. In: *Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities.* Dordrecht: Springer, pp. 385-407.

Ives, C. D. et al., 2017. Capturing residents' values for urban green space: Mapping analysis and guidance for practice. *Landscape and Urban Planning,* Volume 161, pp. 42-33.

Ives, C. et al., 2016. Cities are hotspots for threatened species. *Global Ecology and Biogeography,* 25(1), pp. 117-126.

Jaganmohan, M., Knapp, S., Buchmann, C. & Schwarz, N., 2016. The Bigger, the Better? The Influence of Urban Green Space Design on Cooling Effects for Residential Areas. *Journal of Environmental Quality,* 45(1), pp. 134-145.

Jauregui, E., 1991. Influence of a large urban park on temperature and convective precipitation in a tropical city. *Energy and Buildings,* 15(3), pp. 457-463.

Jones, D. A. W. W. a. R. F., 2009. High-quality spatial climate data-sets for Australia. *Australian Meteorological and Oceanographic Journal,* 58(4), pp. 233-248.

Jonsson, P., 2004. Vegetation as an urban climate control in the subtropical city of Gaborone, Botswana. *International Journal of Climatology,* 24(10), pp. 1307-1322.

Kamitsis, I. F. A., 2013. Spirituality mediates the relationship between engagement with nature and psychological wellbeing, *Journal of Environmental Psychology,* Volume 36, pp. 136-43.

Kendal, D. & Baumann, J., 2016. *The City of Melbourne's Future Urban Forest: Identifying vulnerability to future temperatures: Clean Air and Urban Landscapes Hub.* [Online] Available at: https://www.nespurban.edu.au/publications-resources/research-reports/CAULRR02_CoMFutureUrbanForest_Nov2016.pdf [Accessed 18 May 2018].

Kendal, D. & Baumann, J., 2016. *The City of Melbourne's Future Urban Forest: Identifying vulnerability to future temperatures: Clean Air and Urban Landscapes Hub.* [Online] Available at: http://www.nespurban.edu.au/publications-resources/research-reports/CAULRR02_CoMFutureUrbanForest_Nov2016.pdf]

Kendal, D. et al., 2017. *Risks to Australia's urban forest from climate change and urban heat: Clean Air and Urban Landscape Hub: National Environmental Science Programme.* [Online] Available at: http://www.nespurban.edu.au/publications-resources/research-reports/CAULRR07_RisksAustralianUrbanForest_Nov2017.pdf [Accessed 8 August 2018].

Kendal, D. et al., 2016. *Benefits of Urban Green Space in the Australian Context. A Synthesis Review for the Clean Air and Urban Landscapes Hub. Final Report*. [Online] Available at: http://www.nespurban.edu.au/publications-resources/research-reports/CAULHub_BenefitsUrbanGreeningReport_20160912.pdf [Accessed 9 May 2018].

Kendal, D., Williams, N. & Williams, K., 2012. Drivers of diversity and tree cover in gardens, parks and streetscapes in an Australian city. *Urban Forestry & Urban Greening,* 11(3), pp. 257-265.

Ketterer, C. & Matzarakis, A., 2014. Human-biometeorological assessment of heat stress reduction by replanning measures in Stuttgart, Germany. *Landscape and Urban Planning,* Volume 122, pp. 78-88.

Kinzig, A. et al., 2005. The effects of human socioeconomic status and cultural characteristics on urban patterns of biodiversity. *Ecology And Society 10,* 10(1).

Knox City Council, n.d. *Gardens for Wildlife (G4W).* [Online] Available at: http://www.knox.vic.gov.au/g4w [Accessed 15 April 2017].

Kowarik, I., 2011. Novel urban ecosystems, biodiversity, and conservation. *Environmental Pollution,* 159(8-9), pp. 1974-1983.

Kroeger, T. et al., 2014. Reforestation as a novel abatement and compliance measure for ground-level ozone. *Proceedings of the National Academy of Science,* 111(40), pp. E4204-E4213.

Kuller, M., Bach, P., Ramirez-Lovering, D. & Deletic, A., 2017. Framing water sensitive urban design as part of the urban form. A critical review of tools for best planning practice. *Environmental Modelling & Software.,* Volume 96, pp. 265-282.

Landscape Institute, 2016. *Connectivity and Ecological Networks: Technical Information Note 01/2016,* London: Landscape Institute.

Langner, M., Kull, M. & Endlicher, W., 2011. Determination of PM 10 deposition based on antimony flux to selected urban surfaces. *Environmental Pollution,* 159(9), pp. 2028-2034.

LaPoint, S. et al., 2015. Ecological connectivity research in urban areas. *Functional Ecology,* 29(7), pp. 868-878.

Le Roux, D. et al., 2014. The future of large old trees in urban landscapes. *PLoS One ,* 9(6).

Lee, S.-H., Lee, K.-S., Jin, W.-C. & Song, H.-K., 2009. Effect of an urban park on air temperature differences in a central business district area. *Landscape and Ecological Engineering,* 5(2), pp. 183-191.

Leff, M., 2016. *The Sustainable Urban Forest: A Step-by-Step Approach. An introduction to a comprehensive guide to sustainable urban forestry management..* [Online] Available at: https://www.itreetools.org/resources/content/Sustainable_Urban_Forest_Guide_14Nov2016.pdf [Accessed 27 September 2018].

Lin, B. & Fuller, R., 2013. FORUM: sharing or sparing? How should we grow the world's cities?. *Journal Of Applied Ecology,* 50(5), pp. 1161-1168.

Lindenmayer, D. & Luck, G., 2005. Synthesis: Thresholds in conservation and management. *Biological Conservation ,* 124(3), pp. 351-354.

Litschke, T. & Kuttler, W., 2008. On the reduction of urban particle concentration by vegetation—a review. *Meteorologische Zeitschrift,* 17(3), pp. 229-240.

Living Links, n.d. *Home.* [Online] Available at: http://livinglinks.com.au/ [Accessed 4 June 2017].

Loughnan, M. et al., 2013. *A spatial vulnerability analysis of urban populations during extreme heat events in Australian capital cities, National Climate Change Adaptation Research Facility, Gold Coast, 128 pp..* [Online] Available at: https://www.nccarf.edu.au/business/sites/www.nccarf.edu.au.business/files/attached_files_publications/Loughnan-ExtremeHeatEventsinAustralianCapitalCities-HighRes.pdf [Accessed 26 May 2018].

Louisville Metro Government, 2017. *Green for Good: Assessing the Health Returns of Green Investment,* Louisville, Kentucky, USA: Louisville Metro Government.

Louv, R., (2008). *Last child in the woods: Saving our children from nature deficit disorder.* s.l.:Algonquin Books.

Lovett, G., 1994. Atmospheric deposition of nutrients and pollutants in North America: an ecological perspective. *Ecological Applications,* 4(4), pp. 629-650.

Loyn, R. & Menkhorst, P., 2011. The bird fauna of Melbourne: Changes over a century of urban growth and climate change, using a benchmark from Keartland (1900). *The Victorian Naturalist,* 128(5), pp. 210-231.

Ltd, M. E., 2018. *Memo to the Nature Conservancy Subject: Accuracy Assessment and Data Review of Vegetation Dataset,* s.l.: s.n.

Ltd, M. E., 2018. *Memo to The Nature Conservancy Subject: Accuracy Assessment and Data Review of Vegetation Dataset,* s.l.: s.n.

Luck, G., Smallbone, L. & Sheffield, K., 2012. Environmental and socio-economic factors related to urban bird communities. *Austral Ecology,* 38(1), pp. 111-120.

Luck, G., Smallbone, L., Threlfall, C. & Law, B., 2013. Patterns in bat functional guilds across multiple urban centres in south-eastern Australia. *Landscape Ecology,* 28(3), pp. 455-469.

Luo, T., Young, R. & Reig, P., 2015. *Aqueduct projected water stress country rankings: World Resources Institute.* [Online] Available at: www.wri.org/sites/default/files/aqueduct-water-stress-county-rankings-technical-note.pdf. [Accessed 13 March 2018].

Maher, B. et al., 2013. Impact of roadside tree lines of indoor concentrations of traffic-derived particulate matter. *Environmental Science & Technology,* Volume 47, pp. 13737-13744.

Matzka, J. & Maher, B., 1999. Magnetic biomonitoring of roadside tree leaves: identification of spatial and temporal variations in vehicle-derived particulates. *Atmospheric Environment,* Volume 33, pp. 4565-4569.

Mayer, H. et al., 2008. Human thermal comfort in summer within an urban street canyon in Central Europe. *Meteorologische Zeitschrift,* 17(3), pp. 214-250.

McDonald, R., 2015. Conservation for Cities: How to Plan and Build Natural Infrastructure.. In: Washington, DC: Island Press.

McDonald, R. et al., 2017. *Funding Trees for Health: An Analysis of finance and Policy Actions to Enable Tree Planting for Public Health.* [Online] Available at: https://thought-leadership-production.s3.amazonaws.com/2017/09/19/15/24/13/b408e102-561f-4116-822c-2265b4fdc079/Trees4Health_FINAL.pdf [Accessed 29 January 2019].

McDonald, R., Marcotullio, P. & Guneralp, B., 2013. *Urbanization and global trends in biodiversity and ecosystem services, In Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities: A Global Assessment.* New York: Springer Open.

Mcilrath, B. & Choi, L., 2017. *Policy Frameworks for Water Sensitive Urban Design in 5 Australian Cities: CRC for Water Sensitive Cities.* [Online] Available at: https://watersensitivecities.org.au/content/policy-framework-for-water-sensitive-urban-design-in-5-australian-cities/ [Accessed 13 November 2017].

McKinney, L., 2008. Effects of urbanisation on species richness. A review of plants and animals. *Urban Ecosystems,* 11(3), pp. 161-176.

McKinney, L. & Lockwood, J., 1999. Biotic homogenisation: a few winners replacing many losers in the next mass extinction. *Trends in Ecology & Evolution,* Volume 14, pp. 450-453.

McKinney, M., 2002. Urbanization, biodiversity, and conservation. *BioScience,* 52(10), pp. 883-890.

McMichael, A., 2004. *Global Climate Change, in Comparative Quantification of Health Risks: Global and regional burden of disease attributable to selected major risk factors M. Ezzati, et al., Eds..* Geneva: World Health Organization.

Melbourne Water, 2013. *Healthy Waterways Strategy. A Melbourne Water strategy for managing rivers, estuaries and wetlands; Melbourne Water.* [Online] Available at: www.melbournewater.com.au/sites/default/files/2017-09/HealthyWaterwaysStrategy_1_Executive-summary.pdf [Accessed 20 June 2018].

Melbourne Water, 2013. *Stormwater Strategy. A Melbourne Water strategy for managing rural and urban runoff: Melbourne Water*. [Online] Available at: https://www.melbournewater.com.au/sites/default/files/2017-10/Stormwater-strategy_0.pdf [Accessed 20 June 2018].

Melbourne Water, 2017. *Melbourne Water System Strategy: Melbourne Water.* [Online] Available at: https://www.melbournewater.com.au/sites/default/files/2017-09/Melbourne-Water-System-Strategy_0.pdf [Accessed 20 June 2018].

Melbourne Water, 2017. *Corridors of Green Funding.* [Online] Available at: https://www.melbournewater.com.au/community-and-education/apply-funding/corridors-green-funding [Accessed 29 January 2019].

Melbourne Water, 2018. *Stormwater offsets explained.* [Online] Available at: https://www.melbournewater.com.au/planning-and-building/developer-guides-and-resources/drainage-schemes-and-contribution-rates-1-1[Accessed 29 january 2019].

Melbourne Water, 2019. *Living Rivers funding.* [Online] Available at: https://www.melbournewater.com.au/community-and-education/apply-funding/living-rivers-funding [Accessed 29 January 2019].

Melbourne, C. o., n.d. *Tree Retention and Removal Policy.* [Online] Available at: https://www.melbourne.vic.gov.au/community/parks-open-spaces/tree-protection-management/pages/tree-protection-policy.aspx [Accessed 18 December 2018].

Ministry of the Environment and Water Resources (MEWR), 2012. *The Singapore Green Plan 2012: Ministry fo the Environment and Water Resources.* [Online] Available at: https://www.mewr.gov.sg/docs/default-source/default-document-library/grab-our-research/sgp2012.pdf [Accessed 30 January 2018].

Ministry of the Environment and Water Resources MEWR, 2015. *Sustainable Singapore Blueprint..* [Online] Available at: https://www.mewr.gov.sg/docs/default-source/module/ssb-publications/41f1d882-73f6-4a4a-964b-6c67091a0fe2.pdf [Accessed 29 January 2018].

Mitchell, R. & Maher, B., 2009. Evaluation and application of biomagnetic monitoring of traffic-derived particulate pollution. *Atmospheric Environment,* Volume 43, pp. 2095-2103.

Mitchell, R. M. B. & Kinnersley, R., 2010. Rates of particulate pollution deposition onto leaf surfaces: Temporal and inter-species magnetic analyses. *Environmental Pollution,* 158(5), pp. 1472-1478.

Mooney, R., 2018. *Ecosystem Services Evaluation of Metropolitan Melbourne's Urban Forest. University of Melbourne. Masters of Sustainable Practice – MC240,* s.l.: s.n.

Moore, G., 2009. *People, Tree, Landscapes and Climate Change. Climate Change on for Young and Old: Future Leaders.* [Online] Available at: http://www.futureleaders.com.au/book_chapters/pdf/Climate_Change/Greg_Moore.pdf [Accessed 20 June 2018].

Moor, G. (. A. t. e. A. r. m., 1991. *Amenity tree evaluation: A revised method*. Melbourne , s.n.

Morgenroth, J. & Ostberg, J., 2017. Measuring and monitoring urban trees and urban forests. In: *Routledge Handbook of Urban Forestry.* s.l.:Routledge, pp. 33-48.

Morgenroth, J. & Ostberg, J., 2017. Measuring and monitoring urban trees and urban forests. In: *Routledge Handbook of Urban Forestry.* s.l.:Routledge, pp. 33-48.

Mornington Peninsula Landcare Network, n.d. *Home: Linking the Mornington Peninsula Landscape.* [Online] Available at: lmpl.org.au [Accessed 5 September 2018].

Müller, A., Bøcher, P., Fischer, C. & Svenning, J.-C., 2018. 'Wild' in the city context: Do relative wild areas offer opportunities for urban biodiversity?. *Landscape And Urban Planning,* Volume 170, pp. 256-265.

Mumaw, L. & Bekessy, S., 2017. Wildlife gardening for collaborative public–private biodiversity conservation. *Australasian Journal of Environmental Management,* 24(3), pp. 242-260.

NASA/GISS, 2018. *Global Climate Change: Vital Signs of the Planet..* [Online] Available at: https://climate.nasa.gov/vital-signs/carbon-dioxide/ [Accessed 9 May 2018].

NASA, 2003. *European Heat Wave: Image of the Day..* [Online] Available at: https://earthobservatory.nasa.gov/images/3714/european-heat-wave [Accessed 15 May 2018].

National Library Board Singapore, 2017. *Singapore Green Plan: National Library Board Singapore.* [Online] Available at: http://eresources.nlb.gov.sg/infopedia/articles/SIP_1370_2008-11-22.html [Accessed 19 May 2018].

National Parks, 2004. *Living Green. Annual Report 2003/2004: National Parks.* [Online] Available at: www.nparks.gov.sg/~/media/nparks-real-content/about-us/annual-report/archive/2003-2004/ar0407livinggreen.pdf?la=en [Accessed 20 January 2018].

National Parks, 2017. *About Us. National Parks.* [Online] Available at: https://www.nparks.gov.sg/about-us [Accessed 28 January 2018].

Newman, P., 2014. Biophilic urbanism: a case study on Singapore. *Australian Planner,* 51(1), pp. 47-65.

Ng, E., Chen, L., Wang, Y. & Yuan, C., 2012. A study on the cooling effects of greening in a high-density city: an experience from Hong Kong. *Building and Environment,* Volume 47, pp. 256-271.

Nicholson, K., 1988. A review of particle resuspension. *Atmospheric Environment,* 22(12), pp. 2639-2651.

Nowak, D., 2018. Improving city forests through assessment, modelling and monitoring. *Unasylva 250,* 69(2018/1), pp. 30-36.

Nowak, D., Hirabayashi, S., Bodine, A. & Hoehn, R., 2013. Modelled PM2.5 removal by trees in ten U.S. cities and associated health effects. *Environmental Pollution,* pp. 395-402.

Olsen, H., 2013. Creating and enriching quality and safe outdoor environments. *Dimensions of Early Childhood,* 41(3), pp. 11-17.

O'Malley, A. L. A., 2017. *Northwest Ecological Connectivity Investigation,* Preston Vic: Practical Ecology Pty Ltd.

Ordonez, C. & Duinker, P., 2013. An analysis of urban forest management plans in Canada; Implications for urban forest management. *Landscape and Urban Planning,* Volume 116, pp. 36-47.

Oregon Metro, 2019. *Parks and nature investments.* [Online] Available at: https://www.oregonmetro.gov/public-projects/parks-and-nature-investments/funding [Accessed 29 January 2019].

Osmond, P. & Sharifi, E., 2017. *Low Carbon Living*. [Online] Available at: http://www.lowcarbonlivingcrc.com.au/sites/all/files/publications_file_attachments/rp2024_guide_to_urban_cooling_strategies_2017_web.pdf [Accessed 22 May 2018].

Ossola, A. & Niemela, J., 2018. *Urban Biodiversity. From Research to Practice.* s.l.:Routledge.

Palmer, G., Fitzsimons, J., Antos, M. & White, J., 2008. Determinants of native avian richness in suburban remnant vegetation: Implications for conservation planning. *Biological Conservation,* 141(9), pp. 2329-2341.

Parris, K. et al., 2018. The seven lamps of planning biodiversity in the city. *Cities.*

Parris, K. & Hazell, D., 2005. Biotic effects of climate change in urban environments: the case of the grey-headed flying-fox (Pteropus poliocephalus) in Melbourne, Australia. *Biological Conservation,* 124(2), pp. 267-276.

Porter, R. & McIlvaine-Newsad, H., 2013. Gardening in green space for environmental justice: food security, leisure and social capital. Leisure/Loisir. *Journal of the Canadian Association for Leisure Studies,* 37(4), pp. 379-95.

Presland, G., 2008. *The place for a village: how nature has shaped the city of Melbourne, Melbourne, Museum Victoria Publishing, 2008.*. Melbourne: Museum Victoria Publishing.

Pretzsch, H. et al., 2015. Crown size and growing space requirement of common tree species in urban centres, parks, and forests. *Urban Forestry & Urban Greening,* 14(3), pp. 466-479.

Pugh, T., MacKenzie, A., Whyatt, J. & Hewitt, C., 2012. Effectiveness of green infrastructure for improvement of air quality in urban street canyons. *Environmental Science & Technology,* 46(14), pp. 7692-7699.

Qui, G. et al., 2013. Effects of Evapotranspiration on Mitigation of Urban Temperature by Vegetation and Urban Agriculture. *Journal of Integrative Agriculture,* 12(8), pp. 1307-1315.

Radford, J. & Bennett, A., 2004. Thresholds in landscape parameters: occurrence of the white-browed treecreeper Climacteris affinis in Victoria, Australia. *Biological Conservation,* 117(4), pp. 375-391.

Radford, J., Bennett, A. & Cheers, G., 2005. Landscape-level thresholds of habitat cover for woodland-dependent birds. *Biological Conservation,* 124(3), pp. 317-337.

Resilient Melbourne, 2018. *Melbourne's current Integrated Water Management Reforms and Initiatives. Guide for local government and water sector stakeholders: Resilient Melbourne.* [Online] Available at: https://resilientmelbourne.com.au/wp-content/uploads/2018/03/Integrated-Water-Management-Guide [Accessed 20 June 2018].

Rice, D., 2014. *Which Cities have the worst heat islands?: USA Today.* [Online] Available at: https://www.usatoday.com/story/weather/2014/08/21/urban-heat-islands-study/14389371/ [Accessed 18 May 2018].

Robine J., M. et al., 2003. Death toll exceeded 70,000 in Europe during the summer of 2003. *Comptes Rendus Biologies,* Issue 331, pp. 171-178.

Sæbø, A. et al., 2012. Plant species differences in particulate matter accumulation on leaf surfaces. *Science of the Total Environment,* Volume 427, pp. 347-354.

Saito, I., Ishihara, O. & Katayama, T., 1991-1990. Study of the effect of green areas on the thermal environment in an urban area. *Energy and Buildings,* 15(3-4), pp. 493-498.

Sanusi, R., Johnstone, D., May, P. & Livesley, S., 2016. Street orientation and side of the street greatly influence the microclimatic benefits street trees can provide in summer. *Journal of Environmental Quality,* 45(1), pp. 167-174.

Sara Barron, S., Sheppard, S. & Condon, P., 2016. Urban Forest Indicators for Planning and Designing. *Forests,* 7(9).

Seed Consulting Services: Airbourne Research Australia and EnDev Geographic, 2017. *Western Adelaide Urban Heat Mapping Project Report ,* South Australia: Seed Consulting.

Shanahan, D. et al., 2015. The health benefits of urban nature: How much do we need?. *Bioscience,* 65(5), pp. 476-485.

Shashua-Bar, L. & Hoffman, M., 2000. Vegetation as a climatic component in the design of an urban street: An empirical model for predicting the cooling effect of urban green areas with trees. *Energy and Buildings,* 31(3), pp. 221-235.

Shashua-Bar, L., Pearlmutter, D. & Erell, E., 2011. The influence of trees and grass on outdoor thermal comfort in a hot-arid environment. *International Journal of Climatology,* 31(10), pp. 1498-1506.

Shatkin, G., 2014. Reinterpreting the Meaning of the 'Singapore Model':State Capitalism and Urban Planning. *International Journal of Urban and Regional Research,* 38(1), pp. 116-137.

Shukuroglou, P. & McCarthy, M., 2006. Modelling the occurrence of rainbow lorikeets (Trichoglossus haematodus) in Melbourne. *Austral Ecology ,* 31(2), pp. 240-253.

Shwartz, A., Turbé, A., Simon, L. & Julliard, R., 2014. Enhancing urban biodiversity and its influence on city-dwellers: An experiment.. *Biological Conservation,* Volume 171, pp. 82-90.

Singapore Government, n.d. *'Garden City' vision is introduced, 11th May 1967: History SG.* [Online] Available at: http://eresources.nlb.gov.sg/history/events/a7fac49f-9c96-4030-8709-ce160c58d15c [Accessed 28 January 2018].

Skelhorn, C., Lindley, S. & Levermore, G., 2014. The impact of vegetation types on air and surface temperatures in a temperate city: A fine scale assessment in Manchester. *Landscape and Urban Planning,* Volume 121, pp. 129-140.

Spronken-Smith, R. & Oke, T., 1998. The thermal regime of urban parks in two cities with different summer climates. *International Journal of Remote Sensing,* 19(11), pp. 2085-2104.

Stagoll, K. et al., 2012. Large trees are keystone structures in urban parks. *Conservation Letters,* 5(2), pp. 115-122.

Stanford, H. & Bush, J., 2017. *Trees, Townhouses and Apartments: The effect of development density on private property tree distribution in Melbourne.* Melbourne , The University of Melbourne.

State of Victoria Department of Environment, L. W. a. P., 2017. *Protecting Victoria's Environment - Biodiversity 2037,* Melbourne: The State of Victoria.

State Revenue Office Victoria, 2019. *Growth Areas Infrastructure Contribution.* [Online] Available at: https://www.sro.vic.gov.au/growth-areas-infrastructure-contribution [Accessed 29 January 2019].

Stigsdotter, U. &. G., (2011). Stressed individuals' preferences for activities and environmental characteristics in green spaces. *Urban Forestry and Urban Greening,* 10(4), pp. 295-304.

Streiling, S. & Matzarakis, A., 2003. Influence of single and small clusters of trees on the bioclimate of a city: a case study. *Journal of Arboriculture,* 29(6), pp. 309-316.

Sugawara, H. et al., 2016. Thermal influence of a large green space on a hot urban environment 2016. *Journal of Environmental Quality,* 45(1), pp. 125-133.

Sushinsky, J. et al., 2013. How should we grow cities to minimize their biodiversity impacts?. *Global Change Biology,* 19(2), pp. 401-410.

Symons, J., Jones, R., Young, C. & Rasmussen, B., 2015. *Assessing the Economic Value of Green Infrastructure: Literature Review,* Melbourne: Victoria University.

Taha, H., Akbari, H. & Rosenfeld, A., 1991. Heat island and oasis effects of vegetative canopies: micrometeorological field-measurements. *Theoretical and Applied Climatology,* 44(2), pp. 123-138.

Taleghani, M.,Sailor, D, Tenpierika, M. & van den Dobbelsteena, A., 2014. Thermal assessment of heat of heat mitigation strategies: the case of Portland State University, Oregon, USA. *Building and Environment,* Volume 73, pp. 138-150.

The Nature Conservancy, 2016. *Planting Healthy Air: A global analysisof the role of the urban trees in addressing particulate matter pollution and extreme heat.,* Arlington: The Nature Conservancy.

