Traffix Group

# Traffic Engineering Assessment

## Brunswick Street and Smith Street Activity Centres

Prepared for
Yarra City Council

November, 2019

G22790R-01B

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# Document Control

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# 1. Introduction

Yarra City Council has initiated Built Form Frameworks for the Brunswick Street and Smith Street Activity Centres. These Built Form Frameworks will define the preferred future built form character of the precincts and include principles, guidelines and requirements to guide future development and to manage the level of change. Importantly, these frameworks will inform the preparation of future Design and Development Overlay (DDO) controls and policy for these areas.

The frameworks provide a guide as to what developmental changes can be expected within the Brunswick Street and Smith Street Activity Centres in the future at such time that they are implemented as DDO controls and ultimately, resulting in increased development. This increase in development has the potential to pose transport challenges for all modes along the Brunswick Street and Smith Street corridors and immediate areas.

In particular, a number of traffic engineering related issues have arisen through the creation and analysis of the framework process, including:

- concern in relation to the impact that additional development may have on the transport network, including the network performance of Brunswick Street, Smith Street and the local road network,
- the need for controls to address preferred vehicle arrangements for the Brunswick Street and Smith Street Activity Centres to support the level of development being proposed and to guide decision making and policy formulation,
- the suitability of narrow laneways to provide appropriate access to new development and movement opportunities for people, cyclists, cars and service vehicles, and
- likely Department of Transport concerns relating to vehicle access arrangements to properties on Brunswick Street and Smith Street and the potential impact on the safety and efficiency of the road and tram network.

While the traffic impacts of this growth on this constrained network this is acknowledged as a consideration, there is strong and committed strategic policy support to facilitate increased commercial and residential development in the Brunswick Street and Smith Street Activity Centres. In considering the planning of similar centres across Melbourne, Planning Panels have acknowledged that "future congestion should not stifle development"[1] and the "challenge of managing the road network should not prevent the Amendment from progressing"[2].

It is important that this project recognises the network constraints, the strong strategic support for development in the precinct, and the approach of Planning Panels in the discussion and advice on the future traffic conditions and future performance of Brunswick Street, Smith Street and the local road network. In particular, this project must help to ensure that future consideration of traffic issues is focused on how best to manage the impacts of

[1] Panel Report for Moreland Amendment C123

[2] Panel Report for Moreland Amendment C134

future development through improved access arrangements and measures to promote sustainable and active modes of travel through new development.

Traffix Group has been engaged by Yarra City Council to undertake an assessment of the future access arrangements, prepare access and movement plans and provide input into the content of the future Design and Development Overlay to facilitate appropriate access and movement throughout the Activity Centres. The objective of the access and movement plans is to facilitate 'best practice' access controls to properties abutting Brunswick Street and Smith Street (or located within the 'study area') and specifically:

- To maximise the efficiency of the arterial road network.
- To ensure appropriately managed vehicle access is provided to properties within the Activity Centres.
- To minimise the potential for vehicle conflicts within laneways, ensuring appropriate treatments are put into place to maximise the capacity of laneways and local roads.
- To minimise impacts on tram and public transport services.
- Provide a high quality pedestrian environment along Brunswick Street and Smith Street.
- To minimise where possible the number of vehicle access points directly to arterial roads.
- Provide appropriate vehicle access to properties, including loading and waste collection considerations.

# 2. Scope & Methodology

The adopted methodology for undertaking this study was as follows:

- Undertake thorough site inspections of the entire study areas to document and map (with a main focus on properties abutting arterial and higher order roads):
  - existing access arrangements for each individual property,
  - existing traffic management treatments for all arterial and local roads and rear laneways within the study areas,
  - existing configuration of each road and laneway within the study areas (including carriageway width and road reservation width), and
  - foreseeable access constraints to each individual property should development occur.
- Review and categorisation of laneways into 3 categories (unconstrained, partially constrained or highly constrained) in order to better understand their potential to currently accommodate additional traffic under their existing conditions and configuration. Key factors include laneway width, laneway length, laneway connections (i.e. continuous or dead-end) and physical layout (i.e. bends within the laneway network). These factors are discussed in more detail further in the report.
- High level review of the developmental changes forecast within the Built Form Framework in regards to traffic impacts, in particular the intensity of traffic movements and vehicle circulation within the surrounding road network within the Brunswick Street and Smith Street Activity Centres.