The Nature Conservancy, 2018. *Insuring Nature to Ensure a Resilient Future.* [Online] Available at: https://www.nature.org/en-us/what-we-do/our-insights/perspectives/insuring-nature-to-ensure-a-resilient-future/ [Accessed 29 January 2019].

Threlfall, C., Law, B. & Banks, P., 2012. Sensitivity of insectivorous bats to urbanization: Implications for suburban conservation planning. *Biological Conservation,* 146(1), pp. 41-52.

Threlfall, C., Law, B., Penman, T. & Banks, P., 2011. Ecological processes in urban landscapes: mechanisms influencing the distribution and activity of insectivorous bats. *Ecography,* 34(5), pp. 814-826.

Threlfall, C. et al., 2017. Increasing biodiversity in urban green spaces through simple vegetation interventions. *Journal Of Applied Ecology,* 54(6), pp. 1874-1883.

Tiwary, A., Morvan, H. & Colls, J., 2006. Modelling the size-dependent collection efficiency of hedgerows for ambient aerosols. *Journal of Aerosol Science,* 37(8), pp. 990-1015.

Tiwary, A., Reff, A. & Colls, J., 2008. Collection of ambient particulate matter by porous vegetation barriers: sampling and characterization methods. *Journal of Aerosol Science,* 39(1), pp. 40-47.

Townsend, M., Henderson-Wilson, C., Warner, E. & Weiss, L., 2015. *Healthy People, Healthy Parks: Parks Victoria.* [Online] Available at: http://parkweb.vic.gov.au/__data/assets/pdf_file/0008/693566/Guide-to-Healthy-Parks-Healthy-People.pdf [Accessed 18 May 2018].

Treeconomics, 2015. *Valuing London's Urban Forest. Results of the London i-Tree Eco Project: Treeconomics.* [Online] Available at: http://www.treeconomics.co.uk/wp-content/uploads/LONDON-I-TREE-ECO-REPORT-151202.pdf [Accessed 18 May 2018].

United Nations, Department of Economic and Social Affairs, Population Division, 2015. *World Urbanization Prospects: The 2014 Revision,* New York: United Nations.

United Nations, n.d. *2018 Revision of the World Urbanization Prospects.* 2018: United Nations Department of Economic and Social Affairs.

United States Environmental Protection Agency, 2014. *Getting to Green: Paying for Green Infrastructure.* [Online] Available at: https://www.epa.gov/sites/production/files/2015-02/documents/gi_financing_options_12-2014_4.pdf [Accessed 29 January 2019].

United States Forest Service, n.d. *What is i-Tree?.* [Online] Available at: https://www.itreetools.org/resources/content/guide_to_assessing_urban_forests_nrs_inf_24_13.pdf. [Accessed 5 September 2018].

University of Virginia Institute of Environmental Negotiations, 2015. *Ten-Year Urban Forestry Action Plan. Research Needs 2016-2026,* Charlottesville: University of Virginia Institute of Environmental Negotiations.

Urban Climate Lab, 2016. *Louisville Urban Heat Management Study. April 2016. Draft for Public Commen: City of Louisville Kentucy.* [Online] Available at: https://louisvilleky.gov/sites/default/files/advanced_planning/louisville_heat_mgt_revision_final_prelim.pdf [Accessed 18 May 2018].

'Urban Extent 2015' © State of Victoria, n.d. s.l.: s.n.

Urban Forest Consulting, 2018. *Cool It. Addressing heat vulnerability in regional Victorian towns. Regional Summary Report October 2018,* Bendigo: Central Victorian Greenhouse Alliance.

Urban Forest Innovations Inc., 2009. *Overview of the framework for a strategic urban forest management plan for the city of Guelph: City of Guelph.* [Online] Available at: https://guelph.ca/wp-content/uploads/UFMP-CommunityWorkship1_April2009.pdf [Accessed 18 May 2018].

Vailshery, L., Jaganmohan, M. & Nagendra, H., 2013. Effect of street trees on microclimate and air pollution in a tropical city. *Urban Forestry & Urban Greening,* 12(3), pp. 408-415.

Valderrama, A. et al., 2013. *Issue Brief: Creating Clean Water Cash Flows.* [Online] Available at: https://www.nrdc.org/sites/default/files/green-infrastructure-pa-IB.pdf [Accessed 29 January 2019].

van der Ree, R. & McCarthy, M., 2005. Inferring persistence of indigenous mammals in response to urbanisation. *Animal Conservation,* 8(3), pp. 309-319.

van der Ree, R. et al., 2006. The establishment and dynamics of a recently established urban camp of flying foxes outside their geographic range. *Journal of Zoology,* 268(2), pp. 177-185.

Vandentorren, S. et al., 2004. Mortality in 13 French cities during the August 2003 heat wave. , 2004. 94(9): p. 1518-1520.. *American Journal of Public Health,* 94(9), pp. 1518-1520.

Vibrant Cities Lab, 2018. *Create your own canopy map.* [Online] Available at: https://www.vibrantcitieslab.com/toolkit/urban-tree-canopy/ [Accessed 27 September 2018].

Victoria State Government Department of Environment, Land, Water and Planning, 2017. *Victoria's Climate Change Adaptation Plan 2017-2020,* Melbourne : Victoria State Government Department of Environment, Land, Water and Planning.

Victoria State Government. Deparment of Environment, Land, Water and Planning, 2017. *Planning a Green-Blue City. A how-to guide for planning urban greening and enhanced stormwater management in Victoria: Victorian State Government.* [Online] Available at: https://www.water.vic.gov.au/__data/assets/pdf_file/0029/89606/Green-blue-Infrastructure-Guidelines-Feb17.pdf [Accessed 20 June 2018].

Victoria State Government. Department of Environment, Land, Water and Planning, 2013. *Municipal Strategic Statement – Clause 21.03.* [Online] Available at: http://planningschemes.dpcd.vic.gov.au/schemes/melbourne/ordinance/21_mss03_melb.pdf [Accessed 26 June 2018].

Victoria State Government. Department of Environment, Land, Water and Planning, 2016. *Water for Victoria. Water Plan: Victoria State Government.* [Online] Available at: www.water.vic.gov.au/__data/assets/pdf_file/0030/58827/Water-Plan-strategy2.pdf [Accessed 30 June 2018].

Victoria State Government. Department of Environment, Land, Water and Planning, 2017. *Integrated Water Management Framework for Victoria. An IWM approach to urban water planning and share decision making thoughout Victoria: Victoria State Government.* [Online] Available at:

https://www.water.vic.gov.au/__data/assets/pdf_file/0022/81544/DELWP-IWM-Framework-FINAL-FOR-WEB.pdf [Accessed 20 June 2018].

Victoria State Government. Department of Environment, Land, Water and Planning, 2018. *Victoria Planning Provisions.* [Online] Available at: http://planningschemes.dpcd.vic.gov.au/schemes/vpps [Accessed 20 June 2018].

Victoria State Government, 2007. *Version No. 041. Catchment and Land Protection Act 1994 No. 52 of 1994 : Victorian Legislation and Parlimentary Documents.* [Online] Available at: http://www.legislation.vic.gov.au/domino/Web_notes/LDMS/LTObject_Store/LTObjSt1.nsf/d1a8d8a9bed958efca25761600042ef5/a6c08457004d6b0eca257761001b712e/[Accessed 20 June 2018].

Victoria State Government, 2016. *Plan Melbourne 2017-2050,* s.l.: s.n.

Victoria State Government, n.d. *Victorian Biodiversity Atlas (c).* [Online] Available at: http://www.depi.vic.gov.au/environment-and-wildlife/biodiversity/victorian-biodiversity-atlas [Accessed 19 July 2018].

Victorian Environmental Assessment Council, 2011. *Metropolitan Melbourne Investigation. Final Report,* Melbourne: Victorian Environmental Assessment Council.

Victorian Government Department of Human Services Melbourne, 2009. *January 2009 Heatwave in Victoria: An Assessment of Health Impacts, Victoria, State of Victoria,* Melbourne: Victorian Government Department of Human Services Melbourne.

Victorian Government Department. Department of Treasury and Finance, 2016. *Victorian Green Bonds: An Australian and world first.* [Online] Available at: https://www.dtf.vic.gov.au/sites/default/files/2018-01/Green-Bonds-Fact-Sheet.pdf [Accessed 29 January 2019].

Victorian Legislation and Parliamentary Documents, 2012. *Authorised Version No. 102 Planning and Environment Act 1987 No. 45 of 1987. Authorised Version incorporating amendments as at 1 July 2012: Victorian Legislation and Parliamentary Documents.* [Online] Available at: http://www.legislation.vic.gov.au/Domino/Web_Notes/LDMS/LTObject_Store/LTObjSt7.nsf/07c00f1b6c5c4afbca25776700219570/4d5c8a5d22cc9998ca257a3000028d7a/$FILE/87-45aa102%20authorised.pdf [Accessed 19 May 2018].

Victorian State Government , 2015. *Victorian Public Health and Wellbeing Plan 2015–2019 ,* Melbourne : Victorian Government, 1 Treasury Place, Melbourne.

Victorian State Government Department of Environment, Land Water and Planing , n.d. *Victorian Memorandum for Health and Nature.* [Online] Available at: https://www.environment.vic.gov.au/biodiversity/victorian-memorandum-for-health-and-nature [Accessed 6 March 2017].

Victorian State Government, Department of Environment, Land, Water & Planning , 2017. *Yarra river Action Plan: Wilip-gin Birrarung murron,* Melbourne: The State of Victoria Department of Environment, Land, Water & Planning.

Victorian State Government, 2016. *Urban Extent 2015,* s.l.: Department of Environment, Land, Water and Planning.

Waqar, H., 2015. *Difference between funding and financing.* [Online] Available at: http://www.differencebetween.net/business/difference-between-funding-and-financing/ [Accessed 1 September 2018].

White, J., Antos, M., Fitzsimons, J. & Palmer, G., 2005. Non-uniform bird assemblages in urban environments: the influence of streetscape vegetation. *Landscape And Urban Planning,* 71(2-4), pp. 123-135.

WHO, 2005. *Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide,* Geneva: World Health Organisation.

Williams, N. et al., 2006. Range expansion due to urbanisation: increased food resources attract grey-headed flying-foxes (Pteropus poliocephalus) to Melbourne. *Austral Ecology,* 31(2), pp. 190-198.

Xiangrui Meng, Alan; Lau, Ivy; Boulle, Bridget; Chen, Sen; Liu, Xiaoyi; Liu, Tianyu, 2018. *China Green Bond Market 2017: A USD37.1bn Chinese Green Bond Market,* Beijing: Climate Bonds Initiative and China Central Depository & Clearing Company.

Yang, J., Chang, Y. & Yan, P., 2015. Ranking the suitability of common urban tree species for controlling PM2.5 pollution. *Atmospheric Pollution Research,* 6(2), pp. 267-277.

Yu, C. & Hien, W., 2006. Thermal benefits of city parks. Energy and Buildings. *Energy and Buildings,* 38(2), pp. 105-120.

Attachment 2 - Living Melbourne - consultation 220219

LIVING MELBOURNE
Our metropolitan urban forest

February 2019

Attachment 2 - Living Melbourne - consultation 220219

The Nature Conservancy and Resilient Melbourne (2019) *Living Melbourne: Our Metropolitan Urban Forest.* The Nature Conservancy and Resilient Melbourne, Melbourne

This report was prepared by Martin Hartigan, James Fitzsimons, Maree Grenfell and Toby Kent.

With:

100 Resilient Cities Platform Partners

Satellite imagery for mapping provided by Digital Globe

Mapping analysis software provided by Trimble

Contents

Vision iii
Message from 100 Resilient Cities iv
Message from The Nature Conservancy v
Aboriginal acknowledgement vi
Executive summary 1
Introduction 5
Why do we need this strategy? 5
Taking action for a Living Melbourne 6
Benefits, challenges and opportunities 8
Benefits of nature and the urban forest 8
Social connection and cohesion 9
Socio-economic benefits 10
Physical and mental health 12
Ecosystem services 15
Ecosystem health 15
Challenges for Melbourne's urban forest 19
A growing, densifying, and sprawling urban form 19
Climate change 22
Threats to nature 23
Fragmented governance 24
Opportunities for the urban forest 26
Mapping the urban forest 26
Trees and temperature reduction 37
Water-sensitive urban design 38
Improving urban air quality 39
Developing the *Living Melbourne* strategy 40
Global and local momentum 40
Policies relevant to metropolitan Melbourne's urban forest 41
***Living Melbourne*: A new way forward** 47
How was the strategy devised? 47
How to use this strategy 47
Taking action for a Living Melbourne 48
Healthy people 48
Abundant nature 49
Natural infrastructure 50

Attachment 2 - Living Melbourne - consultation 220219

Actions for a Living Melbourne 51
Implementing the strategy..... 68
Commonly asked questions..... 69
Glossary 71
Acknowledgements 73
References 75

Vision

Our thriving communities are resilient, connected through nature.

Message from 100 Resilient Cities

On behalf of the entire 100 Resilient Cities Network of cities and partners, I would like to congratulate Resilient Melbourne, The Nature Conservancy, and all of the organisations who have co-authored *Living Melbourne*, a robust metropolitan response to many urban resilience challenges. 100 Resilient Cities is proud of the efforts across sectors to develop a truly collaborative and strategic plan to connect existing greening and urban forest approaches across metropolitan Melbourne.

A flagship action from the *Resilient Melbourne* strategy, *Living Melbourne* is the cumulative result of more than two years of collaboration to provide evidence of the need for, and benefits of, greening a city. 100 Resilient Cities unlocked resources from global experts to assist in its development, and many cities and partners are looking to Melbourne's leadership to replicate such a project.

Many of the shocks and stresses that threaten to weaken our resolve can be responded to by working with and incorporating nature into our planning. Melbourne, like many other cities, is facing increasing heat and decreasing social equity. An accessible metropolitan urban forest can improve shading and reduce heat loads, and the mapping developed can direct efforts to areas of societal vulnerability. Given the growing population and urban densification occurring across Melbourne, the ecosystem services that an urban forest can provide will better prepare Melbourne for a resilient future.

Living Melbourne builds on this city's legacy of liveability, and seeks to put down roots for the continued high quality of life for which Melbourne is renowned. I commend this work, and encourage you and your organisations to become implementation partners of *Living Melbourne*, and to incorporate its actions into your operational plans and budgets. I wish you well in realising your ambition to make your great city, Melbourne, truly liveable, both now and in the future.

Michael Berkowitz
Global President
100 Resilient Cities

Message from The Nature Conservancy

The Nature Conservancy is proud to work with 100 Resilient Cities and Resilient Melbourne as partners to present *Living Melbourne* – Melbourne's first-ever metropolitan urban forest strategy.

As a global organisation that conserves the lands and waters on which all life depends, The Nature Conservancy focuses its work on four key priorities, one of which is the building of healthy cities.

Cities are growing – fast. By 2050, two-thirds of the world's population will live in urban areas. Cities' footprints are expanding at an alarming rate, putting habitat, human health, and access to food and water at risk. But with smart planning, science-based solutions and strong partnerships, we believe that cities can become resilient, healthy and equitable. Melbourne is a perfect place to start to combat problems caused by this super-rapid growth.

As nature comes under increasing threat from climate change, the destruction of natural habitats, and unsustainable urbanisation, it is more important than ever to understand that people are an essential part of the solution. And to harness the power of people in the conservation of nature, they need to have a connection to it. That's why The Nature Conservancy sees *Living Melbourne* as an important opportunity to transform Melbourne's approach to urban greening. I hope it will encourage Melburnians to value their urban nature for its biodiversity values and for the benefits it offers them – from cooler neighbourhoods to better physical and mental health.

I'm confident that *Living Melbourne* will inspire the city's residents, and allow them and others around the world to aspire to a future where cities value the contribution that nature makes to our urban environment.

Pascal Mittermaier
Managing Director, Global Cities
The Nature Conservancy

Aboriginal acknowledgement

This document, and its many contributors and owners, respectfully acknowledge the Traditional Custodians of the lands and waters of the Melbourne region. Under the care of the Woiwurrung (Wurundjeri), Boon Wurrung and Wathaurong peoples of the Kulin Nation, who have spent millennia caring for country, the lands and waters of what is now the Melbourne region thrived. We acknowledge the invaluable contribution of generations of Aboriginal custodians to the health and vitality of our natural environment. We recognise that the land is of spiritual, cultural and economic importance to Aboriginal people, and we recognise and value the essential and continuing contribution of Aboriginal people to the region.

Executive summary

Living Melbourne: our metropolitan urban forest is about uniting a city around new, shared objectives. We are bringing together councils, state government agencies, non-government and community organisations, residents, and other partners to give life to our vision for an urban forest: thriving and resilient communities, connected through nature. Our urban forest protects human health, nurtures abundant nature, and strengthens natural infrastructure.

Made up of all the trees, shrubs, grasslands, soil and water on public and private land across metropolitan Melbourne, the urban forest makes innumerable contributions to our health and wellbeing. However, these components on their own do not constitute an 'urban forest'. The urban forest also requires a number of ecological processes to sustain it, including the interconnected relationship with animals.

This strategy aims to create a profound shift in the way we think about, build, grow, and value Melbourne. Until recently, cities have existed in conflict with nature. Increasingly, around the world, people understand that the success and long-term viability of cities depend on being able to live alongside nature. This is neatly expressed in Melbourne through the concept of our urban forest.

The forest cleans our air and water, reduces damaging heat in our neighbourhoods, and provides valuable habitat for flora and fauna. Exposure to nature reduces stress and the incidence of mental illness, and it provides opportunities to strengthen community bonds, by providing spaces where people can congregate and enjoy physical activity.

The 21st century will be remembered as the urban century, the century with the most significant urban growth ever witnessed. This is not news for Melbourne. With a population of 8 million people projected for 2051, we will soon be one of the largest cities in one of the most urbanised nations on the planet.[1] Given the difficulties that we will face in the urban century, it is crucial that we create and nurture our urban forest.

Melburnians value and are proud of their parks and gardens. Admirable efforts are under way to add to the natural features that make our city a safe, healthy and pleasant place to live. But Melbourne's urban forest is under pressure. Changes in urban form, a growing population, climate change – including increasing urban heat – leave it vulnerable. At the moment we lack a metropolitan-wide approach to assess and reduce the harm that these trends inflict upon the city and existing urban forest. This strategy, *Living Melbourne: our metropolitan urban forest*, is a timely and invaluable opportunity to rise to these challenges.

In pursuit of three goals – Healthy People, Abundant Nature, and Natural Infrastructure – this strategy proposes a series of actions to help our rapidly changing city better protect, connect and enhance our urban forest. The strategy, if implemented, will help transform the city for the benefit of all Melburnians, through the urban forest and the biodiversity it supports.

[1] Department of Environment, Land, Water and Planning, *Victoria in Future 2016: Population and Household Projections to 2051*, Victoria State Government, Melbourne, 2016.

The six actions are:

- Action 1: Protect and restore species habitat, and improve connectivity
- Action 2: Set targets and track progress
- Action 3: Scale up greening in the private realm
- Action 4: Collaborate across sectors and regions
- Action 5: Build a toolkit of resources to underpin implementation
- Action 6: Fund the protection and enhancement of the urban forest.

This strategy was developed with the involvement of a broad range of organisations and individuals, including many technical experts, and builds upon the strong foundation of urban forest initiatives already implemented or under way in Melbourne. By bringing together individuals, communities, infrastructure operators, businesses and governments in pursuit of a shared vision, and collectively implementing *Living Melbourne*, we can better protect and enhance all the economic, health, and social dividends of the urban forest. This will strengthen Melbourne's ability to thrive, no matter what the future holds.

This strategy's vision extends to the year 2050, but we expect that the strategy will be reviewed regularly as our urban forest science, implementation expertise and achievements grow.

Attachment 2 - Living Melbourne - consultation 220219

[Note this graphic will align with wording in later part of document once consultation rounds are complete*]*

Attachment 2 - Living Melbourne - consultation 220219

Introduction

Why do we need this strategy?

More than ever before, we need nature in our cities. Melbourne is predicted to be a city of 8 million people by 2051, which would make it the largest city in one of the world's most urbanised nations.[2] Although growth brings tremendous opportunities for innovation and economic development, it also threatens the natural environment and the many services it provides to Melburnians.

These 'ecosystem services' include clean drinking water, respite from rising summer temperatures, and protection from flooding – to name just a few. There are also many broader benefits, including better physical and mental health and wellbeing. Protecting and enhancing natural areas and habitat for flora and fauna in cities is essential for strengthening our resilience to shocks and stresses, many of which will be exacerbated by climate change and rapid urbanisation. The time to act is now.

Melbourne's liveability is under threat

Melburnians are proud of their leafy streets, public gardens, parkways along rivers and creeks, grassy basalt plains in the west, and the Dandenong Ranges that climb above the eastern suburbs. Our natural environment contributes to Melbourne's status as one of the world's most liveable cities. Our city's liveability requires a healthy natural environment, accessible to all.

Our economy also relies upon the greenness of our city. Destination Melbourne's 2017 report shows that visitors to Melbourne, who contribute approximately $8 billion to our annual economy, rank parks and gardens as Melbourne's number-one unique attribute, and as the city's top 'must do' attraction.[3]

However, as metropolitan Melbourne expands outwards and also becomes more densely populated, green space is shrinking, putting many of our natural values at risk. Despite the perception of extensive green areas, some of Melbourne's local government areas have among the lowest urban tree canopy cover in Australia.[4] With Melbourne's population growing and its area expanding, we must act now if we are to maintain and improve our city's liveability and appeal for generations to come.

Our urban forest protects human health, nurtures abundant nature, and strengthens natural infrastructure

The urban forest is made up of trees, shrubs, grasslands and other vegetation, growing on public and private land across metropolitan Melbourne, and the soil and water that support

---

[2] Department of Environment, Land, Water and Planning, *Victoria in Future 2016: Population and Household Projections to 2051*, Victoria State Government, Melbourne, 2016.

[3] Destination Melbourne, *Greater Melbourne's Destination Management Visitor Plan: Executive Summary*, Melbourne, 2018, p. 6.

[4] B. Jacobs et al., *Benchmarking Australia's Urban Tree Canopy: An i-Tree Assessment*, Institute for Sustainable Futures, University of Technology Sydney, for Horticulture Australia Limited, Sydney, 2014.

them. This includes vegetation in parks, reserves and private gardens, along railways, waterways, main roads and local streets, and on other green infrastructure such as green walls and roofs. The urban forest encompasses all types of vegetation and ecosystems, but among the most iconic elements are its trees and shrubs. Fauna is an important component too, with complex interrelations between animals and plants helping to maintain the urban forest.

The urban forest plays a significant role in making our city a place where we can all thrive. It brings us a range of benefits, including a more connected and cohesive society, better physical, mental and environmental health, and important ecosystem services such as heat mitigation. But Melbourne's urban forest is also under pressure. A denser urban form will increasingly crowd out opportunities for trees, while a changing climate and higher urban temperatures put physical stress on the forest. Urban expansion beyond its current footprint threatens existing vegetation and natural values. This is already happening across the city.

Our current fragmented approach to managing the urban forest increases its vulnerability. Investing in the protection, strengthening and expansion of the urban forest will bring many opportunities, including better management of our water resources, higher-quality and better-connected natural habitat, and easier access to green space for all Melburnians. The benefits of, challenges to, and opportunities presented by the urban forest are discussed later in this document.

Taking action for a Living Melbourne

Living Melbourne: our metropolitan urban forest is bringing together councils, state government agencies, non-government and community organisations, residents, and other partners, to work towards a shared vision for the urban forest: thriving and resilient communities, connected through nature. Canopy cover is a particularly important measure of the urban forest's ability to benefit the community and the environment[5]. This strategy focuses on improving the quality and quantity of trees and vegetation in the urban forest – whether on public or private land.

Our urban forest protects human health, nurtures abundant nature, and strengthens natural infrastructure.

This strategy sets out six actions to enable and inspire our rapidly growing city to better protect and strengthen its natural assets. It is supported by solid evidence presented in the accompanying *Living Melbourne: Our Metropolitan Urban Forest Technical Report* (Technical Report).[6] Collaboration is a central element of this strategy. Only by working collaboratively between organisations, land tenures, and regions can we understand the needs, agree on priorities for protection and improvement, set targets, and track progress. Together, we can build on the strong foundation of urban forest initiatives already started or under way in Melbourne. In this way we can bring city-wide benefits that could not be achieved by individual neighbourhoods, infrastructure operators, businesses or governments acting alone.

---

[5] City of Melbourne, *Urban Forest Strategy: Making a Great City Greener: 2012–2032*, Melbourne, 2012.

[6] The Nature Conservancy and Resilient Melbourne, *Living Melbourne: Our Metropolitan Urban Forest Technical Report*, City of Melbourne, 2019.

Protecting and enhancing Melbourne's urban forest is a vital part of planning for shocks and stresses. Box 1 illustrates the link between urban resilience and nature.

Box 1: Urban resilience and the urban forest

Urbanisation, globalisation and climate change are causing more people to move to cities. This presents a series of additional challenges, reducing and threatening the liveability of those cities.

In response, the urban resilience movement pioneered by 100 Resilient Cities (100RC) seeks to build the capacity of a city's individuals, communities, institutions, businesses and systems to adapt, survive and thrive – no matter what kinds of chronic stresses and acute shocks they experience. By equipping themselves to cope not only with acute shocks (such as fires and floods), but also with the chronic stresses that weaken the fabric of a city on a day-to-day or cyclical basis (such as social inequity, overburdened public transport, and chronic water shortages), cities are better able to deal with disruptions, while also enjoying a higher quality of life every day.

To build resilience we must look at our city in its entirety, to understand its many assets and systems and how they interact with each other. Nature is increasingly recognised as one of our most valuable resilience assets: the urban forest and the biodiversity that it supports can take pressure off our increasingly strained built infrastructure. The urban forest helps reduce the damage caused by several types of shocks and stresses (see Figure 1). Failure to protect and improve our urban forest is a missed opportunity to unlock the economic, health and social dividends that strengthen Melbourne's ability to thrive, no matter what the future holds.

Figure 1: Shocks and stresses reduced by the urban forest

Benefits, challenges and opportunities

Benefits of nature and the urban forest

The urban forest brings a multitude of benefits to a city. But many of the ecosystem services that nature provides to the urban realm are currently served by grey infrastructure (such as reticulated water supply and stormwater drainage systems). The costs of maintaining this grey infrastructure generally increase over time, while its level of service declines. In the City of Melbourne alone (which makes up approximately 0.4% of metropolitan Melbourne's land mass), 70,000 trees in streets and parks are estimated to provide $14 million worth of water-quality improvement, stormwater regulation, flood mitigation, air purification, and shade and heat wave mitigation.

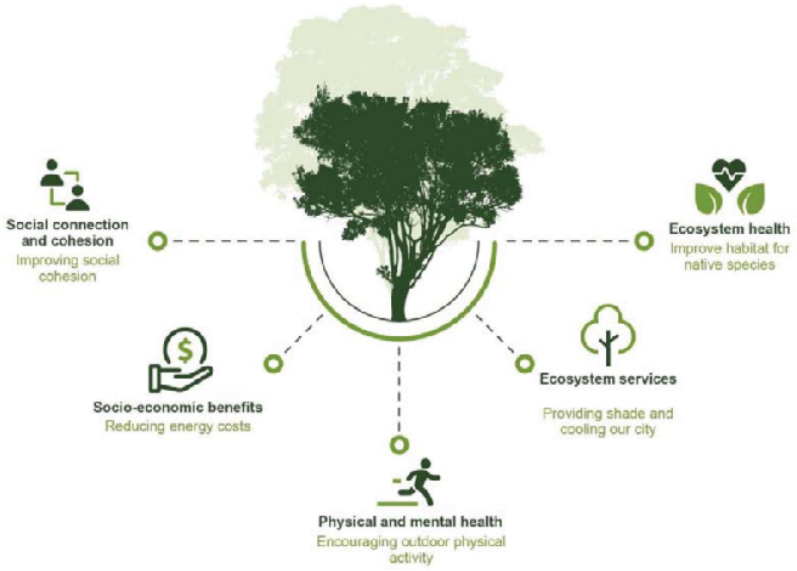
A 2005 study of five US cities estimated that every $1 spent on planting and maintaining trees generated annual benefits ranging from $1.37 to $3.09 – a strong return on investment.[7] Similarly, a more recent study by the US Forest Service and the University of California found that every $1 spent on tree planting and maintenance in Californian cities brought $5.82 in benefits.[8]

Trees and other vegetation are essential components of urban infrastructure, providing a range of benefits, as described further below, with more detailed information and analysis provided in Chapter 3 of the *Technical Report*.

[7] G. McPherson et al., 'Municipal forest benefits and costs in five US cities', *Journal of Forestry*, vol. 103, no. 8, December 2005, pp. 411–16.

[8] E.G. McPherson et al., *The State of California's Street Trees*, Pacific Southwest Research Station, US Forest Service, Davis, California, 2015.

Figure 2: **Benefits of nature and the urban forest**



Social connection and cohesion

Urban green spaces – such as parks – foster social cohesion, inclusion and interaction. They give residents a stronger sense of place and local identity, and reduce fear and crime levels in the community. Urban forests and urban green space provide places to hold major events, festivals and celebrations throughout the city. Events and spaces can bring together diverse groups of people by providing a public realm that is available for everyone to enjoy. Green spaces play an especially important role in integrating minority groups into the wider society, and can help new immigrants adapt to their host country.[9]

"We live opposite a beautiful park … it's right at our doorstep. We feel very, very lucky to live opposite this beautiful park, it's very well maintained by the local council and it's highly utilised. So even just out there walking, I've got to know people in my neighbourhood. – female resident of Wyndham"[10]

[9] D. Kendal et al., *Benefits of Urban Green Space in the Australian Context: A Synthesis Review for the Clean Air and Urban Landscapes Hub. Final Report*, Clean Air and Urban Landscapes Hub, Australia, 2016.

[10] B. Corti et al., *Living Liveable: The lived experiences of life on the urban fringe, http://cur.org.au/project/living-liveable-the-lived-experiences-of-life-on-the-urban-fringe/*

The flourishing of, and interactions between, our diverse plants, animals, soils and waterways are important to the identity of current and future generations. Aboriginal Victorians, the Traditional Owners of the land, attach great value to biodiversity, which is core to many cultural practices and obligations. Connection to Country is fundamentally important for Victorian Aboriginal communities.[11]

This connection builds stronger individual and collective identity, a sense of self-esteem, resilience, and helps to improve people's health, education, economic stability and community safety.[12] Increasingly, we understand that *all* parts of society benefit from being closely connected to nature.

Socio-economic benefits

Green spaces provide important socio-economic benefits, such as reducing energy costs by shading against heat, reducing maintenance costs, and boosting business activity. By shading buildings in summer, trees reduce the need for air-conditioning, and can reduce annual cooling costs by between $30 and $400 per year, depending on the height of the tree. Blacktown Council in Sydney, in partnership with the Cool Streets initiative, found that changes to street design could reduce carbon dioxide emissions, cool neighbourhoods and reduce power bills for residents. Cool Streets found that annual average household savings from tree shading were $249.[13]

Trees can also protect asphalt pavements from heat, reducing the need for regular maintenance.[14] Figure 3 and Figure 4 are thermal images of urban streets. Figure 3 shows an urban street with large trees. The surface temperature is indicated on the right of the image in the scale bar. It illustrates that shaded surfaces (the darker colours) are significantly cooler than unshaded surfaces (lighter colours) such as the roads and footpath. Figure 4 is a thermal image of an urban street with small trees. With little shade provided, surface temperatures are much higher.

---

[11] J. Kingsley et al., 'If the land is healthy … it makes the people healthy: The relationship between caring for Country and health for the Yorta Yorta Nation, Boonwurrung and Bangerang Tribes', *Health & Place*, vol. 15, no. 1, March 2009, pp. 291–9.

[12] Kingsley J, Townsend M, Henderson-Wilson C, Bolam B. Developing an exploratory framework linking Australian Aboriginal peoples' connection to country and concepts of wellbeing. *Int J Environ Res Public Health*. 2013;10(2):678-98. Published 2013 Feb 7. doi:10.3390/ijerph10020678

[13] A. Hoh, 'Sydney squeeze: Lower your electricity bills and reduce the heat island effect by planting more trees', *ABC News*, 23 March 2017.

[14] E.G. McPherson and J. Muchnick, 'Effects of street tree shade on asphalt concrete pavement performance', *Journal of Arboriculture*, vol. 31, no. 6, November 2005, pp. 303–10.

Figure 3: Thermal image of an urban street with large trees (courtesy Banyule City Council, image © ENSPEC)

Figure 4: Thermal image of an urban street with small trees (courtesy Banyule City Council, image © ENSPEC)

Green infrastructure on commercial sites has been found to encourage economic activity by attracting customers who stay longer and return more frequently.[15]

Although there is currently no total valuation of the benefits and savings attributable to Melbourne's metropolitan trees, one study used iTree Eco software, a common and well-accepted method, to value as many local government tree assets as possible across metropolitan Melbourne.[16] Thirteen tree asset databases were suitable for analysis. In total,

[15] The Green Edge: How Commercial Property Investment in Green Infrastructure Creates Value https://www.nrdc.org/sites/default/files/commercial-value-green-infrastructure-report.pdf

[16] R. Moorey, 'Ecosystem services evaluation of metropolitan Melbourne's urban forest', thesis for Master of Sustainable Practice, University of Melbourne, 2018.

the economic savings in the form of pollution removal, carbon storage, carbon sequestration, and avoided water runoff were calculated at $6 million per year. More importantly, the cost of replacing these assets with similar trees – based on size, species, health and location – was calculated at $2.5 billion. These two figures, which could be extrapolated across the metropolitan area for all 32 councils, are for only a relatively small proportion of the total tree canopy of Melbourne.

Physical and mental health

Urban forests improve people's physical and mental health by reducing heat stress, encouraging physical activity, and offering recreational opportunities. The urban forest provides space that encourages the types of physical activity that reduce people's risk of developing chronic heart disease, diabetes, dementia and some cancers. Easily accessible green spaces and trees have positive effects on people's wellbeing, improving their mental health.[17]Scientific research highlights the wellbeing benefits of contact with nature, and disconnection from nature impacting detrimentally on human happiness and ecology[18]. Purely being in the outdoors can be effective in strengthening wellbeing for vulnerable populations[19]. Research that looked at environments which promote people's health and wellbeing and identified green open spaces playing a key role in this process[20].

A study of more than 200,000 Australians aged 45 years and over found that those who had more than 20% green space within a one-kilometre radius of their home were significantly more likely to walk and participate in physical activities rated as 'moderate to vigorous'. Greener neighbourhoods lead not only to weekly participation, but also to more frequent sessions of walking and moderate to vigorous activity, such as jogging and team sports. These findings suggest that the amount of green space available to middle-aged and older adults in their neighbourhood environments influences their level of physical activity.[21]

Urban forests also cool surrounding environments. Built-up areas of cities can be as much as 7°C warmer than surrounding areas.[22] This 'urban heat island effect' is caused by the

---

[17] T. Astell-Burt et al., 'Mental health benefits of neighbourhood green space are stronger among physically active adults in middle to older age: Evidence from 260,061 Australians', *Preventive Medicine*, vol. 57, no. 5, November 2013, pp. 601–6.

[18] Kingsley J, Townsend M, Henderson-Wilson C, Bolam B. Developing an exploratory framework linking Australian Aboriginal peoples' connection to country and concepts of wellbeing. *Int J Environ Res Public Health*. 2013;10(2):678-98. Published 2013 Feb 7. doi:10.3390/ijerph10020678

[19] Kingsley J, Townsend M, Henderson-Wilson C, Bolam B. Developing an exploratory framework linking Australian Aboriginal peoples' connection to country and concepts of wellbeing. *Int J Environ Res Public Health*. 2013;10(2):678-98. Published 2013 Feb 7. doi:10.3390/ijerph10020678

[20] Kingsley J, Townsend M, Henderson-Wilson C, Bolam B. Developing an exploratory framework linking Australian Aboriginal peoples' connection to country and concepts of wellbeing. *Int J Environ Res Public Health*. 2013;10(2):678-98. Published 2013 Feb 7. doi:10.3390/ijerph10020678

[21] T. Astell-Burt et al., 'Green space is associated with walking and moderate-to-vigorous physical activity (MVPA) in middle-to-older-aged adults: Findings from 203,883 Australians in the 45 and Up Study', *British Journal of Sports Medicine*, vol. 48, no. 5, March 2014, pp. 404–6.

[22] A.M. Coutts et al., 'Watering our cities: The capacity for water sensitive urban design to support urban cooling and improve human thermal comfort in the Australian context', *Progress in Physical Geography: Earth and Environment*, vol. 37, no. 1, November 2012, pp. 2–28.

heat-absorptive thermal mass of concrete, bitumen and bricks. The urban heat island disproportionately affects vulnerable people, including young children, the elderly, people who are unwell or socially isolated, and those who are financially disadvantaged.[23]

The *Living Melbourne* strategy takes a further step towards determining where the urban forest will be most beneficial, particularly for vulnerable communities, by using heat-mapping and socio-economic indicators. Some of our metropolitan councils have been leading the way in their urban forest strategies. For example, Yarra City Council considers three criteria to help identify areas of greatest need for improving and protecting the urban forest, including new plantings:

- hotspots: where more heat is currently being retained in the urban landscape, locally exacerbating the urban heat island effect
- social vulnerability: areas with significant populations of people deemed to be especially vulnerable to extreme heat and heatwaves
- pedestrian activity zones: areas of high pedestrian thoroughfare or congregation, or active transport activity, including school zones.[24]

Moreland City Council has developed an urban heat island action plan – see Box 3.

Box 3: Heat planning case study

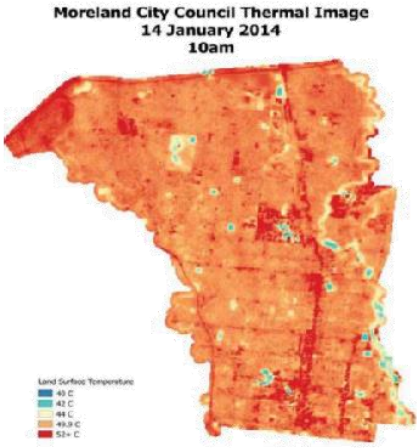
The Moreland City Council's *Urban Heat Island Effect Action Plan* prioritises heat-reduction initiatives by considering the intersection between human vulnerability and urban hot spots.

Thermal satellite imagery (next page) was used to identify Moreland's hot spots – areas of concentrated heat retention – such as major roads, commercial and industrial centres, and new residential subdivisions. This information was then used to prioritise schools, childcare centres, kindergartens, activity centres, neighbourhood shopping strips and industrial areas for cooling strategies (below, right). In this way, Moreland's *Action Plan* ensures that heat-reduction measures are being taken where they are most needed.

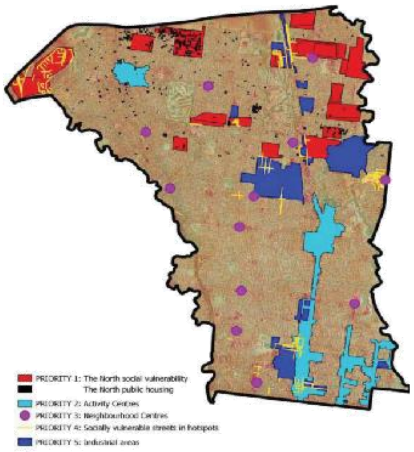
[23] N. Tapper et al., 'Towards management of urban heat stress in urban environments: Recent developments in Melbourne, Victoria', *Emergency Medicine Australasia*, vol. 22, Supp. 1, February 2010, A11–A12.

[24] City of Yarra and Urban Forest Consulting, *Urban Forest Strategy 2017*, City of Yarra, Melbourne, 2017.

City of Moreland: thermal image[25]



City of Moreland: priorities for heat mitigation[26]



This case study suggests ways to reduce heat across our city generally, and to respond to heatwaves, which are discussed in Box 4.

Box 4: Heatwaves in Victoria

Heatwaves have taken more human lives than any other natural hazard in Australia since European settlement began[27], and are projected to increase in frequency, duration and intensity over coming decades.

In Melbourne, deaths begin to rise when the mean daily temperature reaches 28°C, with hospital admissions for heart attack increasing by 10.8% when the mean daily temperature reaches 30°C.[28] When the average temperature is higher than 27°C for three days, hospital admissions increase by 37.7%. This suggests that even a small reduction in temperature during a heatwave will reduce the numbers of deaths. One of the most effective ways to reduce temperatures is to provide shade trees.

[25] Moreland City Council, *Moreland Urban Heat Island Effect Action Plan 2016/2017–2025/2026*, Melbourne, 2016, p. 13.

[26] Moreland City Council, *Moreland Urban Heat Island Effect Action Plan*, p. 16.

[27] Coates. L, (1996) An Overview of Fatalities from Some Natural Hazards in Australia [online]. In: Heathcote, Ronald Leslie (Editor); Cuttler, C (Editor); Koetz, J (Editor). Conference on Natural Disaster Reduction 1996: Conference Proceedings. Barton, A.C.T.: Institution of Engineers, Australia, 49-54. National conference publication (Institution of Engineers, Australia); no. 96/10.

Ecosystem services

In addition to shading and cooling our cities, urban forests:

- improve stormwater quality by reducing runoff
- improve air quality by capturing and filtering pollutants, including ozone, sulphur dioxide, nitrogen oxides, and particulates
- mitigate climate change by capturing and storing carbon dioxide
- reduce emissions from powering heating and air-conditioning equipment, by cooling the environment.

Melbourne's metropolitan parks are estimated to release, on average, more than 31 tonnes of nitrogen per annum, which makes its way into the waters of Port Phillip Bay and Westernport Bay. However, it has been estimated that if these parks were replaced by medium-density residential use, an additional 182 tonnes of nitrogen per annum (making a total of 213 tonnes) would be released into these two bays. This would incur additional stormwater treatment costs in order to protect and maintain the water quality of the bays.[29]

Retaining stormwater in the urban environment not only helps protect natural areas from polluted stormwater runoff, but also reduces flooding and the use of potable (drinkable) water for non-potable needs (such as irrigation), improves soil moisture and soil health, decreases the urban heat island effect, and supports healthy green infrastructure with its associated amenity value.[30]

Ecosystem health

Melbourne's urban forest is rich in biodiversity. The metropolitan region in its entirety is positioned at the confluence of seven bioregions (broad geographical regions composed of a cluster of interacting ecosystems that share common physical and biological features, such as climate, geology, landforms, soils and vegetation), resulting in a rich mosaic of different plant communities. Most of Melbourne sits in the bioregion of the Gippsland Plain (in the east and south-east), Highlands Southern Fall (in the outer east) and Victorian Volcanic Plain (in the north and west). A total of 93 recognised ecological vegetation classes occur across almost 28% of this land, many of which are endangered or vulnerable. Rivers, creeks, wetlands and swamps add to the complexity and richness of habitats.

Metropolitan Melbourne supports a diverse array of native plant and animal species. More than 2,000 native plant species grow in the Melbourne region. The backyards and streetscapes of our city and suburbs are also home to many plant species that are not native to the region or Australia. Reflecting the significant changes that have occurred in the region

---

[28] M. Loughnan et al., 'The effects of summer temperature, age and socioeconomic circumstance on acute myocardial infarction admissions in Melbourne, Australia', *International Journal of Health Geographics*, vol. 9, no. 41, August 2010.

[29] Parks Victoria, and Department of Environment, Land, Water and Planning, *Valuing Victoria's Parks: Accounting for Ecosystems and Valuing their Benefits: Report of First Phase Findings*, Victoria State Government, Melbourne, 2015.

[30] Coutts et al. 'Watering our cities'.

since European settlement in 1788, there are 34 species of plants and 52 species of animals that are listed as threatened under the national *Environment Protection and Biodiversity Conservation Act 1999*, and 64 species of plants and 95 species of wildlife listed under Victoria's *Flora and Fauna Guarantee Act 1988*.[31]

In Melbourne, streetscapes with native trees support significantly more diverse and abundant populations of native birds than do streets with mostly exotic trees.[32] Although many local government authorities maintain good inventories of their street trees, there is no comprehensive picture of street trees across the entire metropolitan area. There is limited data about the trees in our parks and open spaces, and almost no information about the species of trees and other vegetation on privately owned land such as backyards (see 'Opportunities for the urban forest', below). At the neighbourhood level, the highest number of native bird species per hectare is found in native vegetation in parks and reserves[33]. The size of urban remnant vegetation in Melbourne is a major determinant of bird diversity (the larger the area, the greater the diversity).[34] Large old trees are disproportionate providers of the structural elements (such as hollows, and coarse woody debris) that are crucial habitat resources for many fauna species. But in urban areas these large old trees are particularly susceptible to loss.[35]

Most of those natural areas that are located in urban landscapes are fragmented. In order to survive, many species populations must be able to disperse, as this facilitates gene flow. A common conservation approach is to create or improve connectivity by restoring habitat using corridors, stepping stones and buffer zones.[36] Effective connectivity comprises structural connectivity (physical linkages and proximity of landscape components) and functional connectivity (species movement needs and behavioural responses to the structural connectivity).[37] Some species may need to move very little, while others may require greater freedom but are constrained by hard barriers such as fences or roads.

Depending on the movement needs of different species, functional connectivity may or may not require physical habitat patch connectivity. Therefore the same landscape will have different levels of functional connectivity for different species. We need to consider

---

[31] Department of Environment, Land, Water and Planning, *Victorian Biodiversity Atlas*, Victoria State Government.

[32] J.G. White et al., 'Non-uniform bird assemblages in urban environments: The influence of streetscape vegetation', *Landscape and Urban Planning*, vol. 71, nos 2–4, March 2005, pp. 123–35; J.A. Fitzsimons et al., 'Refugees and residents: Densities and habitat preferences of lorikeets in urban Melbourne', *Australian Field Ornithology*, vol. 20, no. 1, March 2003, pp. 2–7.

[33] J.G. White et al., 'Non-uniform bird assemblages in urban environments: The influence of streetscape vegetation', *Landscape and Urban Planning*, vol. 71, nos 2–4, March 2005, pp. 123–35;

[34] G.C. Palmer et al., 'Determinants of native avian richness in suburban remnant vegetation: Implications for conservation planning', *Biological Conservation*, vol. 141, no. 9, September 2008, pp. 2329–41.

[35] D.S. Le Roux et al., 'The future of large old trees in urban landscapes', *PLoS ONE*, vol. 9, no. 6, June 2014, e99403.

[36] Department of Sustainability, Environment, Water, Population and Communities, *National Wildlife Corridors Plan: A Framework for Landscape-Scale Conservation*, Australian Government, Canberra, 2012.

[37] Landscape Institute, *Connectivity and Ecological Networks: Technical Information Note 01/2016*, London, 2016.

connectivity at various scales: local, regional, metropolitan-wide – and beyond. Understanding and designing ways to maintain and restore structural and functional connectivity in cities is complex and still in its infancy, although some local government authorities have been working on this concept (Box 5).[38]

Encouragingly, there are many good examples across Melbourne where the creation of corridors and the restoration of quality habitat have resulted in the return of animal species that are otherwise susceptible to urban development. Box 6 describes the case study of Westgate Park in inner Melbourne, which has achieved remarkable results.

Box 5: Westgate Park case study

Many parks in the Melbourne area have a friends group of volunteers to assist the public land manager with restoration and stewardship. The Friends of Westgate Park, in partnership with Parks Victoria, have welcomed people of all ages and backgrounds to volunteer their time and effort over the last 19 years. Together, they have transformed the 64-hectare park by planting 300,000 plants in nine ecological zones.

This major landscaping project has seen the return of a range of small bird species not present in the surrounding suburbs, including White-browed Scrubwrens and Superb Fairy-wrens. In recognition of their work, the Friends of Westgate Park won the 2010 Urban Landcare Award.

Box 6: Hume City Council and Brimbank City Council: connectivity priorities

Hume City Council and Brimbank City Council used the 'guild approach' to determine the connectivity priorities for their Ecological Connectivity Plans. An important part of this work was a series of expert workshops to decide on parameters such as:

- broad habitat types across the council districts and bounding areas (for instance, woodlands, riparian, grasslands)
- the appropriate guilds (groups of species with common attributes) and structural connectivity needs (for instance, species-specific movement capabilities, thresholds, needs, and minimum habitat patch size)
- selection of the focal species for each guild, *highlighted in bold in the table below.* The result of the analysis was a matrix, comprising four main habitats, two dispersal capabilities (longer and shorter relative distances) and 10 focal species. A fifth general habitat for a long disperser was included, to represent species less affected by fragmentation and capable of greater dispersal.

[38] A. O'Malley and A. Lechner, *Northwest Ecological Connectivity Investigation*, Practical Ecology Pty Ltd for Hume City Council and Brimbank City Council, Melbourne, 2017.

Attachment 2 - Living Melbourne - consultation 220219

Habitat	Disperser capability	
	Longer disperser	**Shorter disperser**
Grassland	Brown Songlark	Australasian Pipit
	Fat-tailed Dunnart	**Golden Sun Moth**
	Plains-wanderer	Grassland Earless Dragon
	Red-chested Button-quail	Little Whip Snake
	Stubble Quail	**Stripped Legless Lizard**
		Tussock Skink
Woodlands and forest	**Brown Treecreeper**	Cunningham's Skink
	Agile Antechinus	Diamond Firetail
	Grey-crowned Babbler	Fuscous Honeyeater
		Grey Shrike-thrush
		Speckled Warbler
		White-throated Treecreeper
		Yellow-faced Honeyeater
Riparian	Azure Kingfisher	Eastern Yellow Robin
	Common Ringtail Possum	Southern Water Skink
	Common Wombat	**Sugar Glider**
	Nankeen Night-Heron	Swamp Rat
	Southern (Large-footed) Myotis	White-browed Scrubwren
	Swamp Wallaby	
	Common Wombat	
Wet habitat	Baillon's Crake	Brown Toadlet
	Buff-banded Rail	**Growling Grass Frog**
	Eastern Long-neck Turtle	Leseur's Tree Frog
	Lowland Copperhead	
	Rakali	
Generalist	Eastern Grey Kangaroo	
	Long-beaked Echidna	

Challenges for Melbourne's urban forest

Melbourne and its urban forest are facing some key challenges, including:

- a growing, densifying, and sprawling urban form
- climate change
- threats to nature
- fragmented governance.