- Review of the capacity for laneways and local roads to accommodate the forecast level of traffic based on development potential and their existing configuration.
- Review of what configuration or adjustments may be necessary to laneways or local road configurations in order to accommodate this increase in vehicle movements and to minimise potential for vehicle conflicts within the study areas. In particular, impacts on Arterial Roads to be minimised as much as practically possible.
- Liaise with stakeholders including representatives from Council to understand the relevant authority concerns and desirable access outcomes having regard to the potential impact on the safety and efficiency of the road and tram network.
- Make recommendations as to the location and form of new, altered and retained access arrangements and laneways required to provide appropriate access to future developments.
- Prepare draft wording for the traffic engineering aspects of the future Design and Development Overlay, which sets out design objectives and outcomes, permit application requirements, and decision guidelines for assessing future planning permit applications, based on the desired access outcomes for future development.

# 3. Policy Context

## 3.1. Plan Melbourne 2017-2050

Plan Melbourne is the State Government plan that will guide the growth of Melbourne city for the next 35 years. It sets the strategy for supporting jobs, housing and transport, while building on Melbourne's legacy of distinctiveness, liveability and sustainability.

The plan includes a number of key transport and urban planning objectives that the Built Form Framework aims to facilitate. The most relevant objectives are listed in the table below.

*Table 1: Key Objectives of Plan Melbourne in relation to the Brunswick Street and Smith Street Activity Centres*

| Outcome | Directions | Policy |
|---|---|---|
| Outcome 2 Melbourne provides housing choice in locations close to jobs and services. | Manage the supply of new housing in the right locations to meet population growth and create a sustainable city. | Facilitate an increased percentage of new housing in established areas to create a city of 20-minute neighbourhoods close to existing services, jobs and public transport. |
| | Deliver more housing closer to jobs and public transport. | Facilitate well-designed, high-density residential developments that support a vibrant public realm in Melbourne's central city.<br>Direct new housing and mixed-use development to urban renewal precincts and sites across Melbourne.<br>Support new housing in activity centres and other places that offer good access to jobs, services and public transport |

| Outcome | Directions | Policy |
|---|---|---|
| | | Provide support and guidance for greyfield areas to deliver more housing choice and diversity. |
| Outcome 3 Melbourne has an integrated transport system that connects people to jobs and services and goods to market. | Transform Melbourne's transport system to support a productive city. | Provide high-quality public transport access to job-rich areas.<br>Improve arterial road connections across Melbourne for all road users.<br>Provide guidance and certainty for land use and transport development through the Principal Public Transport Network and the Principal Freight Network.<br>Improve the efficiency of the motorway network.<br>Support cycling for commuting. |
| | Improve local travel options to support 20-minute neighbourhoods. | Create pedestrian-friendly neighbourhoods.<br>Create a network of cycling links for local trips.<br>Improve local transport choices. |
| Outcome 5 Melbourne is a city of inclusive, vibrant and healthy neighbourhoods. | Create a city of 20-minute neighbourhoods. | Create mixed-use neighbourhoods at varying densities.<br>Support a network of vibrant neighbourhood activity centres. |
| | Create neighbourhoods that support safe communities and healthy lifestyles. | Improve neighbourhoods to enable walking and cycling as a part of daily life. |

## 3.2. State Planning Policy Framework (SPPF)

Clause 18 of the SPPF details state-wide objectives, strategies and policy guidelines relating to transport, including land use and transport planning, the transport system, walking, cycling, the principal public transport network, management of the road system, car parking ports, airports and freights.

The SPPF Transport objectives that are relevant to Yarra are set out in Table 2 below.

*Table 2: SPPF Transport Objectives*

| Clause | Objectives |
|---|---|
| **18.01-1 Land Use and Transport Planning** | To create a safe and sustainable transport system by integrating land-use and transport. |
| **18.01-2S Transport System** | To coordinate development of all transport modes to provide a comprehensive transport system. |
| **18.02-1S Sustainable Personal Transport** | To promote the use of sustainable personal transport. |
| **18.02-2S Cycling** | To integrate planning for cycling with land use and development planning and encourage as alternative modes of travel. |
| **18.02-2R Principal Public Transport Network** | To upgrade and develop the Principal Public Transport Network and local public transport services in Metropolitan Melbourne to connect activity centres, link activities in employment corridors and link Melbourne to the regional cities. |
| **18.02-3S Management of the Road System** | To manage the road system to achieve integration, choice and balance by developing an efficient and safe network and making the most of existing infrastructure. |
| **18.02-4S Car Parking** | To ensure an adequate supply of car parking that is appropriately design and located. |

A copy of Clause 18 of the Planning Scheme is attached at Appendix A, and details the strategies and policy guidelines relating to each of the objectives listed in Table 2.