A growing, densifying, and sprawling urban form

Australia is one of the most highly urbanised nations in the world, with 84% of the population living in cities, towns and suburbs.

From 2012 to 2017, Melbourne accommodated 87% of Victoria's total population growth.[39] A combination of natural increase and net immigration will make Melbourne Australia's largest city, with a population of 8 million people by 2051, and accounting for 80% of Victoria's population. To house this growing population, more than 1.6 million new dwellings will be needed, resulting in further density in existing areas and the addition of new suburbs on the urban fringe.

The characteristics of recent and projected urban growth present remarkably different prospects and challenges for the urban forest in Melbourne.

Until about 1990, much of Melbourne's residential development consisted of detached houses that took up about one-third of the lot, with a large backyard[40]. However, since that time there has been a trend towards building larger houses on smaller greenfield plots in new suburbs, and urban infill in established urban areas. The latter includes larger new houses replacing smaller, older houses, extensions to existing houses, and medium-density to high-density development of townhouses and apartments (Figure 5 and Figure 6).

One study compared plot ratios in older established suburbs to those in newer suburbs.[41] The difference was considerable: in the older established Melbourne suburb about 30% of the plot was covered by buildings and hard surfaces, whereas in a newer Melbourne suburb this increased to about 65%. Combined, these processes reduced lawn and garden size and increased impervious surfaces.

[39] Australian Bureau of Statistics.

[40] T. Hall, *Where Have all the Gardens Gone? An Investigation into the Disappearance of Back Yards in the Newer Australian Suburb*, Research Paper 13, Urban Research Program, Griffith University, Brisbane, 2007.

[41] T. Hall, *Where Have all the Gardens Gone? An Investigation into the Disappearance of Back Yards in the Newer Australian Suburb*, Research Paper 13, Urban Research Program, Griffith University, Brisbane, 2007.

Figure 5: Historic vs recent growth patterns in established urban areas in Melbourne's Eastern Region

(a) 1996

(b) 2018

Images (a) and (b) show a redevelopment of three single dwellings that maximises construction over the allotment area, resulting in less private open space, overall vegetation and canopy cover (source: Explore Whitehorse).

(c) 2009

(d) 2018

Images (c) and (d) illustrate that the dual effects of higher residential density and single-dwelling renovation – or construction of new dwellings – can reduce backyard space, vegetation and canopy.

This results in larger areas covered by impervious surfaces, and less potential habitat for flora and fauna (source: Nearmap).

(e) 2010

(f) 2018

Images (e) and (f) show a redevelopment of four allotments with four detached dwellings to yield 12 dwellings – a gain of eight dwellings.

However, there is a corresponding loss of significant vegetation cover, an almost complete loss of canopy and potential habitat, and a gain in impervious surfaces (source: Nearmap).

Conversely, in our western and northern growth areas, canopy trees are being planted in streetscapes to improve amenity and provide shade on previously rural land that consisted of cleared or largely treeless plains that supported a mixture of exotic and native grasslands (Figure 6).

Figure 6: Historic vs current growth patterns in urban growth areas

(a) 2010 Northern Region, Melbourne

(b) 2018 Northern Region, Melbourne

Images (a) and (b) show the substantial growth of canopy trees in and around a new recreation reserve in Melbourne's Northern Region (Source: Nearmap).

(c) 2010 Northern Region, Melbourne

(d) 2018 Northern Region, Melbourne

Images (c) and (d) show the growth of street trees over an eight-year period in Melbourne's Northern Region.

Note that, due to the relatively small size of the privately owned spaces, street trees and park trees provide most of the canopy cover (source: Nearmap).

The retention and expansion of the urban street tree canopy continues to be challenged by regulations governing powerline clearance, which mandate minimum clearance distances between vegetation and overhead powerlines, depending on the type of infrastructure in place. Solutions need to be developed to encourage electricity distribution systems that minimise vegetation loss, such as underground cables, aerial bundles, and insulation. Solutions are also needed for similar problems posed to the urban forest by other utility services.

Conversely, in greenfield developments, the pavements and nature strips have been narrowed. This has the effect of reducing space available for planting large canopy trees, by constraining room for root growth as trees compete with underground utility services.

Another example is to increase the canopy by planting trees on our road reserves (particularly on boulevards and major roads) without increasing risks to property and human life. The introduction of flexible wire-rope safety barriers provides an opportunity, in collaboration with VicRoads, to achieve this balance on major roads.

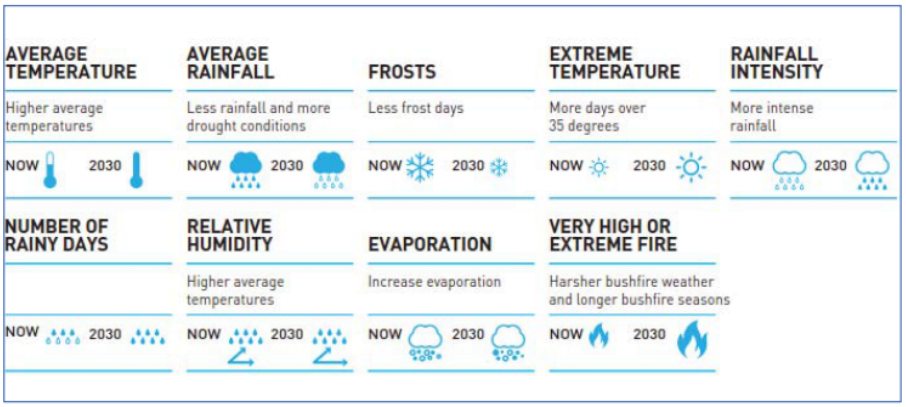
As we face a larger population and a denser urban environment, the benefits of the urban forest have never been more important, yet these trends present a significant threat to the health of the urban forest. Denser urban forms generally have greater areas covered by impervious surfaces; this reduces the soil moisture that trees need in order to grow and to survive during dry periods. Also, water flows more quickly off these surfaces, leading to increased soil erosion. Taller buildings cast shade over environments that would otherwise be suitable for vegetation, and soil is compacted, making it more difficult for plants to thrive.

Climate change

Climate research continues to show that maximum and minimum temperatures are rising in Australia. Such changes will expose Melburnians to more frequent and intense droughts, fires, heatwaves, extreme rainfall, and coastal inundation (see **Figure** 7). Climate change makes the urban forest more susceptible to pests and diseases, thus increasing the frequency of tree death, further reducing canopy cover.

Australia's climate has warmed by an average of approximately 1°C since 1910.[42] With this has come an increase in the duration, frequency and intensity of heatwaves, increase in extreme fire weather, a decline in April–October rainfall, and rising sea levels, which amplify the effects of high tides and storm surges. These trends are expected to continue.

Figure 7: Projections for temperature changes in Melbourne[43]



[42] Australian Bureau of Meteorology, *Annual Climate Statement 2018*, Australian Government, 10 January 2019.

[43] Department of Environment, Land, Water and Planning, *Climate-Ready Victoria: Victoria*, Victoria State Government, Melbourne, 2015.

Even if there are considerable reductions in global greenhouse gas emissions in the near future, the lag in the climatic system means that much harm is already unavoidable, requiring communities and organisations to change their behaviour and practices. Urban form changes slowly, and the long lives of trees and vegetation require planning decisions to account for long-term changes to the climate and the uncertainties that these changes will bring.

Rising temperatures and extreme heat

As average temperatures rise, many trees are becoming increasingly vulnerable, including exotic species from colder climates and indigenous species that thrive only in relatively narrow climatic bands. When extreme heat is combined with low soil moisture, some trees' foliage and bark can scorch, which can lead to declines in tree and ecosystem health. Warmer temperatures also change the geographical extent of pests and diseases, by affecting life cycles, habitat suitability and reproduction rates. The urban forest will face new risks and challenges as pest and disease ranges change.

Rainfall, droughts and floods

Droughts have become more frequent and intense due to climate change, with confident predictions that this trend will continue. In 2015 the total rainfall across Melbourne's water catchments was more than 15% below the 30-year average, and the total catchment inflow was more than 40% below the long-term average.[44] Increasing evaporation due to higher temperatures and declining rainfall will exacerbate reductions in soil moisture caused by impervious surfaces. This reduces urban vegetation's resilience to droughts and hot days.

Despite an overall trend of declining rainfall, more of the rain that does fall will be in increasingly heavy downpours. This is likely to lead to more frequent flooding, particularly in urbanised and small catchments. Flooding and inundation can contribute to soil erosion, tree instability and tree death.

Threats to nature

Historically, urban growth and densification have been major causes of natural habitat loss around the world. Melbourne is no exception.

Melbourne's fauna is dynamic, and changes in species presence and abundance are largely the result of changes to the extent, structure and composition of habitat over time, as well as adaptation by some species to the urban environment.

Despite Melbourne's relatively high proportion of public open space and overall native vegetation cover, many species of native flora and fauna have declined.[45] Further losses can be expected due to species extinction, unless we put additional effort into sustaining plant

---

[44] Melbourne Water, *Enhancing Life and Liveability: Annual Report 2015–16*, Melbourne, 2016, pp. 11, 12.

[45] A. Hamer and M. McDonnell, 'The response of herpetofauna to urbanization: Inferring patterns of persistence from wildlife databases', *Austral Ecology*. vol. 35, no. 5, August 2010, pp. 568–80; R. van der Ree and M.A. McCarthy, 'Inferring persistence of indigenous mammals in response to urbanisation', *Animal Conservation*, vol. 8, no. 3, August 2005, pp. 309–19.

populations.[46] Higher urban density not only reduces backyard size and opportunities for conservation, it also reduces opportunities for people to connect with nature at home.

Despite these known broad-scale trends in urban growth, there is still much to learn about the consequences of urbanisation for biodiversity, and how best to design cities and towns to conserve biodiversity and maintain healthy ecosystems.[47] Best practice guidelines are lacking on how to halt biodiversity loss and increase biodiversity.[48]

Fragmented governance

Federal, state and local governments, utility providers, property developers and residents all have roles – formal and informal – to play in the governance and management of our urban forest. However, relationships between these tiers of government are complex, sometimes effective cooperation is easier said than done, yet the urban forest does not recognise or adhere to administrative boundaries. This situation of fragmented governance hampers our ability to plan for and adequately protect our metropolitan urban forest across different jurisdictions and land tenures.

Despite the many benefits that we know they provide, most trees are not protected by planning or environmental controls. Many municipalities have their own local laws, which require applications for permits to remove or carry out works to trees on both public and private property. Registers of significant or exceptional trees are enshrined in local laws, but these too protect only individual trees, and in an ad hoc manner.

Thirteen of Melbourne's councils are leading the way in protecting and improving the urban forest in their municipal areas through urban forest strategies, in which the active involvement of private landholders is essential. Many other local government authorities have urban landscape, open space or street tree strategies that also benefit the urban forest.

Managing and developing our urban forest requires us to bring together many different organisations to work collaboratively towards both a long-term vision and shorter-term priorities. Significant progress has already been made in this regard, providing a strong foundation for further integrated efforts between sectors and regions. Landcare is one example of an inclusive, community approach to natural habitat protection and development across Australia (Box 7).

---

[46] A. Hahs et al., 'A global synthesis of plant extinction rates in urban areas', *Ecology Letters*, vol. 12, no. 11, November 2009, pp. 1165–73.

[47] A. Ossola and J. Niemela (eds), *Urban Biodiversity: From Research to Practice*, Routledge, UK and New York, 2018.

[48] C. Threlfall et al., 'Increasing biodiversity in urban green spaces through simple vegetation intervention', *Journal of Applied Ecology*, vol. 54, no. 6, January 2017, pp. 1874–83.

Box 7: Landcare – an Australian model fostering social connection

Landcare groups are communities of volunteers who take action to improve their local environment. A Landcare group usually starts when community members with common objectives notice a local environmental problem that needs to be remedied, and come together to make it happen. Landcare builds social capital in rural communities and helps communities promote sustainable land and water management and tackle common problems across farm boundaries. These groups have proven that community-based, decentralised, sustainable land and water management can be extremely successful.

Landcare became an Australian national program in July 1989, when the Australian Government, with bipartisan support, announced its *Decade of Landcare* plan and provided $320 million to the National Landcare Programme. Since then, Landcare groups have formed across Australia, and in more than 20 countries around the world. Because Landcare's cornerstones are to be community-owned and community-led, bipartisan in nature, and encouraging integrated management of environmental assets, it has a number of positive attributes that are relevant to the *Living Melbourne* strategy.

Opportunities for the urban forest

Mapping the urban forest

Vegetation and canopy cover

To better inform the strategic approach of connecting and enhancing our metropolitan urban forest, *Living Melbourne* has developed new mapping resources including imagery and mapping derivatives. These can be used by partners to set priorities for their investment, and regional opportunities to scale up existing efforts.

We used eCognition Essentials software provided by global software developer Trimble, to map metropolitan Melbourne's urban forest. The two main sources of data were:

- two-metre resolution multispectral satellite imagery provided by Digital Globe
- Victorian Government LiDAR datasets.

This data was prepared and formatted before being processed by the eCognition Essentials software. The output provides a map of the distribution and height of vegetation across metropolitan Melbourne (Figure 8).[49]

Mapping the urban forest is essential for its development, protection, maintenance and growth. Comprehensive and accurate maps give government authorities and other land managers the information they need to make informed decisions about improving, re-establishing and connecting Melbourne's natural environments. Canopy cover is an important measure of the urban forest's ability to benefit the community and the environment.[50] Developing a consistent, metropolitan-wide canopy map for this *Living Melbourne* strategy is a critical step in assessing the current status of Melbourne's urban forest, and for setting future targets and actions.

[49] For further information and maps please refer to Chapter 6 of the *Technical Report*.

[50] City of Melbourne, *Urban Forest Strategy: Making a Great City Greener: 2012–2032*, Melbourne, 2012.

Figure 8: Melbourne's urban forest

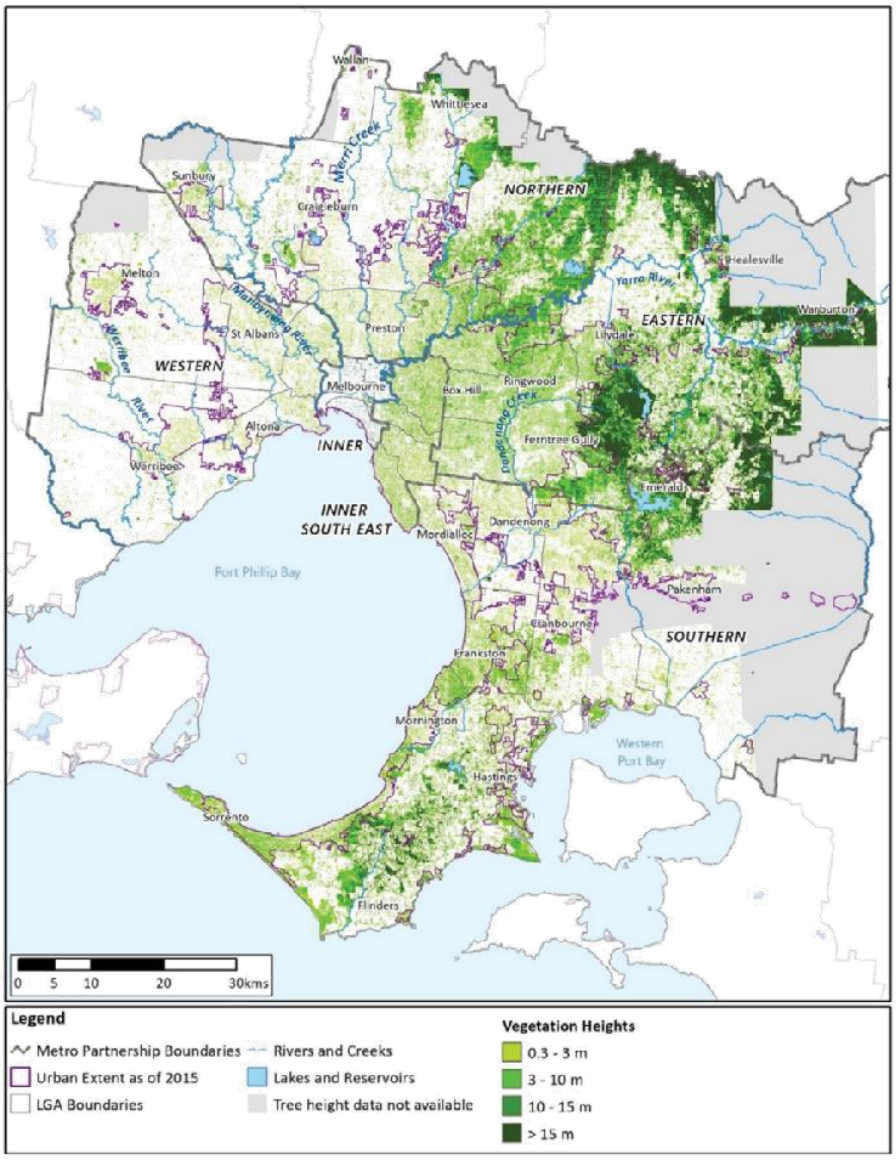


Table 1 provides a regional breakdown of the distribution of canopy cover across metropolitan Melbourne. 'Canopy' is defined as vegetation above 3 metres in height.

The metropolitan urban area has a total canopy cover of 15.4%. Canopy cover is highest in the Eastern (25.2%) and Inner South-East (21.7%) regions. The Southern (16.4%), Inner

(12.5%) and Northern (12.1%) regions have less canopy cover. Canopy cover is lowest in the Western Region (4.2%).

Table 1: Canopy cover in urban Melbourne*

Metropolitan region	Percentage of land with canopy cover (of trees 3 metres high or taller)
Eastern	25
Inner South-East	22
Southern	16
Inner	13
Northern	12
Western	4
Total metropolitan tree canopy	**15**

*Figures rounded to nearest whole number

The different regions vary widely in canopy cover. This is a result of their natural attributes – which influence vegetation patterns – combined with the historical development and growth of Melbourne.

One important factor is Melbourne's location at the confluence of multiple bioregions. For example, the vegetation types that existed in Melbourne before European settlement included grasslands and grassy woodlands in the west, heaths and heathy woodlands in the south-east, and dry forests in the east.

In addition to these natural differences, Melbourne's development and growth since the 1830s has had an important influence on the shape and form of today's urban forest. Settlers' preferences for elevation, views, water and mature trees meant that Melbourne's early development moved outwards from the original European settlement on the banks of the Yarra River, to the north-east, east and south-east, and tended to be on the hillier, treed terrain.[51] The flatter northern and western areas – largely grassland plains – were considered less hospitable and desirable.

These underlying differences are critical – any work on the urban forest across Melbourne must respond to these characteristics. Both the natural systems and built urban form, including infrastructure, should be considered in all efforts to protect and enhance our urban forest.

Habitat connectivity

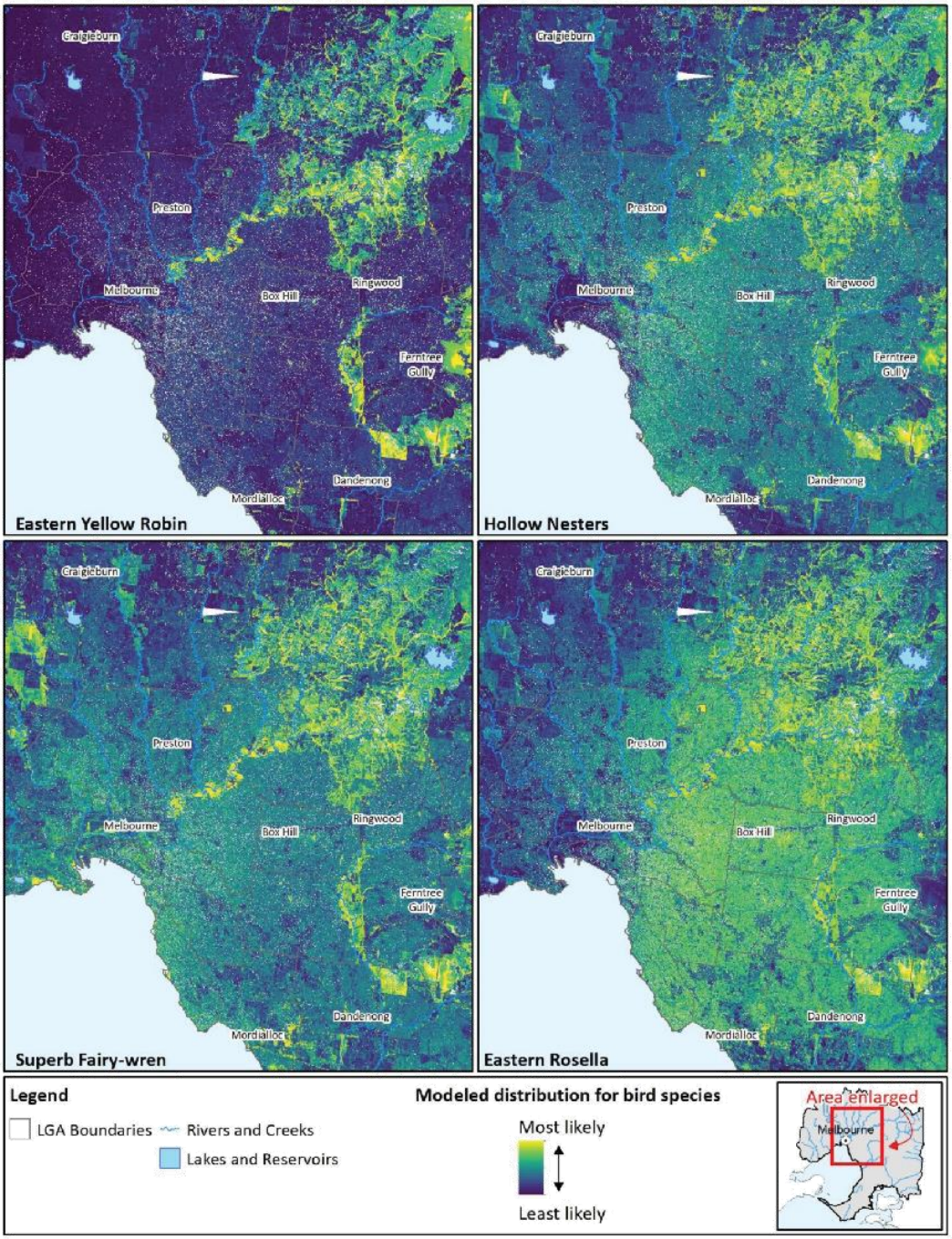
Connectivity and the ability of animals to move, and plants to disperse, within or between patches of habitat is critical for conservation. Many individual patches are too small and widely dispersed to support viable populations. It is therefore important that gardens are not viewed at the individual scale, but instead considered collectively with other gardens and public open spaces as interconnected networks of green spaces across the urban landscape. By extending the urban forest, we can link and create an interconnected matrix of green spaces across our diverse urban landscape.

[51] G. Presland, *The Place For a Village: How Nature Has Shaped the City of Melbourne*, Museum Victoria Publishing, Melbourne, 2008.

Using the urban forest canopy cover mapping layer with bird atlas data (supplied by BirdLife Australia) and other important datasets (such as ecological vegetation classes), enables the modelling of different levels of connectivity and landscape permeability for different bird species and bird groups (see Figure 9 below and the *Technical Report* for more details).