Detailed state-wide requirements in relation to car parking, loading and bicycle parking are set out at Clause 52.06, 65.01 and 52.34 of the Planning Scheme respectively.

## 3.3. Local Planning Policy Framework

While Clause 18 sets out the state-wide planning policy in relation to transport, each Council also sets its own local policies at Clauses 20, 21 and 22 of the Planning Scheme.

Clause 21 sets out the Municipal Strategic Statement (MSS).

Clause 21.03 sets out the vision for the municipality, as follows:

*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.*

Clause 21.06 sets out Yarra's detailed local Transport policy. The preamble states the following:

*Yarra needs to reduce car dependence by promoting walking, cycling and public transport use as viable and preferable alternatives. This is also a key message of Melbourne 2030 and fundamental to the health and well-being of the community.*

*While the scope of the planning scheme in managing an integrated transport system is limited, Council will work towards improving the quality of walking and cycling infrastructure as a priority. Note that the term "walking" includes people who use wheelchairs.*

*Parking availability is important for many people, however in Yarra unrestricted car use and parking is neither practical nor achievable. Car parking will be managed to optimise its use and to encourage sustainable transport options.*

The specific objectives and strategies for Transport management in Yarra are detailed in Table 3 below.

*Table 3: LPPF Transport Objectives & Strategies*

| Clause | Objective | Strategies |
|---|---|---|
| **21.06-1 Walking & Cycling** | To provide safe and convenient pedestrian and bicycle environments. | 30.1 Improve pedestrian and cycling links in association with new development where possible.<br>30.2 Minimise vehicle crossovers on street frontages.<br>30.3 Use rear laneway access to reduce vehicle crossovers. |
| **21.06-2 Public Transport** | To facilitate public transport usage. | 31.1 Require new development that generates high numbers of trips to be easily accessible by public transport. |
| **21.06-3 The Road System & Parking** | To reduce the reliance on the private motor car. | 32.1 Provide efficient shared parking facilities in activity centres.<br>32.2 Require all new large developments to prepare and implement integrated transport plans to reduce the use of private cars and to encourage walking, cycling and public transport. |
| | To reduce the impact of traffic. | 33.1 ensure access arrangements maintain the safety and efficiency of the arterial and local road networks.<br>33.2 Ensure the level of service needed for new industrial and commercial operations does not prejudice the reasonable needs of existing industrial and commercial operations to access Yarra's roads. |

The City of Yarra is currently undertaking a review of a number of Municipal Strategic Statement (MSS) policy themes, including Transport.

Yarra's Planning Scheme Review – Report on Findings (October 2014) sets out the following in relation to the current Transport policy in the Planning Scheme:

> *An effective and efficient transport network is at the heart of a vibrant, equitable and prosperous municipality. In inner city environments, the management of the limited road and transport space and resources can require balancing of a number of objectives. This is a particular challenge in Yarra, due to the travel demands generated by:*
>
> - *the strategic location of the municipality on the edge of the central city*
> - *the significant and growing mobile population, and*
> - *the presence and proximity of major event attractors.*
>
> *Transport is currently addressed separately in the Context and Vision provisions of the Scheme as well as in strategy at Clause 21.06. It is also addressed in some specific policies such as the parking, access and traffic provisions of Built Form and Design Policy (Clause 22.10).*
>
> *The current policy expresses a preference to reduce car dependency and encourage walking, cycling and public transport use. This appears to have had some success, with Yarra having a higher bicycle use rate than other parts of Melbourne.*

*There are still, however, inconsistencies regarding the requirement for Green Travel Plans, the use of car share schemes and reductions or waiving of on-site car parking.*

*Carparking was considered a particularly contested political issue in the initial consultation; any position or strategy regarding carparking is unlikely to satisfy all stakeholders. The Parking Strategy and Local Area Transport Management Policy provides a framework for the development of local area traffic management schemes.*

*The Scheme would be assisted with clear direction about how Council seeks to facilitate greater use of public transport, walking and cycling, and how and in what circumstances this will translate into reduced car parking, car sharing schemes and the like. The approach should include consideration of car parking in activity centres on a precinct wide basis (rather than site-by-site) as well as strategies relating to visitor car parking and increased bicycle parking.*

Relevant additional policies and studies (which do not form part of the Planning Scheme) are summarised below.

### 3.3.1. Clause 22.07 – Development Abutting Laneways

The City of Yarra has a specific policy in relation to development abutting laneways.

The local policy identifies the need to retain existing laneways and enhance their amenity. It also states that, where appropriate, laneway access for vehicles is to be used in preference to street frontages to reduce vehicle crossovers.

Objectives

- To provide an environment which has a feeling of safety for users of the laneway.
- To ensure that development along a laneway acknowledges the unique character of the laneway.
- To ensure that where development is accessed off a laneway, all services can be provided to the development.
- To ensure that development along a laneway is provided with safe pedestrian and vehicular access.

Policy

It is policy that:

- Where vehicular movement in the laneway is expected to cause a material traffic impact, a traffic impact assessment report be provided to demonstrate that the laneway can safely accommodate the increased traffic.
- Where alternative street frontage is available, pedestrian access from the street be provided.
- Pedestrian entries be separate from vehicle entries.
- Pedestrian entries be well lit to foster a sense of safety and address to a development. Existing lights may need to be realigned, or have brackets or shields attached or additional lighting may be required.

- Lighting be designed to avoid light spill into adjacent private open space and habitable rooms.
- Vehicle access be provided to ensure ingress and egress does not require multiple vehicular movements.
- Windows and balconies overlook laneways but do not unreasonably overlook private open space or habitable rooms on the opposite side of the laneway.
- Development respect the scale of the surrounding built form
- Development not obstruct existing access to other properties in the laneway.
- Doors to car storage areas (garages) not protrude into the laneway.
- The laneway not be used for refuse storage.
- All laneway upgradings which provide improved access to the development be funded by the developer.
- The laneway meet emergency services access requirements.

### 3.3.2. Council Transport Statement 2006

City of Yarra's Strategic Transport Statement 2006 sets out a clear desire to reduce car dependence in the City of Yarra by promoting walking, cycling and public transport use as viable and preferable alternatives.

The Strategic Transport Statement sets out the following hierarchy of transport modes which forms the basis for decision making and actions related to transport in the City:

1. Pedestrians (including wheelchairs and walking with prams)
2. Cyclists
3. Tram
4. Bus/train
5. Taxi users/car sharers
6. Freight vehicles
7. Motorcyclists
8. Multiple occupants local traffic
9. Single occupants local traffic
10. Multiple occupants through traffic
11. Single occupants through traffic

The vision of Council's Transport Statement 2006 is … *"to create a city which is accessible to everyone irrespective of levels of personal mobility and where a fulfilling life can be had without the need for a car"*.

There are seven key Strategic Transport Objectives (STO) to achieve this vision.

Of particular relevance is STO 5, which is to … *"ensure Council's response to parking demand is based on Yarra's hierarchy and sustainable transport principles"*.

### 3.3.3. Transport Statement Review 2012

The City of Yarra's Strategic Transport Statement was reviewed in 2012.

Relevant key actions include the following:

- *Develop guidelines for assessing planning permit applications for car parking dispensation.*
- *Develop guidelines for car share operators that address the issues of location, number of bays and signage so that operators are clear as to the process and responsibilities.*

### 3.3.4. Yarra Parking Management Strategy

The Yarra Parking Management Strategy provides the framework around Yarra's policies for parking permit schemes, parking enforcement, the provision of disability access parking, managing parking around shopping strips, signage and all other parking-related issues and topics.

Council's website states that 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 this strategy is Council's desire to promote sustainable travel, such as cycling, walking and public transport.

Action Area 4 of Council's Parking Management Strategy is an integrated approach for Municipal Parking Strategy and in particular identifies a need to further develop Yarra's policy to provide a disincentive to car ownership and use by working with other sections of Council to promote behaviour change, sustainable transport and introduce more sustainable transport infrastructure.

### 3.3.5. Liveable Yarra Project

In 2015 Council undertook an extensive community engagement process known as the "Liveable Yarra Project". The consultation consisted of a number of elements including a People's Panel, Advisory Committees, and Targeted Community Workshops, and covered a range of topics, one of which was "Access and Movement".