Attachment 2 - Living Melbourne - consultation 220219

Figure 9: Modelled distribution for various bird species or bird groups in Melbourne's urban landscape, with suitability ranging from most likely (yellow) to least likely (dark blue)



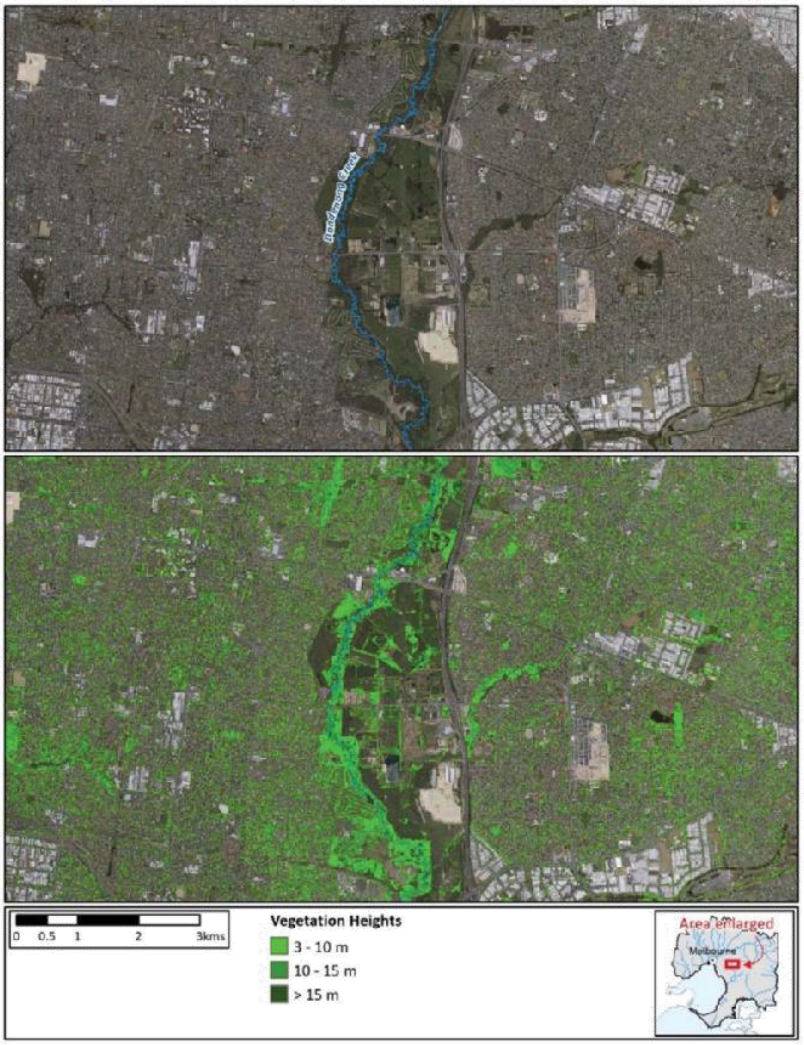
The high suitability of particular riparian corridors (such as along the Yarra River and Dandenong Creek) for many of these species highlights the importance of these features for the persistence of some species in the urban landscape, and the importance of connectivity. However, for species that are better able to exist in the urban environment, suitable habitat and connectivity are also provided by streetscapes and backyards.

Identifying a network of existing and potentially new habitat corridors at different scales for a range of species (and protecting and improving these corridors) will be an important step in creating an enhanced urban forest for Melbourne. For example, by combining habitat models based on species records and known habitat preferences with canopy mapping can reveal areas for future corridor improvement, as illustrated in Figure 10.

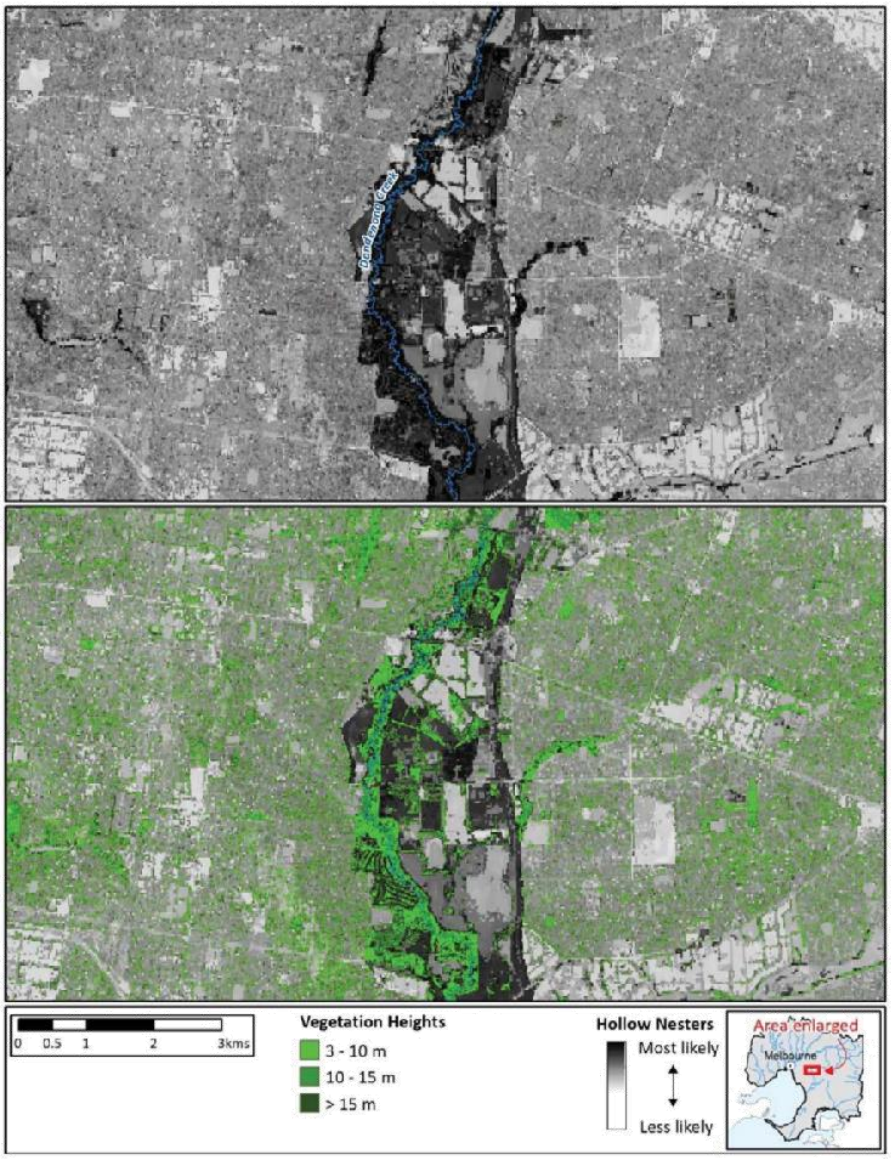
Figure 10: Canopy mapping and bird species habitat modelling used together, to reveal areas suitable for corridor improvement by expanding the urban forest

The Dandenong Creek Valley Parklands in eastern Melbourne (a), has patchy canopy cover (b), but has relatively high likelihood of occurrence for a suite of hollow-nesting bird species (darker shading) (c), revealing areas suitable for connectivity improvement (visible black and dark grey areas) (d).

(a) and (b)



(c) and (d)



Correlations between the urban forest and heat vulnerability

In developing the *Living Melbourne* strategy, we analysed land surface temperature (Figure 11) using a variety of Australian Bureau of Statistics indices, such as the Socio-Economic Indexes for Areas, which ranks areas in Australia according to relative socio-economic advantage and disadvantage, it found a close correlation between hot spots in the

landscape and vulnerable populations. We also found, in most cases, a greater number of hot spots where the percentage of residential rental properties is higher and where weekly household income is lower.

The land surface temperature analysis was also undertaken to explore the effect of total vegetation cover and vegetation height. About half of metropolitan Melbourne is 5°C above its estimated non-urban baseline temperature. This applies to about 80% of the Northern and Western Regions. It also shows that, overall, there is more vegetation and far more canopy (vegetation greater than 3 metres in height) in cool spots (areas that are 0°C or more *below* their estimated non-urban baseline temperature). On average, hot spots have less than 3% canopy and no tall trees (trees greater than 15 metres high). Vegetation between 3 metres and 10 metres high is predominant across Melbourne, and provides for more cool spots.

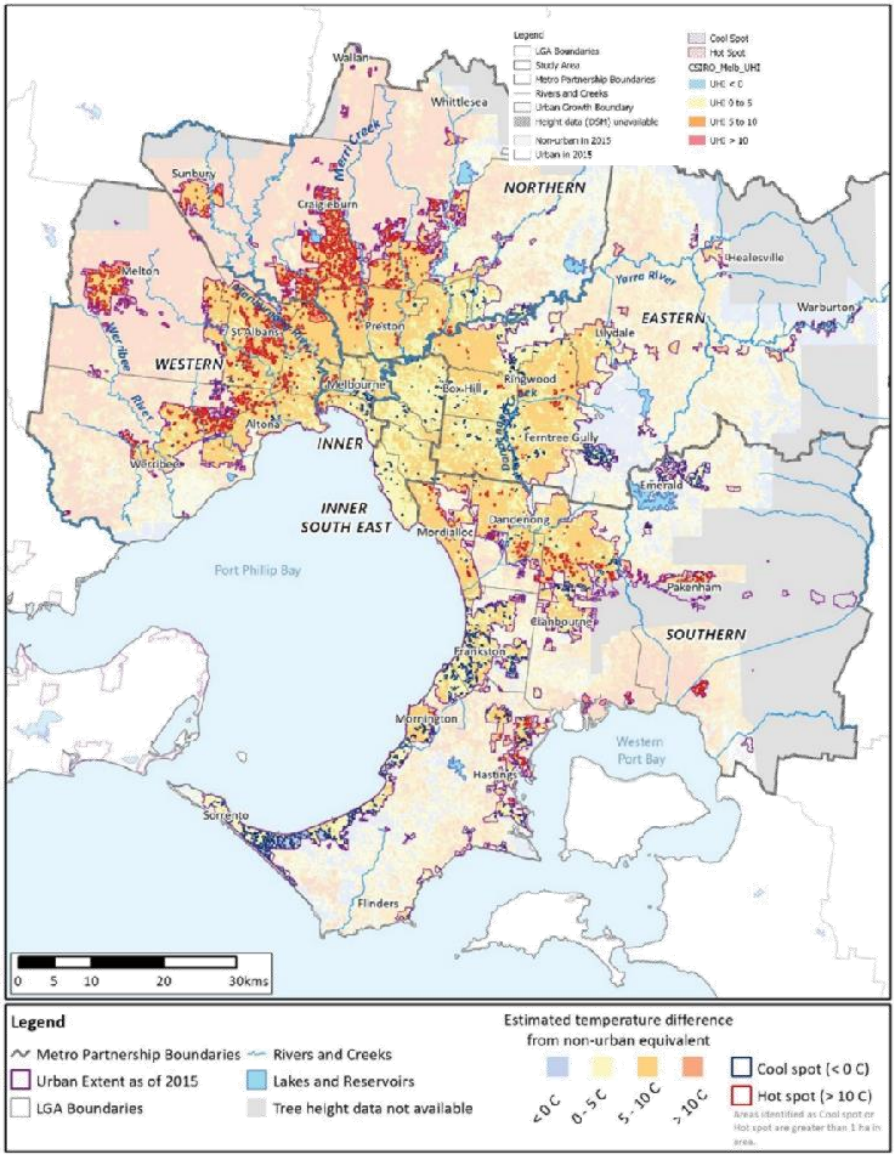
The highest numbers of hot spots occur in the north, west and south of Melbourne. The north and west also have far more hot spots than cool spots. The size of hot spots and cool spots varies: hot spots in the east are on average 3 hectares in area, compared to hot spots in the west averaging nearly 10 hectares in area. The opposite is true for the cool spots: these are larger in southern and eastern Melbourne (which is more heavily vegetated) and smaller in the north and west.

A full analysis is provided in Chapter 7 of the *Technical Report*.

Figure 11: **Urban heat islands across metropolitan Melbourne**

Hot spots (> 10°C warmer than non-urban condition) in bright red

Cool spots (> 0°C cooler than non-urban conditions) in dark blue

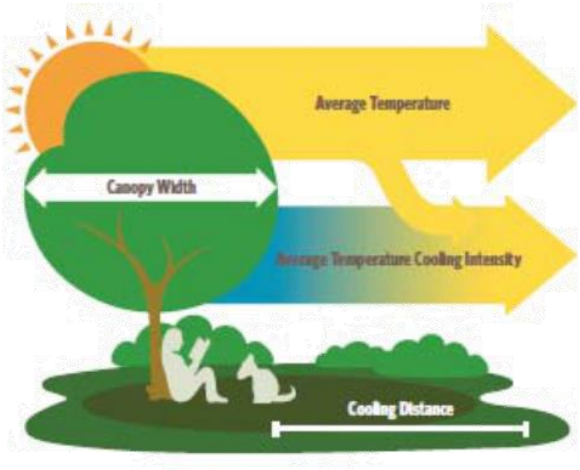


Trees and temperature reduction

In urban areas, individual trees can substantially lower maximum summer daytime air temperatures at the street and pedestrian level. They do this in two ways: by transpirative cooling and by shading.[52] However, the shading of sealed surfaces under a tree canopy is particularly important in improving pedestrian thermal comfort, because it dramatically lowers surface temperatures, and the mean radiant temperature to which pedestrians are exposed.[53]

A tree canopy produces a 'cooling intensity' (the reduction in average temperature under a tree canopy compared to the temperature outside the patch covered by the canopy, expressed in degrees Celsius). Generally, the larger the canopy, the greater the cooling intensity. The cooler air from beneath the canopy then disperses away from the patch and slowly mixes with the adjacent hot air. The further the air moves from the canopy, the closer it gets to the average temperature in the city – as illustrated in Figure 12.

Figure 12: Temperature mitigation by trees



One of the most effective ways to reduce temperatures is to provide shade trees in combination with increased pervious surfaces that will retain more moisture in the landscape.

Compared with moist and shaded environments, a built-up city with one million or more people can have average air temperature increases of 1°C to 3°C during the day, and up to

[52] C. Gromke et al., 'CFD analysis of transpirational cooling by vegetation: Case study for specific meteorological conditions during a heat wave in Arnhem, Netherlands', *Building and Environment*, vol. 83, January 2015, pp. 11–26; E. Andreou, 'The effect of urban layout, street geometry and orientation on shading conditions in urban canyons in the Mediterranean', *Renewable Energy*, vol. 63, March 2014, pp. 587–96.

[53] L. Vailshery et al., 'Effect of street trees on microclimate and air pollution in a tropical city', *Urban Forestry & Urban Greening*, vol. 12, no. 3, 2013, pp. 408–15.

12°C during the night.[54] Inner-Melbourne temperatures have shown peaks up to 7°C higher than those of surrounding rural areas.[55]

The cover provided by trees and other vegetation can affect cooling intensity in two ways. First, vegetative cover shades impervious surfaces, preventing the sun's rays from hitting them and thus inhibiting heat storage and its subsequent release, which would contribute to the urban heat island effect. Trees that are tall enough to create a large shaded area under their canopy are more useful than short vegetation. Trees also transpire water as they grow and photosynthesise. This water absorbs surrounding warmth and is converted from liquid into water vapour, which in turn prevents an increase in air temperature.[56]

Like vulnerability overall, the harm caused to human health by excessive heat is concentrated in particular parts of the population, particularly the elderly, young children, socially isolated persons, people with chronic disease, and those in built-up urban areas. Around the world, people are living longer. With the percentage of our population aged 65 or older projected to increase from 14% in 2012 to 25% in 2051, Australia is no exception. In Victoria, 2.2 million people, or 21.5% of the state's population, will be 65 years or older by 2051. Higher urban temperatures disproportionately affect elderly people.[57]

Water-sensitive urban design

Water-sensitive urban design (WSUD) uses better urban planning and design to clean, re-use and absorb stormwater, stopping it from reaching our waterways by mimicking the natural water cycle. The urban forest is a vital part of this process.

Without sufficient water, efforts to maintain and extend the urban forest will be unsuccessful. As more surfaces become impermeable – and climate change reduces rainfall and increases heat, evaporation and the variability of what rain there is – we must make the most of advances in urban water management. WSUD integrates 'urban planning with the management, protection, and conservation of the urban water cycle' and 'ensures water management is sensitive to natural hydrological and ecological processes'.[58] By making

---

[54] United States Environmental Protection Agency, *Heat Islands*, https://www.epa.gov/sites/production/files/2014-06/documents/basicscompendium.pdf.

[55] A.M. Coutts et al., 'The urban heat island in Melbourne: Drivers, spatial and temporal variability, and the vital role of stormwater' (conference paper), 2009.

[56] S. Vandentorren et al., 'Mortality in 13 French cities during the August 2003 heat wave', *American Journal of Public Health*, vol. 94, no. 9, September 2004, pp. 1518–20; S. Hales et al. (eds), *Quantitative Risk Assessment of the Effects of Climate Change on Selected Causes of Death, 2030s and 2050s*, World Health Organization, Geneva, 2014.

[57] J. Voelkel, et al., Assessing Vulnerability to Urban Heat: A Study of Disproportionate Heat Exposure and Access to Refuge by Socio-Demographic Status in Portland, Oregon. *International Journal of Environmental Research and Public Health* — Open Access Journal, School of Urban Studies and Planning, Portland State University, Portland, Published: 30 March 2018. https://www.mdpi.com/1660-4601/15/4/640/pdf

[58] A. Sharma et al,. Water Sensitive Urban Design: An Investigation of Current Systems, Implementation Drivers, Community Perceptions and Potential to Supplement Urban Water Services https://www.mdpi.com/2073-4441/8/7/272/htm

decisions that recognise water as a valuable, vulnerable and finite resource, we can provide water to our cities and maintain a healthy urban forest.

By harvesting, using and re-using stormwater, and establishing wetlands and water infiltration systems, WSUD supports the urban forest. Conversely, the urban forest plays an important role in WSUD, by reducing evaporation, slowing and absorbing water runoff, and trapping pollutants.

Improving urban air quality

The *Interim Victorian State of the Environment Report 2018* identifies opportunities to consider air quality when making urban planning decisions, particularly in relation to urban green space and opportunities to reduce reliance on motor vehicles and other sources of air pollution.[59]

The project Green for Good: Assessing the Health Returns of Green Investment assessed the effects of green infrastructure on the health of children in the city of Louisville, Kentucky, USA. A screen of mature trees and shrubs was planted along the busy road in front of a school; urine and blood tests were taken from the children and staff three weeks before and three weeks after the screen was installed. The results showed that, under certain conditions, the green wall bio-filter reduced particulate pollution by 60%. A large body of literature suggests that trees can provide localised but meaningful reductions in airborne particulate matter. But tree planting should complement – not replace – other efforts to reduce particulates in the air.[60]

[59] Commissioner for Environmental Sustainability Victoria, *Interim Victorian State of the Environment Report 2018*, Victoria State Government, Melbourne, 2018.

[60] Nature Conservancy, *Planting Healthy Air: A Global Analysis of the Role of Urban Trees in Addressing Particulate Matter Pollution and Extreme Heat*, The Nature Conservancy, Arlington, Virginia, 2016.

Developing the *Living Melbourne* strategy

Global and local momentum

The rapid urban growth being experienced by Melbourne is part of a worldwide trend. A recent assessment of global urbanisation patterns and biodiversity loss confirms that we are now witnessing the most significant urban growth in human history.[61]

The United Nations Department of Economic and Social Affairs estimates that, by 2050, roughly 68% of the world's population will be urban.[62] This means that the next 30 years will see the largest human settlement transformation in human history. It forecasts that, by 2050, 2.4 billion more people will be living in cities, a rate of urban growth that is equivalent to building a city with the population of London every seven weeks. Humanity will urbanise an area of 1.2 million square kilometres, nearly the size of the Northern Territory.

Figure 13: The United Nations Global Goals for Sustainable Development

[61] R.I. McDonald et al., *Nature in the Urban Century: A Global Assessment of Where and How to Conserve Nature for Biodiversity and Human Wellbeing*, The Nature Conservancy, Arlington, Virginia, 2018.

[62] United Nations Development Program, *World Urbanization Prospects: The 2018 Revision*, United Nations Population Division, New York, 2018.

The United Nations 2030 Agenda for Sustainable Development provides a worldwide plan for dignity, peace and prosperity for people and the planet, now and in the future. *Living Melbourne* supports the following Sustainable Development Goals:

- Goal 3: good health and wellbeing
- Goal 5: clean water and sanitation
- Goal 11: sustainable cities and communities
- Goal 15: life on land.[63]

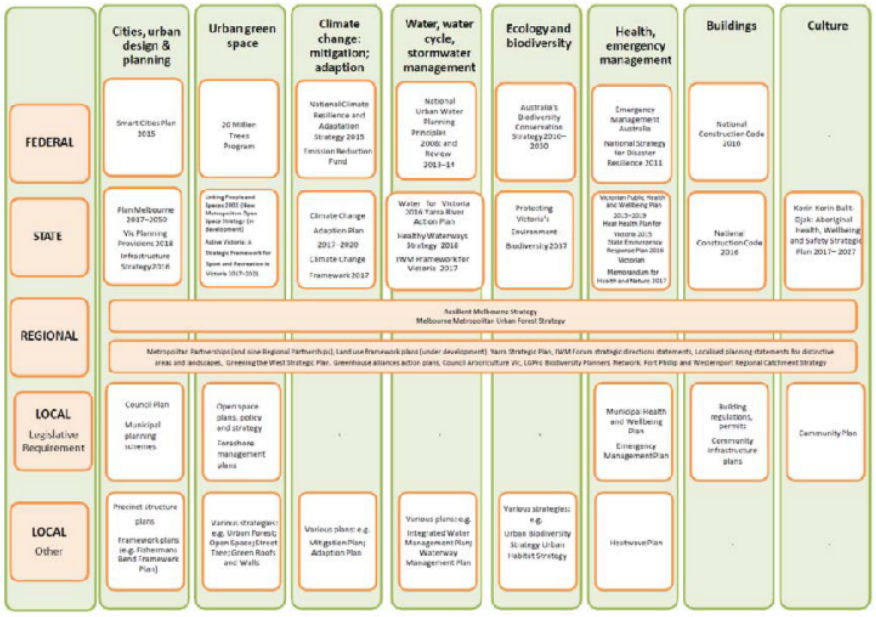
Living Melbourne's advocacy for cross-sectoral partnerships is also consistent with Goal 17: partnerships for the goals.

Policies relevant to metropolitan Melbourne's urban forest

Many local, Victorian and Australian government policies and strategies have implications for Melbourne's urban forest (Figure 14). This section summarises important documents (with further details provided in Chapter 5 of the *Living Melbourne Technical Report*).

[63] United Nations, *Sustainable Development Goals: Why the SDGs Matter*, United Nations.

Figure 14: Major government policies and actions relevant to Melbourne's urban forest



Local government open space and urban forest strategies

All councils in metropolitan Melbourne recognise, in their strategies and policies on public open space, the value of green space and tree canopy cover. This is why, when the *Resilient Melbourne* strategy was created, the metropolitan urban forest was the most strongly supported action.

At the time of writing the *Living Melbourne* strategy, 13 local government authorities have an urban forest strategy and are making efforts to maintain or increase tree canopy cover. Although some strategies focus narrowly on street trees and canopy on public land, others also consider vegetation on private land, have performance measures, are long term, and use a broad definition of an urban forest. Many more councils have urban landscape, open space, or street tree strategies, which also contribute to the urban forest.

Currently, eight municipalities have specific tree requirements in the schedules to their residential zones for development proposals for two or more dwellings. Requirements include elements such as a minimum number of trees per specified area, and specific characteristics of trees such as size, maturity, canopy tree, and species. Additional responsibilities are assigned to local government through the Victoria Planning Provisions garden area requirement, introduced in March 2017, which applies to two residential zones: General Residential and Neighbourhood Residential. Councils must now assess the garden areas in residential development proposals that require a planning permit on lots over 400 square metres in those two zones; stipulated minimum standards must be met.

Victorian Government policies and strategies

A range of Victorian Government documents provide support and guidance relevant to Melbourne's urban forest (Figure 15). These include *Plan Melbourne 2017–2050*, the *Victorian Climate Change Adaptation Plan 2017–2020*, *Water for Victoria*, *Protecting Victoria's Environment – Biodiversity 2037*, and the *Victorian Public Health and Wellbeing Plan*, among others.

Figure 15: Victorian Government documents

Living Melbourne: The metropolitan urban forest strategy

Plan Melbourne 2017–2050

Victoria has set a strong policy direction towards cooling and greening, to help create a city that is more sustainable, resilient and better adapted to the changing climate. *Plan Melbourne 2017–2050*, the state's long-term plan to accommodate Melbourne's future growth in population and employment, explicitly supports the management and maintenance of the urban forest. Direction 6.4, 'Make Melbourne cooler and greener', and Direction 6.5, 'Protect and restore natural habitats', explicitly encourage 'maintaining and enhancing … [the] urban forest of trees and vegetation' and support 'the development of the metropolitan urban forest strategy'.[64]

Victoria's Climate Change Adaptation Plan 2017–2020

Victoria's Climate Change Adaptation Plan 2017–2020 sets out the Victorian Government's priorities for leading and supporting the community to adapt to climate change from 2017 to 2020.[65] It explains how the government will support adaptation and coordinate action on different scales (local, regional, and sectoral). Important elements of this plan include improving how we consider climate change when making decisions about the built environment, and taking immediate steps to minimise the urban heat island effect and manage risks to the transport system.

Protecting Victoria's Environment: Biodiversity 2037

Protecting Victoria's Environment: Biodiversity 2037 is the Victorian Government's plan to stop the decline of biodiversity and improve the State's natural environment over the next

[64] Department of Environment, Land, Water and Planning, *Plan Melbourne 2017–2050*, Victoria State Government, Melbourne, 2016.

[65] Department of Environment, Land, Water and Planning, *Victoria's Climate Change Adaptation Plan 2017–2020*, State of Victoria, Melbourne, 2016.

20 years. It highlights the need to create more liveable and climate-adapted local communities, by planting trees to reduce heat and creating a network of natural and design green spaces. Like *Plan Melbourne 2017–2050*, *Protecting Victoria's Environment: Biodiversity 2037* also refers specifically to the metropolitan-wide urban forest strategy.

Victorian Public Health and Wellbeing Plan 2015–2019

The *Victorian Public Health and Wellbeing Plan 2015–2019* sets out a long-term agenda for improving health and social wellbeing in Victoria.[66] In setting high-level goals for change and improvement, the plan recognises and seeks to complement many existing and emerging plans, strategies and policies for improving public health. It refers to Parks Victoria's 'Healthy Parks, Healthy People' principles: the wellbeing of all societies depends on healthy ecosystems; parks nurture healthy ecosystems; contact with nature is essential for improving emotional, physical and spiritual health and wellbeing; and parks are fundamental to economic growth and to vibrant and healthy communities.

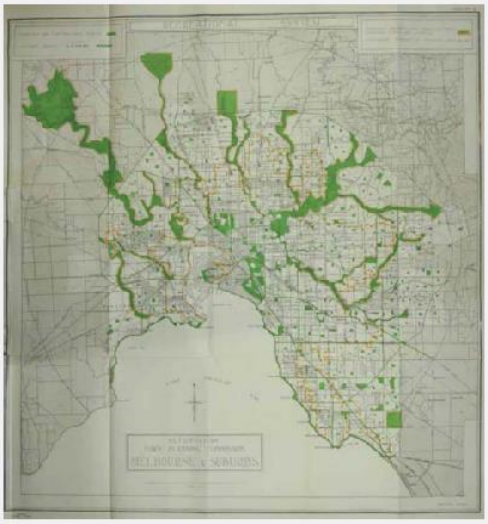
Another important Victorian Government strategy is currently in development: the *Metropolitan Open Space Strategy*, described in Box 8.

[66] State of Victoria, *Victorian Public Health and Wellbeing Plan 2015–2019*, Victoria State Government, Melbourne, 2015.

Box 8: Metropolitan open space strategy

Plan Melbourne 2017–2050 recognises green infrastructure as essential to liveable cities and healthy communities.

Partnerships between Victorian and local government authorities will look for new ways to open up more public land and make open space accessible and enjoyable for all Melburnians. A new investment framework, to be developed as part of the new metropolitan open space strategy under Action 93 of *Plan Melbourne 2017–2050*, will reinforce and complement the great legacy and foundations of past planning to create a fairer and more equitable open space network. The map below is from the *Plan for General Development, Melbourne*, commissioned by the Metropolitan Town Planning Commission in 1929, which recognised the value of Melbourne's waterways as an open space network. The legacy of the commission's important work still influences Melbourne's urban form today.



Healthy Waterways Strategy 2018–28 and Integrated Water Management Framework 2017

Water authorities, consistent with the strategy *Water for Victoria*, are recognising their important role in supporting a healthy urban forest. Melbourne Water's *Healthy Waterways Strategy 2018–28* is a strategy shared by Melbourne Water, state and local governments, water corporations and the community. It covers the rivers, creeks, estuaries and wetlands of the Port Phillip and Westernport Region, providing a single framework to protect and improve the waterways' environmental, social, economic and cultural values to the community.

Integrated water management is essential if we are to provide enough water to support our urban forest. The *Integrated Water Management Framework 2017* describes the benefits of consistent and strategic collaboration in the water sector – water corporations, local governments, and catchment management authorities – and with other organisations involved in land use planning. Box 9 illustrates the importance for the urban forest of work by our water authorities.

Box 9: The importance of water authorities

Public utilities such as Melbourne Water are active in cooling and greening our city. Melbourne Water has committed to 'investing directly in improving 30 hectares of green spaces for shade and cooling across Melbourne by 2021'.[67]

Water-sensitive urban design in Melbourne is supported by several state and local government policies, including the Victorian Planning Provisions, precinct structure plans and the Integrated Water Management Framework. Additionally, water authorities are applying water-sensitive urban design in their business strategies, such as Melbourne Water's *Healthy Waterways Strategy*, *Stormwater Strategy*, and *Integrated Water Future for Melbourne's North*.

Water for Victoria

Water for Victoria, the state's water plan, argues for the use of diverse water sources to protect public spaces.[68] In particular, it encourages water corporations to work with local government and other managers of public open space to identify water sources that can be used to maintain community assets such as gardens and street trees, and seek opportunities to cool the city in order to improve community health, wellbeing and liveability.

[67] Melbourne Water, *Better Waterways and Drainage for our Community: An Investment Plan July 2016 – June 2021*, Melbourne, 2016.

[68] Department of Environment, Land, Water and Planning, *Water for Victoria*, State of Victoria, 2016.

Living Melbourne: A new way forward

How was the strategy devised?

The development of the *Living Melbourne* strategy is a 'flagship action' under the *Resilient Melbourne* strategy. The Nature Conservancy and Resilient Melbourne and have developed this strategy in collaboration with many other organisations and individuals, and drawing upon the advice of a Senior Reference Group and a Technical Advisory Group. This process included a series of workshops to guide development of the strategy, incorporate stakeholder perspectives and review the strategy as it progressed. The four major workshops helped us to:

1. establish the baseline and set the initial vision (only local government)
2. develop the strategic foundation
3. identify technical evidence to guide the strategy
4. frame and develop the draft strategy.

The parties involved were metropolitan Melbourne's 32 local government authorities, Victorian Government departments and statutory agencies, technical experts, land managers, policy makers, planners, developers and community representatives.

How to use this strategy

This strategy sets out a program of interrelated actions that will work together to bring metropolitan Melbourne closer to our vision of thriving communities that are resilient and connected through nature. This strategy has three goals: healthy people, abundant nature and natural infrastructure. Each goal will result in specified benefits for Melbourne's people and our forest.

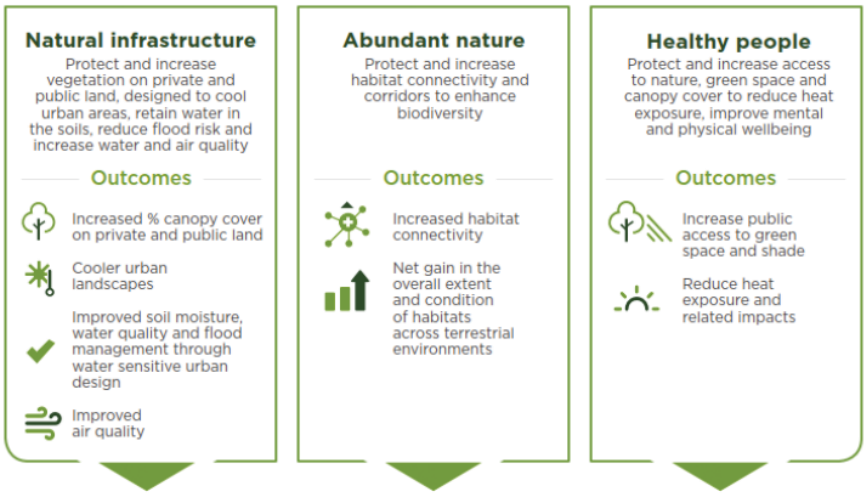
The goals are to be achieved by actions – the steps we need to take to get there.

Much valuable work is already being led by metropolitan Melbourne's local governments, the Victorian Government, non-government and community organisations, private landowners and many others. What has been missing until now is a way for this work to be coordinated and supported at a metropolitan scale. Actions 1 to 6 set out a way to combine our efforts, enabling us to:

- protect and restore species habitat, and improve connectivity (Action 1)
- set targets and track progress (Action 2)
- scale up greening in the private realm (Action 3)
- collaborate across sectors and regions (Action 4)
- build a toolkit of resources to underpin implementation (Action 5)
- fund the protection, improvement and expansion of the urban forest (Action 6).

Taking action for a Living Melbourne

Figure 16: Three goals for a Living Melbourne



[Note this graphic will align with wording in later part of document once consultation rounds are complete*]*

Healthy people

Protect and increase access to nature, green space and canopy cover, to reduce heat exposure, and improve mental and physical wellbeing

Nature enriches our lives and improves our physical, mental, social and spiritual wellbeing. Traditional Owners have recognised this connection for thousands of years, and their cultures reflect their profound connection to Country. Making nature accessible to more people in urban areas can instil a deeper connection with nature, and unlock the benefits of nature for people's lives and health. While this connection will remain fundamentally important to our First Peoples, there is now also wider understanding of how important such connections are.

A healthy, vibrant, biodiverse natural world enables the health of all creatures living on this earth.

We cannot achieve optimal human health without developing healthy natural environments. It is through shared responsibility and a collective effort to enable a flourishing natural world that we will position ourselves for better health into the future.

Dr Bruce Bolam
Chief Preventive Health Officer
Department of Health and Human Services

The urban forest supports cohesive and healthy communities by fostering social connections, contributing to a sense of place, and offering opportunities for relaxation and play. Exposure to nature improves our cognitive abilities, strengthens our immune systems and, by encouraging physical activity, reduces the incidence and harms of many non-communicable diseases. We must provide these benefits to all people in our city.

A healthy urban forest is also one of the most effective ways to reduce the temperature of the city and lessen the harm to mental and physical health caused by the urban heat island effect. Transpiration and shading reduce the mean temperature and greatly improve thermal comfort. Increasing our urban canopy and opening up access to nature will make our city safer during heatwaves, and people healthier in their daily lives.

We will know we have met this goal when we have:

- increased public access to open space and shade
- reduced heat exposure and the harms it causes.

Abundant nature

Protect and extend habitat connectivity and corridors to enhance biodiversity

There is widespread recognition that our natural environment is not only beautiful and provides essential ecosystem services, but also that it is fundamental to the health and wellbeing of every Victorian.[69] This understanding is reflected around the world, with an acceptance that nature in and near cities is crucial, not just for maintaining biodiversity but also for ensuring human wellbeing.[70] Although the urban forest provides many services to Melburnians, it is also important to acknowledge that native plants and animals also have significant intrinsic value, regardless of whether they provide tangible benefits to humans. As custodians of the natural environment, it is our duty to protect the biodiversity in our city.

Urbanisation, land clearing and climate change are putting our fauna and flora under stress. Our improved understanding of the urban forest and the biodiversity it supports opens the way to achieve better results for nature in our increasingly urbanised world. Flora and fauna populations are more likely to survive when their habitat is protected and when they are able to disperse across landscapes. Improving connectivity and creating corridors to reduce habitat fragmentation is essential here. However, for such work to have a chance of succeeding, urban growth plans need to incorporate information on biodiversity and ecosystem values and protect and expand remnant vegetation.

We will know we have met this goal when we have:

- increased habitat connectivity and created corridors
- reduced habitat fragmentation.

---

[69] Department of Environment, Land, Water and Planning, *Protecting Victoria's Environment: Biodiversity 2037*, Victoria State Government, Melbourne, 2017.

[70] McDonald et al., *Nature in the Urban Century*.

Natural infrastructure

Protect and increase vegetation on public and private land, in order to cool urban areas, retain water in the soils, reduce flood risk and increase water and air quality

The urban forest's role in providing critical city services

Metropolitan Melbourne's urban forest provides important ecosystem services that are vital to supporting human life, health and wellbeing in our city. The urban forest filters our air and purifies water, protects our coast from flooding and erosion, provides opportunities for social connection, and shades and cools the city and suburbs. Only recently have these benefits are been recognised. Human-made 'grey infrastructure' such as roads, drainage systems and power grids, have historically taken precedence over natural infrastructure in planning decisions.

We now know that natural infrastructure complements grey infrastructure and, in certain situations, is better at providing social, environmental and economic benefits. However, regulations and business models generally do not encourage our transport authorities, utility companies, local government authorities and developers to recognise the urban forest as essential infrastructure and afford it the protection and proper management it deserves. We must view nature and natural infrastructure as assets equally necessary for the successful operation of a society.

We will know we have met this goal when we have:

- increased the percentage of public and private land that has canopy cover
- created cooler urban landscapes

improved soil moisture, water quality and flood management through water-sensitive urban design.

Actions for a Living Melbourne

[Note this graphic will align with wording in later part of document once consultation rounds are complete*]*

Action 1: Protect and restore species habitat, and improve connectivity

Protect and restore habitats, and increase ecological connectivity of all types between streetscapes, conservation reserves, riparian and coastal areas, open spaces and other green infrastructure across metropolitan Melbourne

Why do we need to protect, restore and connect habitat?

Melbourne has one of the highest percentages of open green space of any city in the world. However, the distribution and extent of native vegetation varies, with inner-city areas retaining less original native vegetation and having a larger proportion of introduced flora species than Melbourne's outer suburbs.[71] Urban areas can play a significant role in conserving biodiversity, but without conscious efforts to protect and enhance habitat and linking corridors, our natural environment, which is 'fundamental to the health and wellbeing of every Victorian',[72] will continue to decline.

Restoring corridors and connectivity in Melbourne is required at different scales and will need different approaches. Efforts to restore corridors on public land, which often focus on riverine corridors, should give priority to indigenous plant species. In an urban setting, while indigenous plant species are usually best for fauna (especially mobile fauna such as birds, bats and insects), non-indigenous native plant species can also provide important resources (such as food and shelter). Although introduced species of trees and shrubs typically offer fewer resources to fauna, they still provide ecosystem services and, in neighbourhoods where introduced trees dominate, the habitat value of these areas can be improved by increasing structure (such as by planting shrubs and native understorey). We must manage the different elements of the urban forest collectively, building upon existing habitat and

[71] A. Hahs et al., *Biodiversity of Metropolitan Melbourne. Prepared for Victorian Environmental Assessment Council*, Australian Research Centre for Urban Ecology, Royal Botanic Gardens, Melbourne, 2009.

[72] Department of Environment, Land, Water and Planning, *Protecting Victoria's Environment: Biodiversity 2037*.

vegetation to form an interconnected matrix of green spaces across the urban landscape. Box 10 provides an example of the success of the Merri Creek revegetation works. It is an excellent example of successfully connecting natural habitats in a rapidly changing urban setting.

Box 10: Friends of Merri Creek

The Merri Creek corridor extends from rural open space to inner urban Melbourne, passing through residential and industrial landscapes including sites important to the Traditional Owners, the Wurundjeri people.

The Friends of Merri Creek is an active community group based in Melbourne. Since 1988 they have actively planned and replanted native vegetation, to restore the biodiversity of the creek and its landscape.

In addition to the greening that they have achieved over the years, the Friends foster social connection and cohesion through their activities. They hold regular creek-side activities and encourage community participation in their work, such as planting, site maintenance, surveying birdlife, testing water quality and running litter blitzes.

In addition, the Friends group is represented on the Merri Creek Management Committee, a non-profit organisation that operates the Merri Creek Environment Fund. The Friends have also played an important and successful role in opposing inappropriate development that would have harmed the creek and its surrounds.

What needs to be done?

1.1 Consolidate data, maps and other relevant information

1.2 Assess the values and quality of information, to develop a list of priority areas for immediate protection

1.3 Map existing and new areas for biodiversity connectivity at different scales, and prioritise areas for strengthening connectivity and biolinks, including responses to climate change, within each municipality and across the region

1.4 Implement priorities for conservation, to secure and build habitat connectivity

Action 1.1: Consolidate data, maps and other relevant information

The urban forest brings important benefits to Melburnians. To get maximum return from any investment in protecting and enhancing the urban forest, we need to improve the completeness and accuracy of available information, including data and maps. For example, understanding where remnants of native habitat are can help us to better manage, protect and connect them.

We need to build upon the mapping done for this strategy, and systematically map natural habitat connectivity opportunities at different scales, across all jurisdictions and land tenures. Initial efforts should concentrate on:

- sites of biodiversity significance
- vegetation – whether indigenous, native or introduced – that provides habitat for fauna
- areas with future potential for habitat restoration (for instance, bare earth, non-native grassland).

Many organisations are already undertaking valuable data-collecting projects. For example, BirdLife Australia's bird atlas, when used with other datasets helped demonstrate differing levels of connectivity for different bird species and bird groups in this strategy (see Figure 10).

Action 1.2: Assess the values and quality of information, to develop a list of priority areas for immediate protection

The information gathered in Action 1.1 must be carefully assessed to develop a list of priority areas for immediate protection. This assessment will help set priorities for efforts to protect important remnant vegetation, canopy trees and other essential habitat values.

Action 1.3: Map existing and new areas for biodiversity connectivity at different scales, and prioritise areas for strengthening connectivity and biolinks, including responses to climate change, within each municipality and across the region

Connectivity allows plants to pollinate and disperse, and animals to move in or between habitat areas, enabling gene dispersal, improving adaptation to climate change, and reducing the risk of extinction. Plants and animals move in different ways. Animals move over a large range of distances – from international migrations to crossing a road to forage for food. We need to better understand Melbourne's habitat connectivity at different scales, within individual municipalities and across the region, to protect what exists and identify opportunities for increasing connectivity. In prioritising and building connectivity, we must consider the effects of climate change.

Action 1.4: Implement priorities for conservation, and secure and build habitat connectivity

Once areas for conservation have been mapped and prioritised, it is vital that action is taken to protect priority sites and create habitat corridors at various scales. This may include securing land when opportunities arise, to protect and expand corridors.

Action 2: Set targets and track progress

Set urban canopy and understorey targets for each metropolitan region, and decide on a clear and consistent method for long-term monitoring and evaluation of the quality and extent of the urban forest

Why do we need to set targets, and track their progress?

Clear, consistent and agreed methods for monitoring and evaluating the urban forest will be essential for tracking progress and managing the urban forest in response to changes that arise. These methods are also important for transparency and accountability. Although many municipalities are already setting their own urban forest targets, there is little coordination of target-setting between local government authorities and, until now, no metropolitan-wide approach.

Monitoring and evaluation are also essential for designing financial models that will attract investment (described under Action 6).

Victoria's Department of Environment, Land, Water and Planning recognises, through Plan Melbourne 2017-2050 (Action 91) the need to create urban forests throughout metropolitan

Melbourne, and to work with local government authorities to establish targets for each of the metropolitan regions.[73]

What needs to be done?

2.1 Adopt and implement regional urban forest 'tree canopy' and 'tree canopy and shrub' cover targets

2.2 Establish a measure of permeability across the regions, with the aim of implementing a permeability target for public and private land

2.3 Establish a method for monitoring, evaluating and reporting on the improvement of the urban forest, including indicators and measures for quality and extent

2.4 Develop a system for consistently collecting and analysing urban forest data, and coordinate the collection and publication of data in a publicly available, comparable database

Action 2.1: Adopt and implement regional urban forest canopy targets

We need to adopt regional targets for canopy and vegetation across Melbourne that are based on a common analysis of metropolitan-scale vegetation. Targets for 'canopy cover' and 'canopy and shrub' for each region are proposed in Table 2.

As a starting point for regional agreement, *Living Melbourne* proposes targets that:

- are calculated based on vegetation in the existing urban area at 2015
- apply to all land (public and private) in each region
- recommend increases each decade
- are supported by principles, including no net loss of tree or shrub cover on public and private urban land in each metropolitan region.

Research suggests that targets should be specific to each region, and should take into account local conditions such as development density, land use, and climate.[74] After considering the literature, current local government authority urban forest strategies, and regional context, ambitious regional tree canopy cover targets of between 20% to 30% are proposed. Because native understorey and tree canopy cover of at least 30% benefits biodiversity,[75] both tree canopy and shrub targets of between 30% and 50% by 2050 are proposed .

The 2015 baseline and targets for each of the six metropolitan regions vary, due to the historical development of these regions and the ecological characteristics of their underlying bioregions. For example, the Eastern Region of Melbourne was developed before the Western Region, and is largely in the Gippsland Plain bioregion, which before European

[73] Department of Environment, Land, Water and Planning, *Plan Melbourne 2017–2050*, Action 91.

[74] I. Leahy, 'Why we no longer recommend a 40 percent urban tree canopy goal', *Loose Leaf: The Official Blog of American Forests*, 12 January 2017.

[75] Threlfall et al., 'Increasing biodiversity in urban green spaces through simple vegetation intervention'.

settlement was mostly dry forest. The result is a canopy cover of about 25% in 2015, a higher 2050 target, and less action required to achieve this target. By contrast, the Western Region is a newer urban growth area and is predominantly in the Victorian Volcanic Plain bioregion, which was originally a largely plains grassland landscape. The result is a 2015 canopy cover of only 4%, a lower 2050 target, and significantly more effort required to achieve this target. Further discussion on the distribution of the urban forest between public and private land, and across Melbourne, can be found in Chapter 6 of the *Technical Report*.

In providing for 'tree canopy' and 'tree canopy and shrub' cover targets, *Living Melbourne* acknowledges the increasing difficulty of getting canopy trees into some densely developed, established urban areas, and into new greenfield developments. This applies to both public and private land. It also acknowledges that shrubs are also important for shading, aesthetics and habitat.

Principles to guide the implementation of urban forest targets are set out below, along with thresholds for the percentage of vegetation to be maintained or established on public and private land. This emphasis on both public and private land is important to avoid a concentration of effort on public land only, when vegetation on private urban land currently makes up 58% of the tree canopy cover across metropolitan Melbourne. Although this percentage varies between the metropolitan regions (see Chapter 6 of the *Technical Report*), it is important – for both biodiversity habitat and human health and wellbeing – that this canopy is protected and expanded. Local government authorities in these regions are encouraged to follow these principles.

Principles to support the urban forest targets for Melbourne

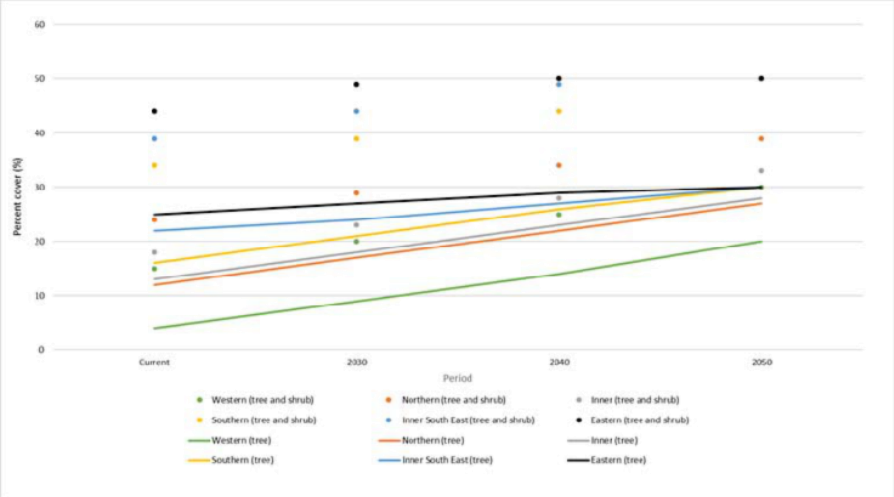
1. No net loss of tree or shrub cover on public or private land in each metropolitan region
2. Regional targets for canopy cover must apply to both public and private land
3. Implementation partners must strive to achieve the targets set for each category of public open space, road reserves, and private land
4. No more than 70% of the canopy and shrub cover should be on public land
5. At least 30% of the canopy and shrub cover should be on private land

Table 2: Targets for tree canopy, and for canopy and shrubs, by region, to 2050

Region	Local government authorities	Existing 2015		Target 2030		Target 2040		Target 2050	
		Total % tree canopy	Total % tree canopy & shrubs	Total % tree canopy	Total % tree canopy & shrubs	Total % tree canopy	Total % tree canopy & shrubs	Total % tree canopy	Total % tree canopy & shrubs
Western	Brimbank, Hobsons Bay, Maribyrnong, Melton, Moonee Valley, Wyndham	4	15	9	20	14	25	20	30
Northern	Banyule, Darebin, Hume, Mitchell, Moreland, Nillumbik, Whittlesea	12	24	17	29	22	34	27	39
Inner	Melbourne, Port Phillip, Yarra	13	18	18	23	23	28	28	33
Southern	Casey, Frankston, Greater Dandenong, Kingston, Mornington Peninsula, Cardinia	16	34	21	39	26	44	30	50
Inner South-East	Bayside, Boroondara, Glen Eira, Stonnington	22	39	24	44	27	49	30	50
Eastern	Knox, Manningham, Maroondah, Monash, Whitehorse, Yarra Ranges	25	44	27	49	29	50	30	50

Note: figures rounded to nearest whole number

Figure 17: Tree canopy and shrub cover targets: 2019–2050



Setting priorities for action

In addition to the considerations set out in Action 1.1, land managers should give priority to protecting and increasing vegetation – particularly canopy cover – in the following places:

- larger consolidated cool spots – to protect areas that contribute to reducing urban heat islands
- areas with a combination of high land surface temperatures, low percentage of canopy cover, and higher proportions of vulnerable community members – young children, older persons, culturally and linguistically diverse communities, public housing tenants, and socio-economically disadvantaged people
- schools, childcare centres, kindergartens, activity centres and neighbourhood shopping strips in hot areas
- in new precincts and infrastructure developments
- locations where we can build on existing opportunities, such as extending Greening the Pipeline, Chain of Ponds collaboration, Friends of Merri Creek.

Action 2.2: Establish a measure of permeability across the regions, with the aim of implementing a permeability target for public and private land

Increasing our permeable surfaces is essential for the growth of our urban forest, because water is vital for vegetation growth. Hard surfaces on roads and roofs divert polluted stormwater into our drainage system, and from there into our catchments and Port Phillip Bay. This limits the ability of rain to infiltrate the soil and provide much-needed moisture for a healthy urban forest.

Increasing permeability allows water to be stored in the soil and used by vegetation to increase our canopy and green cover. Increasing permeable surfaces brings other benefits too, such as decreasing flood damage by limiting peak stormwater flows and floodwaters.

Allowing water to infiltrate the entire soil profile is also critical: surface irrigation exacerbates trees' vulnerability by encouraging shallow root systems, whereas deep watering encourages deep root growth, which is better able to reach soil moisture during low-rainfall periods.[76] Deep watering is easier to achieve in some soil types than others, so new ways may be needed to identify areas of lower rainfall and difficult soils.

Although a baseline analysis of permeability across metropolitan Melbourne was not available at the time of writing, the City of Melbourne has a goal for 40% of the Elizabeth Street Catchment's soil surface to be unsealed by 2030, from a baseline of 17% unsealed soil in 2014.[77] International examples of programs to reduce permeable surfaces include cities in the United States such as Portland in Oregon,[78] Seattle in Washington[79] and Philadelphia in Pennsylvania.[80]

Methods used to increase permeability across metropolitan Melbourne might include:

- applying integrated water cycle management design principles to increase the infiltration of stormwater for new street trees
- creating more open space
- introducing new road medians, and widening existing ones
- using permeable paving materials
- building green roofs.

Further work will be required to determine how to measure progress towards the permeability target. But we should be proactive in reducing impermeable surfaces in public and private urban spaces, to benefit our urban forest.

Action 2.3: ***Develop a system for consistently collecting and analysing urban forest data, and coordinate the collection and publication of data in a publicly available, comparable database***

The success of this strategy depends on collaboration between all partners in tracking our progress and ensuring that our efforts and investment are achieving our goals. Measuring, monitoring and maintaining an inventory of the urban forest is not a new activity, but current efforts are varied, and comparisons between them are difficult, due to incomplete datasets, different methods and scales used, and the high costs of acquiring and analysing data. The development of a monitoring, evaluation, reporting and improvement framework will be essential for understanding the results of our actions, on the urban forest itself and more broadly on the socio-economic situation, health and wellbeing of communities. Box 11 sets out Action 91 of *Plan Melbourne 2017–2050*.

---

[76] City of Melbourne, *Urban Forest Strategy*.

[77] City of Melbourne, *Elizabeth Street Catchment Integrated Water Cycle Management Plan*, Melbourne, 2015.

[78] *Depave*, Portland (Oregon, USA).

[79] *Sustainable Seattle*, Seattle, 2019.

[80] Philadelphia Water Department, *Depave Your Yard*, Philadelphia, 2018.

Box 11: Delivering Plan Melbourne 2017–2050 to achieve a cooler, greener city

Plan Melbourne 2017–2050 recognises the urban heat island effect, climate change, the benefits of urban greening, and the difficulties encountered when attempting to green a city that is rapidly growing and becoming denser. *Plan Melbourne 2017–2050* aims to make Melbourne cooler and greener, strengthen the metropolitan open space network, and better integrate urban development and water cycle management.

Action 91 proposes government-wide action to cool and green Melbourne, through the creation of a metropolitan urban forest. It includes working with local government and water authorities, supporting the development of municipal forest strategies, investigating green roof and green wall demonstration projects, and changing guidelines and regulations for subdivisions and new development. The assembly and dissemination of spatial data on metropolitan Melbourne's green space network, to establish a detailed understanding of Melbourne's existing green cover, and how this is changing over time, are also part of Action 91.

To put these proposals into practice, the Department of Environment, Land, Water and Planning is working in partnership with RMIT University, the University of Western Australia, CSIRO, and the Clean Air and Urban Landscapes Hub of the National Environmental Science Program, to map and analyse vegetation, heat and land use across metropolitan Melbourne. This project is also supported by Melbourne Water. The project includes a comparative analysis of 2014 and 2018 imagery, including an urban surface temperature baseline, to understand trends over time.

The provision of this information is an important step forward in the identification, documentation, and future planning of Melbourne's urban forest. It will enable evidence-based planning and decision-making in relation to urban forests, and will be a valuable resource for local governments. The findings from 2014 have been made available on the Victorian Government Spatial DataMart, to help local government develop urban forest strategies. The 2018 analysis is being prepared.

Action 2.4: Develop a system for the consistent collection and analysis of urban forest data, and coordinate the collection and publication of data in a publicly available, comparable database

Many different organisations and individuals help care for and monitor the urban forest, including citizens, researchers, and government bodies (such as those responsible for transport, planning, the environment, and water). They need a range of current and historical data on which to make decisions, manage under changing circumstances, continuously improve their work, and to provide and evidence-base for advocacy. Different types of data may be of interest to different people and groups, from data on the physical health of the urban forest, to data on ecosystem services, the health and wellbeing benefits provided by the urban forest, and the time and investment needed for its care.

Given recent technological advances in measuring and modelling, it is now possible to go beyond simply keeping inventories; we can quantify the many benefits of the urban forest. For transparency, and to allow the data to be used and contributed to by all, including residents and the community as a whole, data should be made publicly available and interactive online.

Action 3: Scale up greening in the private realm

Strengthen planning and development standards and relevant guidelines to increase the greening of the private realm

Why do we need to green the private realm?

Land zoned for residential, commercial, industrial, special, or rural use contributes more than 66% of the existing tree canopy, with residential land alone contributing 58%. With a trend towards larger houses on smaller lots in greenfield developments, and higher-density development in urban infill areas, gardens have become smaller, and impervious surfaces have increased. The result is a rapid diminishing of the urban forest, as room for vegetation in private space shrinks. Protecting, maintaining and nurturing the trees and suitable understorey vegetation on private land is critical to maintaining and expanding the urban forest. A full regional analysis can be found in Chapter 6 of the *Technical Report*.

Further, much greater use of green roofs and green walls is required, both to increase permeability of urban environments and to provide habitat. Box 12 describes how the cities of San Francisco and Denver are attempting to achieve this.

Box 12: Regulating for green roofs in San Francisco and Denver

The City of San Francisco implemented the first green roof mandate in the United States in January 2017: San Francisco Better Roofs. The legislation is part of the Sustainable City initiative, and requires most new residential and non-residential buildings applying for building permits to designate 15–30% of roof space for either a living roof or solar power generation, using an existing state law that requires a portion of roof space to be 'solar ready'.

A cost–benefit study conducted by engineering firm Arup demonstrated that, though the up-front cost of installing a living roof is higher, the extra expense is 'largely offset by the avoided one-time stormwater management equipment costs' and that a 'living roof provides net financial benefit to the building owner, while providing significant additional benefit to the tenants, and the broader community'.[81]

The City of Denver has implemented an even more robust green roof requirement. From 1 January 2018, all new construction with a gross floor area greater than 25,000 square feet (2,323 square metres) must cover at least 20% of available roof space with greenery. And this percentage increases as the building becomes larger. The measure was approved by popular vote and used much of the data from San Francisco's program, including the study by Arup, to demonstrate the viability of green rooftops and their benefits for building owners.

What needs to be done?

3.1 Strengthen regulations to support greening in new subdivisions and developments – to benefit human health and wellbeing, and increase biodiversity

3.2 Strengthen regulations to protect canopy trees

3.3 Encourage private landholders to protect and enhance the urban forest and expand greening activities by offering incentives for planting, installing and maintaining natural infrastructure

[81] http://default.sfplanning.org/Citywide/livingroof/SFLivingRoofCost-BenefitStudyReport_060816.pdf

Action 3.1: Strengthen regulations to support greening in new subdivisions and developments – to benefit human health and wellbeing, and increase biodiversity

Maintaining and enhancing the urban forest should be integral to urban planning, construction and financing. There should be more and larger green spaces in new developments, and existing green spaces on private land should be protected through mechanisms such as 'amenity valuations' for trees. Strong leadership is required to strengthen planning policies, provisions and regulations, and to enforce them.

Action 3.2: Strengthen regulations to protect canopy trees

Enforcement measures, such as financial penalties, are currently insufficient to deter the unpermitted removal of canopy trees and other vegetation. Regulations to protect canopy trees should be strengthened, enforced and financial penalties for breaches of these regulations set to a level to better deter tree removal on private urban land.

Action 3.3: Encourage private landholders to protect and enhance the urban forest and expand greening activities by offering incentives for planting, installing and maintaining natural infrastructure

While a range of funding opportunities are available for greening work on public land, less effort has been made to increase greening on private land. Incentives for urban greening in the private realm will be important for reaching canopy targets. A range of incentives can be used to encourage private landholders to continue and increase their greening efforts.

Box 13 describes how the City of Chicago is encouraging green roofs. Incentives range from attaching benefits (such as zoning upgrades, faster processing of permits, and reduced stormwater requirements) to desired activities, to reducing fees when developers act to protect or increase planting, or install natural infrastructure. Other financial mechanisms are outlined in Action 6.

Box 13: Encouraging green roofs in Chicago

In the City of Chicago's recently updated Sustainable Development Policy, green roofs are an important component. The revisions include a new points-based system; the points required in order to be compliant are obtained in several different ways. These can include certifications or designations, such as meeting the WELL Building Standard or earning Energy Star recognition. Installing a green roof on the entirety of the net roof area of a building earns 20 points, while adding a green roof may also earn a floor area ratio bonus under a separate program to encourage the creation of green roofs.

In 2001, the City of Chicago installed a pioneering green roof on top of its city hall, which was planted with a mix of grasses and native prairie plants. This was used as an experiment to discover whether similar roofs could be viable in Chicago. Researchers have found that the vegetation reduces rooftop temperatures by at least 70°F (about 21°C) compared to the adjacent tar roof, and increases biodiversity in the area. The roof reduces stormwater runoff, and continues to serve as a laboratory to test plant viability, new rooftop designs, and urban beekeeping.

Action 4: Collaborate across sectors and regions

Encourage collaboration between sectors and regions, to protect and expand the urban forest by strengthening existing regional partnerships, and establishing new ones, and by accelerating greening efforts on private land.

Why do we need to collaborate across sectors and regions?

Although work is under way to protect and expand the urban forest across Melbourne, the fragmentation of these efforts within and between municipalities is one of the most significant barriers to reaching our urban forest goals. Achieving collective action by bringing people and projects together offers greater benefits, opportunities and efficiency. Box 14 describes three global urban sustainability networks.

Box 14: Global urban sustainability networks

The urban century offers enormous opportunity for humanity. Melbourne's participation in three international urban sustainability networks – 100 Resilient Cities, The Nature Conservancy, and ICLEI: Local Governments for Sustainability – puts it at the forefront of a global trend: creating a shared regional vision for nature and human wellbeing through urban conservation planning.

To help cities incorporate nature into their urban plans, ICLEI, in collaboration with The Nature Conservancy and the International Union for Conservation of Nature, has created Cities With Nature, a global platform for cities and other sub-national governments that recognise and wish to increase the value of nature in and around cities. Although Cities With Nature is still in development, it remains a potentially valuable resource for The Nature Conservancy, Resilient Melbourne and our partners.

What needs to be done?

4.1 Capitalise on existing collaborations between local and state governments and the private sector

4.2 Mobilise broad community support

4.3 Support and develop existing and new methods to obtain and apply community knowledge

4.4 Foster and promote urban forest champions, in both the public and private sectors

Action 4.1: Capitalise on existing collaborations between local and state governments and the private sector

Several successful alliances and cross-organisational governance agreements already exist in different parts of Melbourne. These should be the starting point for building further collaborations and alliances for greening across the city, including Greening the West (see Box 15).

Box 15: Greening the West

Greening the West is a regional collaboration to help communities in Melbourne's west expand green spaces in parks, reserves, streetscapes, roofs and walls, backyards, car parks, sporting fields and waterways. A total of 23 organisations – local government authorities, Victorian Government departments and agencies, water utilities and community groups – work successfully together to protect and enhance the urban forest, sharing knowledge and promoting and scaling up practical solutions in western Melbourne.[82]

[82] For further detail of Greening the West's activities, see Chapter 4 of the *Living Melbourne Technical Report*.

Action 4.2: Mobilise broad community support

Galvanising the support of urban forest practitioners and the public will be fundamental to protecting and expanding the urban forest. To do this we must:

- understand the community's perceptions of the urban forest
- build on and support existing community education and behaviour-change programs that inform, involve and empower the community to promote the urban forest
- develop information for community use that will inform private decision-making
- devise a universal message that supports a long-term campaign to raise public awareness of, and support for, the urban forest.

Positive messaging, supported by broad-based awareness and behaviour-change programs and campaigns – such as Clean Up Australia and Gardens for Wildlife (Box 16) – are needed to communicate the benefits of the urban forest to all. Partners should collaborate to frame messages that will inform and attract all parts of the community.

Box 16: Gardens for Wildlife

Gardens for Wildlife is a network of community groups and councils involved in caring for native plants and animals in urban areas. A good example of a community education and behaviour-change program, Gardens for Wildlife helps individual landowners protect remnant vegetation, improve habitat, and create havens for wildlife. Launched in 2006, the Knox City Council's Gardens for Wildlife program was designed to encourage residents to provide habitat and food sources for threatened wildlife (e.g. birds, insects, and frogs), by planting indigenous plants or suitable exotic species in their gardens. The program is a partnership with the Knox Environment Society and has more than 800 contributing households.

Gardens for Wildlife has recently been expanded across Victoria, and is now running in four municipalities: Knox, Whitehorse, Yarra Ranges and Cardinia.

Action 4.3: Support and develop existing and new methods to obtain and apply community knowledge

Local communities can help urban forest efforts by gathering and sharing important data, so that we target our investment in the urban forest wisely. Data is already available from aerial photography, global positioning systems, and light detection and ranging systems. These tell us much about tree cover, distribution and types. But to obtain specific tree information, such as species and numbers, we need to involve citizen scientists and draw on Indigenous ecological knowledge.

Action 4.4: Foster and promote urban forest champions, in both the public and private sectors

Fostering urban forest champions and leaders, as well as forging partnerships between government departments, non-government organisations and community will help to disseminate, and gain support for, our vision throughout the community.

Action 5: Build a toolkit of resources to underpin implementation

Equip practitioners to protect and enhance the urban forest by building on existing resources and creating a shared toolkit to facilitate implementation of best practices

Why do we need a toolkit of resources tools?

A range of information and experience exists on actions to protect and enhance our urban forest. But this information is disparate and incomplete. Building on existing materials and preparing guidelines, standards and toolkits of resources are important to help assist the many contributors to the development, management and maintenance of the urban forest.

What needs to be done?

5.1	Build the capacity of public and private sector practitioners to protect, enhance and expand the urban forest
5.2	Build on, and develop new tools for public sector land managers
5.3	Build on, and develop new guidance materials for managing the capital and operational costs of urban forest endeavours

Action 5.1: Build the capacity of public and private sector practitioners to protect and enhance expand the urban forest

There are many parties involved in maintaining and expanding a healthy, resilient urban forest. Helping practitioners identify, agree on and adopt best practice is central to the success of the urban forest. To do this, we must update existing vegetation asset management guidelines, and provide technical training in their application, building skills and capacity across both the public and private sectors.

Action 5.2: Build on, and develop new tools for public sector land managers

Further investment is required to improve existing tools, develop new tools and provide a centralised place for such resources, creating a 'how-to' reference point for all aspects of project planning and action. In particular, we need:

- materials that will help involve the wider community and the land development industry, such as best practice guidelines and case studies
- clear and agreed procedures to attract involvement by private and semi-public utility companies
- vegetation-management and associated technical training for staff of utility companies, to improve decision-making.

There is a growing list of open-source tools, resources and reference materials that practitioners can apply to their greening efforts.

Melbourne Water's Clearwater program (Box 17) is an example of a centralised resource disseminating best practice across a sector.

Box 17: Clearwater – Melbourne Water

Integrated water management and water-sensitive urban design improve water quality, reduce risks to human life and property, help us use water resources more efficiently, and improve the ability of water to maintain and strengthen economic, social and cultural values. Hosted and funded by Melbourne Water, Clearwater is a capacity-building program that works with the water industry to transform the way we manage water for healthy, connected communities. Clearwater supports water professionals, organisations and the water sector by improving skills, increasing knowledge and facilitating networking across Victoria. Melbourne is recognised as a world leader in urban water management, in part due to active collaboration and dissemination of best practice.[83] A similar approach is required if we are to realise the full benefits of the urban forest.

Action 5.3 Build on, and develop new guidance materials for managing the capital and operational costs of urban forest endeavours

Managing, maintaining and expanding the urban forest require significant capital and operational expenditure. Currently, every council contributes to the urban forest: it is estimated that in 2017–18 between $256 million and $384 million – approximately $8–$12 million per council – was spent on the urban forest. Guidance on current and projected future costs will help all parties forecast future funding requirements more accurately, identify any unnecessary or unreasonable expenditures, and bring efficiencies in funding the urban forest.

Action 6 - Fund the protection and enhancement of the urban forest

Establish a set of funding and financing options to suit different types of urban forest action

Why do we need to fund the protection and enhancement of the urban forest?

Protecting and expanding the urban forest, in order to connect natural habitats, create natural infrastructure and reach agreed targets, needs a variety of greening actions, which inevitably require funding. The scientific case for the benefits of urban nature and natural infrastructure has become ever clearer and more convincing over the last few decades. Our calculations as part of developing this strategy, drawing from existing government and peer-reviewed sources, suggest that, even today with our not yet fully realised urban forest, Melburnians receive benefits of approximately $6 billion every year.[84]

To reach the canopy and broader vegetation targets set out in Action 2, we must invest an additional $1 billion over the next 30 years, with the bulk of this spent in the first 10 years.

The *Living Melbourne* strategy proposes three ways to fund this work, in addition to existing funding:

- issue *Living Melbourne* Bonds
- provide grants and funding opportunities for specific sites
- use carbon credits to promote and finance activities.

83

84

This funding is needed for:

- works, management and continuing maintenance of the urban forest, including:
  - the protection of existing native vegetation (including native grasslands), including compliance and enforcement
  - operational management of offset sites
  - additional planting, management and maintenance of vegetation on public land (such as parks, conservation reserves, other open spaces, road reserves and streetscapes)
  - community engagement and behaviour-change activities that increase community awareness and support
  - property development industry involvement, education, training and behaviour-change activities that lead to improvements of the urban forest in private land development
  - green infrastructure efforts as part of the Local Government Road Renewal Program
  - water-sensitive urban design
- new governance and collaborative programs
- monitoring and evaluation
- professional education and training
- innovation and research
- replacement plantings.

What needs to be done?

6.1 Secure long-term financing to realise the *Living Melbourne* vision

6.2 Provide grants and funding opportunities for specific sites

Action 6.1: Secure long-term financing to realise the Living Melbourne vision

A promising financing arrangement would be the use of bonds. Living Melbourne Bonds would be a cost-effective way to obtain the funds needed to implement the changes recommended throughout this strategy. Bonds would enable private sector investors, including philanthropic funds and endowments, to earn a financial return in exchange for providing financial capital for our efforts. Bonds are frequently underwritten by governments. Based on information from investors worldwide, a bond from an Australian government authority (whether state or federal) that has a AAA credit rating, would be competitive at 6% per annum. This would see a government paying $1.5 billion over a 25-year period, in exchange for $1 billion today.

A significant proportion of these funds should be made available to local government authorities, with other funds used to encourage planting, greening and water-sensitive urban design on large private landholdings. In notable cases funds could also support the acquisition of land of particularly high conservation value.

While a significant injection of funds is required to achieve the ambitions of this strategy in the early years, land managers – both public and private – will need to consider how funds

are used to support long-term maintenance. Although natural infrastructure generally becomes stronger and more valuable over time, it does require maintenance. Such work provides additional job opportunities and, particularly if tied to social procurement, can mean that the urban forest brings even greater and broader socio-economic benefits.

Carbon finance and our urban forest

Carbon credits are a niche, but valuable, way to encourage specific activities to reduce greenhouse gas emissions. Today, the existing urban forest offers limited scope for attracting carbon credits. But as we develop even clearer mapping, and standardise our methods of valuation, monitoring and evaluation, greater opportunities to generate certified credits will emerge, as long as we demonstrate tangible progress towards achieving the ambitions of this strategy.

Action 6.2: Provide grants and funding opportunities for specific sites

To involve *all* of Melbourne, it is not enough to target only larger institutions and those already able to comply with the kinds of monitoring and evaluation required for large investments. We also need a range of grants and other targeted funding mechanisms for smaller-scale and community efforts.

The forthcoming Metropolitan Open Space Strategy grants are one such mechanism. Others include specific initiatives such as the City of Melbourne Urban Forest Fund (Box 18).

Box 18: The Urban Forest Fund – Greening Howlett Street

The City of Melbourne Urban Forest Fund provides financial support for new greening projects that otherwise would not be funded, such as green spaces, tree planting, vertical greening, or green roofs.

Approximately 75% of land in the City of Melbourne is privately owned or managed, offering huge potential for the private realm to contribute more towards greening our city. The Urban Forest Fund aims to build partnerships between government and the private sector to achieve greening above and beyond existing Council capital works investment. Established in 2017 with $1.2 million in seed funding, the Urban Forest Fund will be increased by contributions from organisations and individuals who want to create a greener city.

One of the first partnership grants went to the 45-apartment Howlett Street complex in Kensington. The site currently has very little greenery, it often floods, and – despite having an outdoor public common area that connects two streets – sees little interaction between residents. With the support of a $200,000 grant, residents have come together and created a project that will not only bring greening benefits, but also create rich and cohesive spaces for use by Howlett Street residents and the entire neighbourhood.[85]

[85] City of Melbourne, *Greening Howlett Street*, 2019.

Implementing the strategy

The *Living Melbourne* strategy has been prepared by The Nature Conservancy and Resilient Melbourne and on behalf of many partners across metropolitan Melbourne. To achieve its vision of thriving communities that are resilient and connected through nature, all sectors and regions have a role to play. Local government authorities across the metropolitan region will continue to perform an invaluable role as managers and custodians of many of the parks, streetscapes and open spaces that form a fundamental part of our urban forest. Their involvement is also essential for working with residents and the broader community to generate local action.

The Victorian Government, including its many departments and agencies, is leading initiatives such as Action 91 of *Plan Melbourne*, and the forthcoming Metropolitan Open Space Strategy, both of which will be central to the metropolitan-wide approach set out in *Living Melbourne*. State government authorities such as VicTrack, VicRoads, Parks Victoria and Melbourne Water, all of which manage large tracts of public land, will play a critical role in protecting and expanding our urban forest.

Beyond the public sector, non-government and community organisations, private land owners and many others will need to disseminate information and galvanise support if we are to make the *Living Melbourne* vision a reality. The residents of Melbourne, who all benefit from, and have a vested interest in, the urban landscape, will be essential to the implementation of many actions of this strategy. 'Friends of' groups, Landcare, and communities of practice are already making significant contributions to urban greening. It is hoped that this strategy provides the missing link for us to all work better together. We invite you to be involved.

Commonly asked questions

What is the urban forest?

Our urban forest comprises all the trees, shrubs, grasslands and other vegetation growing on public and private land across metropolitan Melbourne. It includes urban parks, street trees, landscaped boulevards, river corridors, green walls and roofs, wetlands, greenways and gardens.

Why does the *Living Melbourne* strategy focus so much on trees?

Many elements make up our urban forest, and it is important for planners and decision makers to understand the importance of them all. Nevertheless, measuring and monitoring all the elements is prohibitively complex and costly. The presence of trees, measured by their canopy cover, remains a good indicator of the overall extent and ecological value of the urban forest. It is currently the best way to measure the urban forest's ability to benefit the community and the environment.

What is resilience?

100RC defines urban resilience as the capacity of individuals, institutions, businesses and systems within a city to adapt, survive and thrive no matter what kind of chronic stresses and acute shocks they experience

What are shocks and stresses?

Shocks are sudden, often unexpected, events – such as bushfires, floods and heatwaves. Stresses are longer-term problems, such as climate change, governance fragmentation, and urbanisation.

How is the *Living Melbourne* strategy different from other urban forest strategies?

Current urban forest strategies exist at the local government level, but the urban forest does not follow administrative boundaries, and the risks it faces are too complex and interconnected for local governments to meet on their own. This strategy builds on existing strategies by bringing together a wide range of organisations to work together towards a common vision for the urban forest – across the whole of metropolitan Melbourne.

Who prepared this strategy?

Development of the *Living Melbourne* strategy is a 'flagship action' under the *Resilient Melbourne* strategy. Resilient Melbourne and The Nature Conservancy developed this strategy in cooperation with a wide range of organisations, and with advice from a Senior Reference Group and a Technical Advisory Group.

Who is this strategy for?

Just as the urban forest is something we all benefit from and enjoy, we all have a role to play in supporting our urban forest. Local and state governments have the greatest influence over the urban forest on public land, but all sectors, communities, institutions and individuals can – and should – contribute.

How can I get involved?

As an individual you can join a local Landcare or 'Friends of' community group, plant trees and shrubs in your garden, talk to your friends and neighbours about the benefits of the

urban forest and the risks it is facing, and contribute to advocacy, monitoring and research through programs such as the Citizen Forest Program.

Glossary

Biodiversity	*Living Melbourne* uses the definition of biodiversity given in *Protecting Victoria's Environment: Biodiversity 2037*: 'all components of the living world: the number and variety of plants, animals and other living things (including fungi and micro-organisms) across our land, rivers, coast, and ocean. It includes the diversity of their genetic information, the habitats and ecosystems within which they live, and their connections with other life forms and the natural world'.
Connectivity	The capacity of plants, animals and other living things to move between disjunct landscape elements such as habitat patches, lakes and streams.
Cool spot	Areas with the lowest storage heat flux values.
Cooling intensity	The reduction in average temperature under a tree canopy compared to the temperature outside the patch covered by the canopy, expressed in degrees Celsius.
Evapotranspiration	The part of the water cycle by which liquid water is removed from a vegetated area and into the atmosphere by the processes of transpiration and evaporation.
Extinction debt	Many living species may already be functionally extinct, due to historic clearing of habitat.
Green infrastructure	The green spaces and water systems that intersperse, connect and provide life support for humans and other species in urban environments. Green infrastructure ranges in scale from residential gardens to local parks and housing estates, streetscapes and highway verges, services and communications corridors, waterways and regional recreation areas. Green infrastructure has many benefits for society and the environment.
Habitat	All the physical and biological things that collectively make up the place where a plant or animal lives.
Grey infrastructure	Human-built physical structures and systems, such as buildings, water and electrical supply, sewers, stormwater drains, dams, reservoirs, fences, paths, roads and bridges.
Hot spot	Areas of concentrated heat retention, such as major roads, commercial and industrial centres, and new residential subdivisions.
Integrated water management	Collaborative planning that brings together organisations that influence all elements of the water cycle, including waterways and bays, wastewater management, alternative and potable water supply, stormwater management and water treatment.

Metropolitan Melbourne	The geographical area that defines Melbourne as a city and the capital of the state of Victoria. Metropolitan Melbourne is made up of 32 local councils: Banyule, Bayside, Boroondara, Brimbank, Cardinia, Casey, City of Melbourne, Darebin, Frankston, Glen Eira, Greater Dandenong, Hobson's Bay, Hume, Kingston, Knox, Manningham, Maribyrnong, Maroondah, Melton, Mitchell, Monash, Moonee Valley, Mornington Peninsula, Nillumbik, Port Phillip, Whitehorse, Whittlesea, Wyndham, Yarra, and Yarra Ranges.
Permeability	The readiness with which a surface, whether man-made (such as a paved road) or natural (such as soil or rock) allows water, air or plant roots to penetrate or pass through.
Riparian	The interface between land and a river or stream; land alongside creeks, streams, gullies, rivers and wetlands.
Threatened species	Species of plants, animals or other life forms that are considered either vulnerable, endangered, critically endangered, or extinct in the wild.
Tree canopy	The uppermost trees, or branches of the trees, in a forest, forming a more-or-less continuous layer of foliage. The topmost layer of bioactivity in a forest setting.
Urban forest	All of the trees and other vegetation – and the soil and water that support them – in a municipality. Urban forest incorporates vegetation in streets, parks, gardens, plazas, campuses, river and creek embankments, wetlands, railway corridors, community gardens, green walls, balconies and roofs.
Urban green infrastructure	An interconnected network of green spaces in an urban area that conserves natural ecosystem values and functions, and provides associated benefits to human populations.
Urban heat island effect	The phenomenon of dense urban areas having significantly warmer air and surface temperatures than surrounding rural areas.
Water-sensitive urban design	Integrated design of the water cycle, incorporating water supply, wastewater, stormwater and groundwater management, urban design and environmental protection. It sees all water as a resource to be managed to improve the environment, the economy, and liveability.

Acknowledgements

We would like to acknowledge the contributions of the following organisations in the preparation of *Living Melbourne*

100 Resilient Cities

AECOM

Australian Institute Landscape Architects

Banyule City Council

Bayside City Council

BirdLife Australia

Boroondara City Council

Brimbank City Council

Cardinia Shire Council

Casey City Council

Clean Air and Urban Landscape HUB

Council Arboriculture Victoria

City West Water

CSIRO

Darebin City Council

Department of Environment, Land, Water and Planning

Department of Health and Human Services

Digital Globe

Eastern Alliance Greenhouse Action

Emergency Management Victoria

Federation of Victorian Traditional Owner Corporations

Folkestone

Frankston City Council

Glen Eira City Council

G&M Connellan Consultants

Mitchell Shire Council

Monash City Council

Moonee Ponds Creek Collaboration

Moonee Valley City Council

Moreland City Council

Mornington Peninsula Shire

Municipal Association of Victoria

Northern Alliance Greenhouse Action

Nillumbik Shire Council

North East Link Authority

Nursery and Garden Industry of Victoria

Odonata

Office for Suburban Development

Parks Victoria

People and Parks Foundation

Port Phillip and Westernport Catchment Management Authority

Port Phillip City Council

Property Council - Victoria

Rusty Brown

South East Water

Stonnington City Council

Transport Accident Commission

Transport for Victoria

Trimble

University of Melbourne

Greater Dandenong
Greening the West
Hobsons Bay City Council
Hume City Council
ICLEI
Inner Melbourne Action Plan
Kingston City Council
Knox City Council
Manningham City Council
Maribyrnong City Council
Maroondah City Council
Melbourne City Council
Melbourne Water
Melton City Council
University of Sydney – Business School
University of Tasmania
VicRoads
Victorian Planning Authority
Victorian Tree Industry Organisation
Werribee River Association
Western Alliance for Greenhouse Action
Whitehorse City Council
Whittlesea City Council
Wyndham City Council
Yarra City Council
Yarra Ranges Council
Yarra Valley Water

***Living Melbourne* Senior Reference Group**

Department Environment Land Water Planning
City of Brimbank
The Nature Conservancy
Melbourne Water
City of Monash
City of Stonnington
Resilient Melbourne
City of Frankston
City of Melbourne
Parks Victoria
City of Hume

***Living Melbourne* Technical Advisory Group**

City of Hume
City of Melbourne
Parks Victoria
The Nature Conservancy
University of Tasmania

References

Andreou, E., 'The effect of urban layout, street geometry and orientation on shading conditions in urban canyons in the Mediterranean', *Renewable Energy*, vol. 63, March 2014, pp. 587–96.

Astell-Burt, T., Feng, X., and Kolt, G.S., 'Green space is associated with walking and moderate-to-vigorous physical activity (MVPA) in middle-to-older-aged adults: Findings from 203,883 Australians in the 45 and Up Study', *British Journal of Sports Medicine*, vol. 48, no. 5, March 2014, pp. 404–6.

——, 'Mental health benefits of neighbourhood green space are stronger among physically active adults in middle to older age: Evidence from 260,061 Australians', *Preventive Medicine*, vol. 57, no. 5, November 2013, pp. 601–6.

Australian Bureau of Meteorology, *Annual Climate Statement 2018*, Australian Government, 10 January 2019, http://www.bom.gov.au/climate/current/annual/aus/, viewed 30 January 2019.

Australian Bureau of Statistics …

Australian Government, *National Water Commission 2004*, http://www.nwc.gov.au/nwi.

Brown, N., 'Promoting a social and cultural determinants approach to Aboriginal and Torres Strait Islander affairs' (slide presentation), Prime Minister's Indigenous Advisory Council, n.d., http://www.checkup.org.au/icms_docs/183362_Prof_Ngiare_Brown.pdf, viewed February 2019.

City of Melbourne, *Elizabeth Street Catchment Integrated Water Cycle Management Plan*, Melbourne, 2015, http://urbanwater.melbourne.vic.gov.au/industry/our-strategies/elizabeth-street-catchment-iwcm-plan/.

——, *Greening Howlett Street*, 2019, https://www.melbourne.vic.gov.au/community/parks-open-spaces/urban-forest-fund/Pages/greening-howlett-street.aspx, viewed February 2019.

——, *Urban Forest Strategy: Making a Great City Greener: 2012–2032*, Melbourne, 2012, https://www.melbourne.vic.gov.au/SiteCollectionDocuments/urban-forest-strategy.pdf.

City of Yarra and Urban Forest Consulting, *Urban Forest Strategy 2017*, City of Yarra, Melbourne, 2017, https://www.yarracity.vic.gov.au/-/media/files/services/cleaning-and-maintenance/urban-forest-strategy.pdf?la=en&hash=7B4B1138DF50E02D61EB054995CA67A694298453.

Commissioner for Environmental Sustainability Victoria, *Interim Victorian State of the Environment Report 2018*, Victoria State Government, Melbourne, 2018, https://www.ces.vic.gov.au/publications/interim-victorian-state-environment-report-2018.

Coutts, A.M., Beringer, J., Jimi, S., and Tapper, N.J., 'The urban heat island in Melbourne: Drivers, spatial and temporal variability, and the vital role of stormwater' (conference paper), 2009, https://www.clearwatervic.com.au/user-data/resource-files/Urban_Heat_Island_in_Melbourne2009.pdf.

Coutts, A.M, Tapper, N.J., Beringer, J., Loughnan, M., and Demuzere, M., 'Watering our cities: The capacity for water sensitive urban design to support urban cooling and improve human thermal comfort in the Australian context', *Progress in Physical Geography: Earth and Environment*, vol. 37, no. 1, November 2012, pp. 2–28.

Department of Environment, Land, Water and Planning, *Climate-Ready Victoria: Victoria*, Victoria State Government, Melbourne, 2015, https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0018/60750/statewide-victoria.pdf.

——, *Plan Melbourne 2017–2050*, Victoria State Government, Melbourne, 2016, https://www.planmelbourne.vic.gov.au.

——, *Protecting Victoria's Environment: Biodiversity 2037*, Victoria State Government, Melbourne, 2017, https://www.environment.vic.gov.au/biodiversity/biodiversity-plan.

——, *Victoria in Future 2016: Population and Household Projections to 2051*, Victoria State Government, Melbourne, 2016, https://www.planning.vic.gov.au/__data/assets/pdf_file/0014/14036/Victoria-in-Future-2016-FINAL-web.pdf.

——, *Victorian Biodiversity Atlas*, Victoria State Government, https://www.environment.vic.gov.au/biodiversity/victorian-biodiversity-atlas.

——, *Victoria's Climate Change Adaptation Plan 2017–2020*, State of Victoria, Melbourne, 2016, https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0024/60729/Victorias-Climate-Change-Adaptation-Plan-2017-2020.pdf.

——, *Water for Victoria*, State of Victoria, 2016, https://www.water.vic.gov.au/water-for-victoria.

Department of Sustainability, Environment, Water, Population and Communities, *National Wildlife Corridors Plan: A Framework for Landscape-Scale Conservation*, Australian Government, Canberra, 2012, http://155.187.2.69/biodiversity/wildlife-corridors/publications/pubs/national-wildlife-corridors-plan.pdf.

Depave, Portland (Oregon), https://depave.org/, viewed February 2019.

Destination Melbourne, *Greater Melbourne's Destination Management Visitor Plan: Executive Summary*, Melbourne, 2018, sps://assets.destination.melbourne/resources/DMP-2018_Program_FA-MedRes.pdf?mtime=20180924115645.

Fitzsimons, J.A., Palmer, G.C., Antos, M.J., and White, J.G., 'Refugees and residents: Densities and habitat preferences of lorikeets in urban Melbourne', *Australian Field Ornithology*, vol. 20, no. 1, March 2003, pp. 2–7.

Gromke, C., Blocken, B., Janssen, W., Meremaa, B., van Hooff, T., and Timmermans, H., 'CFD analysis of transpirational cooling by vegetation: Case study for specific meteorological conditions during a heat wave in Arnhem, Netherlands', *Building and Environment*, vol. 83, January 2015, pp. 11–26.

Hahs, A., McDonnell, M., Holland, K., and Caryl, F., *Biodiversity of Metropolitan Melbourne. Prepared for Victorian Environmental Assessment Council*, Australian Research Centre for Urban Ecology, Royal Botanic Gardens, Melbourne, 2009, http://www.veac.vic.gov.au/reports/Biodiversity%20of%20Metropolitan%20Melbourne.pdf.

Hahs, A., Mc Donnell, M., McCarthy, M., Vesk, P., Corlett, R., Norton, B., Clemants, S., Duncan, R., Thompson, K., Schwartz M., and Williams, N., 'A global synthesis of plant extinction rates in urban areas', *Ecology Letters*, vol. 12, no. 11, November 2009, pp. 1165–73.

Hales, S., Kovats, S., Lloyd, S., and Campbell-Lendrum, D. (eds), *Quantitative Risk Assessment of the Effects of Climate Change on Selected Causes of Death, 2030s and 2050s*, World Health Organization, Geneva, 2014, https://www.who.int/globalchange/publications/quantitative-risk-assessment/en/.

Hall, T., *Where Have all the Gardens Gone? An Investigation into the Disappearance of Back Yards in the Newer Australian Suburb*, Research Paper 13, Urban Research Program, Griffith University, Brisbane, 2007, https://www.healthyplaces.org.au/userfiles/file/where%20have%20all%20the%20gardens%20gone%20Tony%20Hall(1).pdf.

Hamer, A., and McDonnell, M., 'The response of herpetofauna to urbanization: Inferring patterns of persistence from wildlife databases', *Austral Ecology*, vol. 35, no. 5, August 2010, pp. 568–80.

Hoh, A., 'Sydney squeeze: Lower your electricity bills and reduce the heat island effect by planting more trees', *ABC News*, 23 March 2017, https://www.abc.net.au/news/2017-03-23/tackling-heat-with-trees-one-street-at-a-time/8380306, viewed February 2019.

Jacobs, B., Mikhailovich, N., and Delaney, C., *Benchmarking Australia's Urban Tree Canopy: An i-Tree Assessment*, Institute for Sustainable Futures, University of Technology Sydney, for Horticulture Australia Limited, Sydney, 2014, http://202020vision.com.au/media/7141/final-report_140930.pdf.

Kendal, D., Lee, K., Ramalho, C., Bowen, K., and Bush, J., *Benefits of Urban Green Space in the Australian Context: A Synthesis Review for the Clean Air and Urban Landscapes Hub. Final Report*, Clean Air and Urban Landscapes Hub, Australia, 2016, https://research-repository.uwa.edu.au/en/publications/benefits-of-urban-green-space-in-the-australian-context-a-synthes.

Kingsley, J., Townsend, M., Phillips, R., and Aldous, D., 'If the land is healthy … it makes the people healthy: The relationship between caring for Country and health for the Yorta Yorta Nation, Boonwurrung and Bangerang Tribes', *Health & Place*, vol. 15, no. 1, March 2009, pp. 291–9.

Landscape Institute, *Connectivity and Ecological Networks: Technical Information Note 01/2016*, London, 2016, https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2016/03/Connectivity-And-Ecological-Networks-TIN-1_16-20160425.pdf.

Le Roux, D.S., Ikin, K., Lindenmayer, D.B., Manning, A.D., and Gibbons, P., 'The future of large old trees in urban landscapes', *PLoS ONE*, vol. 9, no. 6, June 2014, e99403.

Leahy, I., 'Why we no longer recommend a 40 percent urban tree canopy goal', *Loose Leaf: The Official Blog of American Forests*, 12 January 2017, https://www.americanforests.org/blog/no-longer-recommend-40-percent-urban-tree-canopy-goal/, viewed 26 September 2018.

Loughnan, M., Nicholls, N., and Tapper, N., 'The effects of summer temperature, age and socioeconomic circumstance on acute myocardial infarction admissions in Melbourne, Australia', *International Journal of Health Geographics*, vol. 9, no. 41, August 2010.

McDonald, R.I., Colbert, M., Hamann, M., Simkin R., and Walsh, B., *Nature in the Urban Century: A Global Assessment of Where and How to Conserve Nature for Biodiversity and Human Wellbeing*, The Nature Conservancy, Arlington, Virginia, 2018, https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_NatureintheUrbanCentury_FullReport.pdf.

McPherson, E.G., and Muchnick, J., 'Effects of street tree shade on asphalt concrete pavement performance', *Journal of Arboriculture*, vol. 31, no. 6, November 2005, pp. 303–10.

McPherson, E.G., van Doorn, N., and de Goede, J., *The State of California's Street Trees*, Pacific Southwest Research Station, US Forest Service, Davis, California, 2015, https://www.fs.fed.us/psw/topics/urban_forestry/documents/20150422CAStreetTrees.pdf.

McPherson, G., Simpson, J.R., Peper, P.J., Maco, S.E., and Xiao, Q., 'Municipal forest benefits and costs in five US cities', *Journal of Forestry*, vol. 103, no. 8, December 2005, pp. 411–16.

Melbourne Water, *Better Waterways and Drainage for our Community: An Investment Plan July 2016 – June 2021*, Melbourne, 2016, https://www.melbournewater.com.au/media/3056/download.

——, *Enhancing Life and Liveability: Annual Report 2015–16*, Melbourne, 2016, https://www.melbournewater.com.au/about-us/publications-and-policies/annual-report/annual-report-archive.

Moorey, R., 'Ecosystem services evaluation of metropolitan Melbourne's urban forest', thesis for Master of Sustainable Practice, University of Melbourne, 2018.

Moreland City Council, *Moreland Urban Heat Island Effect Action Plan 2016/2017–2025/2026*, Melbourne, 2016, https://www.moreland.vic.gov.au/environment-bins/environment/climate-change/urban-heat-island/.

Nature Conservancy, *Planting Healthy Air: A Global Analysis of the Role of Urban Trees in Addressing Particulate Matter Pollution and Extreme Heat*, The Nature Conservancy, Arlington, Virginia, 2016, https://www.nature.org/content/dam/tnc/nature/en/documents/20160825_PHA_Report_Final.pdf.

Nature Conservancy, and City of Melbourne, *Living Melbourne Technical Report*, City of Melbourne, 2019, https://resilientmelbourne.com.au/living-melbourne/.

O'Malley, A., and Lechner, A., *Northwest Ecological Connectivity Investigation*, Practical Ecology Pty Ltd for Hume City Council and Brimbank City Council, Melbourne, 2017, https://www.researchgate.net/publication/323455124_Northwest_Ecological_Connectivity_Investigation.

Ossola, A., and Niemela, J. (eds), *Urban Biodiversity: From Research to Practice*, Routledge, UK and New York, 2018.

Palmer, G.C., Fitzsimons, J.A., Antos, M.J., and White, J.G., 'Determinants of native avian richness in suburban remnant vegetation: Implications for conservation planning', *Biological Conservation*, vol. 141, no. 9, September 2008, pp. 2329–41.

Parks Victoria, and Department of Environment, Land, Water and Planning, *Valuing Victoria's Parks: Accounting for Ecosystems and Valuing their Benefits: Report of First Phase Findings*, Victoria State Government, Melbourne, 2015, https://parkweb.vic.gov.au/__data/assets/pdf_file/0010/695764/Valuing-Victorias-Parks-Report-Accounting-for-ecosystems-and-valuing-their-benefits.pdf.

Philadelphia Water Department, *Depave Your Yard*, Philadelphia, 2018, http://www.phillywatersheds.org/whats_in_it_for_you/residents/depave-your-yard, viewed February 2019.

Presland, G., *The Place For a Village: How Nature Has Shaped the City of Melbourne*, Museum Victoria Publishing, Melbourne, 2008.

State of Victoria, *Victorian Public Health and Wellbeing Plan 2015–2019*, Victoria State Government, Melbourne, 2015, https://www2.health.vic.gov.au/Api/downloadmedia/%7B8CF1698F-F539-4BD6-8876-9B66C91793E7%7D.

Sustainable Seattle, Seattle, 2019, http://sustainableseattle.org/, viewed February 2019.

Tapper, N., Loughnan, M., and Nicholls, N., 'Towards management of urban heat stress in urban environments: Recent developments in Melbourne, Victoria', *Emergency Medicine Australasia*, vol. 22, Supp. 1, February 2010, A11–A12.

Threlfall, C.G., Mata, L., Mackie, J.A., Hahs, A.K., Stork, N.E., Williams, N.S., and Livesley, S.J., 'Increasing biodiversity in urban green spaces through simple vegetation intervention', *Journal of Applied Ecology*, vol. 54, no. 6, January 2017, pp. 1874–83.

United Nations, *Sustainable Development Goals: Why the SDGs Matter*, United Nations, n.d., https://www.un.org/sustainabledevelopment/why-the-sdgs-matter/, viewed February 2019.

United Nations Development Program, *World Urbanization Prospects: The 2018 Revision*, United Nations Population Division, New York, 2018, https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html.

United States Environmental Protection Agency, *Heat Islands*, www.epa.gov/heat/islands.

Vailshery, L.S., Jaganmohan M., and Nagendra, H., 'Effect of street trees on microclimate and air pollution in a tropical city', *Urban Forestry & Urban Greening*, vol. 12, no. 3, 2013, pp. 408–15.

van der Ree, R., and McCarthy, M.A., 'Inferring persistence of indigenous mammals in response to urbanisation', *Animal Conservation*, vol. 8, no. 3, August 2005, pp. 309–19.

Vandentorren, S., Suzan, F., Medina, S., Pascal, M., Maulpoix, A., Cohen, J., and Ledrans, M., 'Mortality in 13 French cities during the August 2003 heat wave', *American Journal of Public Health*, vol. 94, no. 9, September 2004, pp. 1518–20.

White, J.G., Antos, M.J., Fitzsimons, J.A., and Palmer, G.C., 'Non-uniform bird assemblages in urban environments: The influence of streetscape vegetation', *Landscape and Urban Planning*, vol. 71, nos 2–4, March 2005, pp. 123–35.

11.8 Councillor Attendance at ALGWA 2019 National Conference

Trim Record Number: D19/65898
Responsible Officer: Group Manager Chief Executive's Office

Purpose

1. To approve attendance by the Deputy Mayor at the 2019 national conference of the Australian Local Government Women's Association (ALGWA), to be held from 14-17 May 2019 in Bankstown, New South Wales.

Background

2. The Australian Local Government Women's Association is a non-party political association of local government women formed to support women's participation in local government, both as Councillors and officers.
3. The ALGWA has held a national conference every two years since 1966. The 2019 conference has the theme 'Celebrating 100 Years of Women', and will focus on how far women in local government have come in the last 100 years.
4. The conference also seeks to strengthen networking, mentoring and innovative opportunities that encourage and support women in local government.
5. Council's Expense Entitlement Policy provides:
   (a) "Councillors' attendance at interstate and overseas conferences and Council's payment of airfares is subject to the approval of the Council;" and
   (b) "Subject to the availability of funds, Council shall pay for the cost of registration fees, accommodation and travelling expenses, meals and other incidental expenses associated with authorised attendance at conferences and seminars."
6. Expressions of interest have been sought from Councillors, with the Deputy Mayor (Cr Misha Coleman) expressing a desire to attend.

Consultation

7. Not relevant to this report.

Financial Implications

8. The costs associated with attendance by the Deputy Mayor at the Assembly are estimated at $2,609, broken down as follows:
   (a) Conference registration –$909;
   (b) Airfare - $500;
   (c) Accommodation –$700; and
   (d) Meals, taxis and other incidentals – $500.
9. Provision is made in the Council budget for Councillors to attend approved conferences.

Economic Implications

10. There are no economic implications.

Sustainability Implications

11. There are no sustainability implications.

Social Implications

12. Not applicable to this report.

Human Rights Implications

13. There are no Human Rights implications associated with this report.

Communications with CALD Communities Implications

14. There are no communications with CALD communities implications associated with this report.

Council Plan, Strategy and Policy Implications

15. The attendance at peak body conferences enables discussion with Councillors across the nation to compare issues, processes, services standards which assist Council in formulating its own plans, strategies and work procedures.

Legal Implications

16. There are no legal issues concerned with attendance by Councillors at the ALGWA National conference, save that details of interstate travel (dates, attendees and costs) must be recorded in the interstate travel register, in accordance with the *Local Government (General) Regulations*, in respect of the conference.

Other Issues

17. None applicable.

Options

18. None applicable.

Conclusion

19. That Council authorise the attendance of the Deputy Mayor at the 2019 national conference of the Australian Local Government Women's Association.

RECOMMENDATION

1. That, pursuant to Council's Expense Entitlement Policy, Council approve attendance by the Deputy Mayor (Cr Misha Coleman) at the 2019 national conference of the Australian Local Government Women's Association, to be held from 14-17 May 2019 in Bankstown, New South Wales.

CONTACT OFFICER: **Rhys Thomas**
TITLE: **Senior Governance Advisor**
TEL: **9205 5302**

Attachments
There are no attachments for this report.