The "engagement summary" document prepared by Capire Consulting Group (January 2016) summarised the consultation in relation to access and movement as follows:

> *"Access and movement received the highest number of priority votes at 64. Actions around the improvement of cycling, walking and non-automotive transport modes were strongly supported. Panel members suggested trialling street closures to "reclaim" street share for cyclists and pedestrians. The trade-off of busier arterials was seen as largely acceptable pending the trials. Panel members were very supportive of Council efforts to lobby for public transport upgrades."*

The specific Access and Movement recommendations which were summarised in the "engagement summary" document are as set out in Table 4 below.

*Table 4: Summary of Parking Recommendations from Liveable Yarra Project*

| Action No. | Action | Support from People's Panel |
|---|---|---|
| **1** | Articulate targets for street share. Develop a municipality wide plan for transport and access. | 86% support<br>12% not sure<br>2% disagree |
| **2** | Close local (residential) streets to through traffic including living streets. | 36% support<br>48% not sure<br>16% disagree |
| **3** | Increase space for pedestrians and bikes, dedicated lanes/corridors. Decrease car space on the streets. | 63% support<br>22% not sure<br>15% disagree |
| **4** | Require better bicycle parking as part of major development. | 76% support<br>14% not sure<br>10% disagree |
| **5** | Reduce barriers that discourage riding, improve safety, connections, lighting. Council to provide additional cycling infrastructure – a comprehensive network that consistently provides a good level of service. | 75% support<br>18% not sure<br>7% disagree |
| **6** | Move away from a "predict and provide" approach to providing car parking in new development. | 86% support<br>12% not sure<br>2% disagree |
| **7** | Continue to work with State Government to improve performance of current public transport infrastructure assets. | 36% support<br>48% not sure<br>16% disagree |
| **8** | Continue lobbying for improved public transport (new infrastructure and services). | 63% support<br>22% not sure<br>15% disagree |

# 4. Brunswick Street/Smith Street Built Form Framework

Brunswick Street and Smith Street are important commercial and retail areas within the Yarra Local Government Area that has been identified in State and local planning policy documents as an area suitable for accommodating significant residential and commercial growth, principally through redevelopment of sites and development in new upper levels to existing buildings.

Built Form Frameworks are being prepared for the Brunswick Street and Smith Street Activity Centres. These provide recommendations in relation to building heights and setbacks, amongst other areas and will guide the future form and development in these centres.

This report informs and supports the traffic engineering aspects of the Built Form Framework. It seeks to manage the impact of new development by encouraging appropriate vehicle access outcomes, in particular the use of side and rear frontages for vehicle access instead of arterial roads. This strategy is important to promoting pedestrian and cycle friendly environments and support public transport services along these roads.

The development outcomes proposed under the Built Form Framework have been taken into account when formulating our recommendations. In particular, the envisioned development intensity abutting and accessing the local road/laneway network has been a key factor in the recommendations of this report. The main focus of this report is adjoining properties to the arterial road network and higher order roads.

# 5. Existing Conditions

## 5.1. Study Areas

The study areas extend for approximately 1.7km long sections of Brunswick Street and Smith Street between Alexandra Parade and Victoria Parade. The study area also includes sections of Johnston Street, Gertrude/Langridge Street and Alexandra Parade.

This is shown in the locality plan provided on the following page at Figure 1.

Land within the study areas is generally zoned ‘Commercial 1 Zone’ and ‘Mixed Use Zone’, as shown in Figure 2. Both figures show the overall study area, in addition to the area of focus of this report, which includes all properties adjacent to arterial roads and higher order roads

Significant land uses within the vicinity of the study area include:

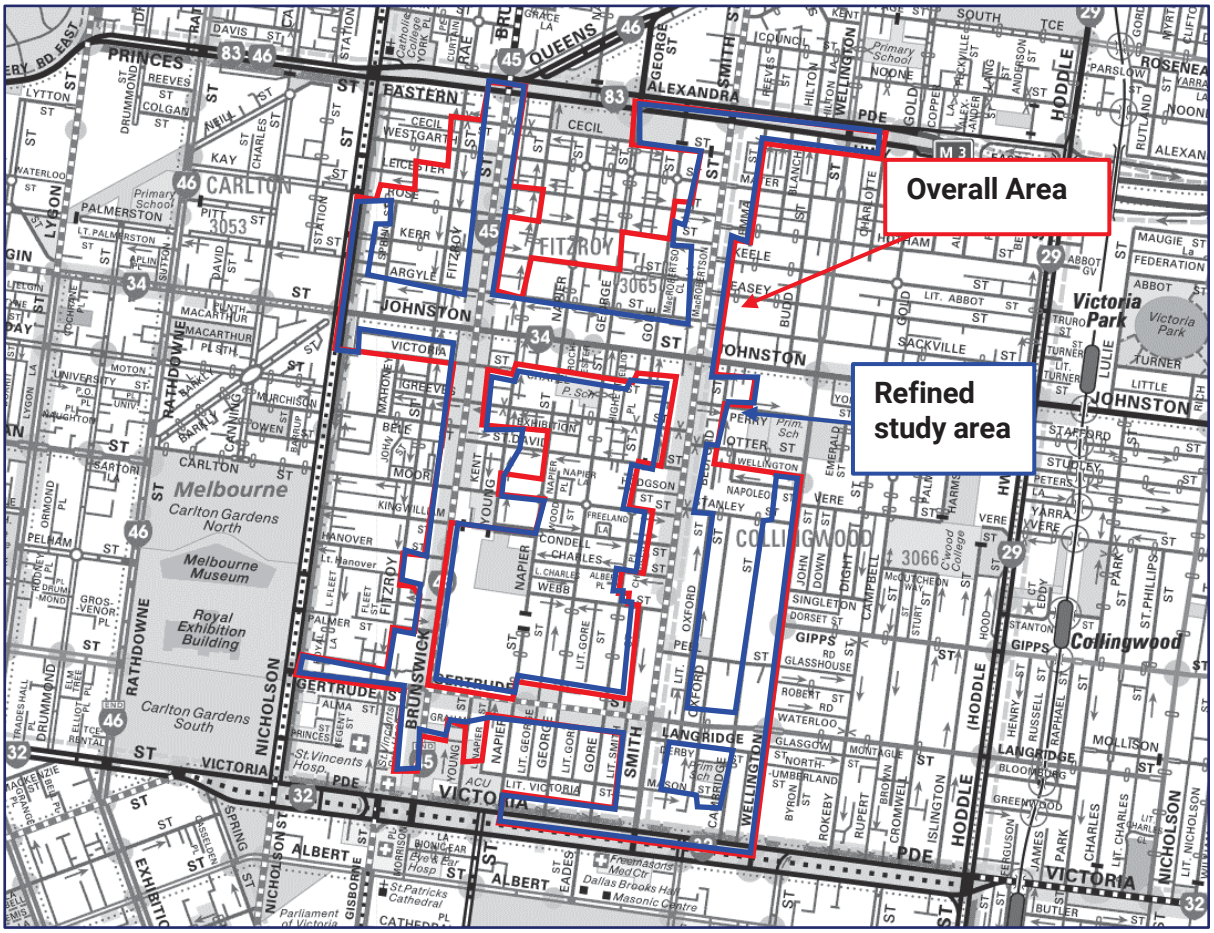
- Smith Street Reserve/Fitzroy Swimming Pool, located on Alexandra Parade, between Young Street and George Street.
- Fitzroy Primary School, located on Chapel Street, between Napier Street and George Street.
- Melbourne Polytechnic (Collingwood), located east of Smith Street, between Perry Street and Otter Street.

- St Josephs Primary School, located on Wellington Street, between Perry Street and Otter Street.
- Sacred Heart Primary School, located on Young Street, between Moor Street and King William Street.
- Fitzroy Town Hall, located corner of Moor Street and Napier Street.
- Atherton Reserve, located corner of Napier Street and King William Street.
- Academy of Mary Immaculate Secondary College, located on Nicholson Street between Hanover Street and Palmer Street.
- St Vincents Hospital, located corner of Nicholson Street and Victoria Parade.
- Australian Catholic University, located corner Brunswick Street and Victoria Parade

In the wider area, the following Activity Centres and key land uses are located in close proximity to the study area:

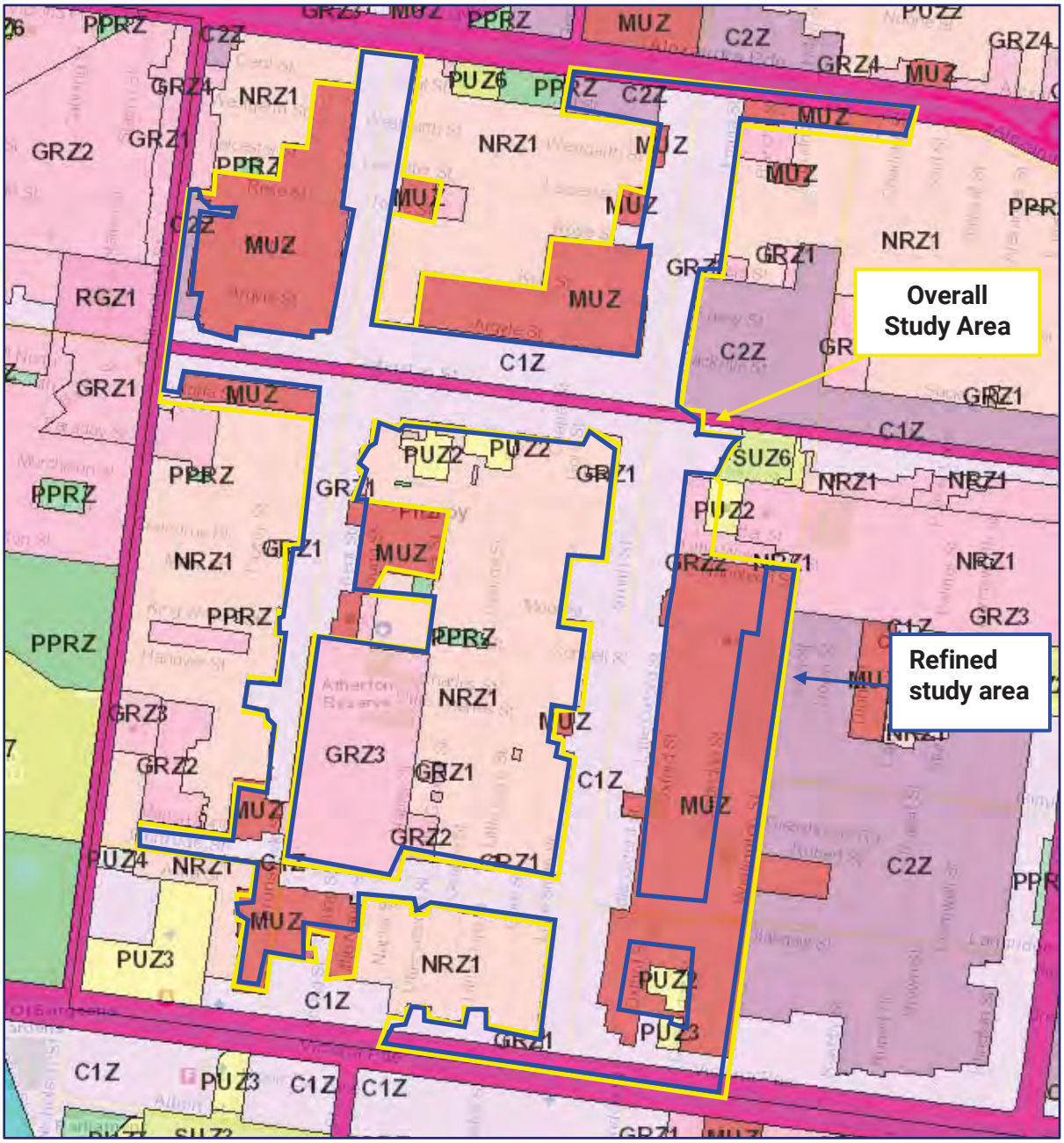
- Carlton Gardens/Melbourne Museum, located adjacent to the study area on the west.
- The Melbourne CBD (Hoddle Grid) begins approximately 450m south-west of the study area.
- The Victoria Street Activity Centre begins approximately 550m east of the study area.
- The Melbourne Cricket Ground, located approximately 1km south of the study area.
- The Bridge Road Activity Centre, located approximately 1km south-east of the study area.

All of these areas are readily accessible from the study area via walking, cycling or a short public transport trip.




Source: Melway

*Figure 1: Locality map*




Source: Planning Schemes Online

*Figure 2: Land use zoning map*

## 5.2. Road Network

The following section describes the higher order roads within the study areas. This study has also reviewed the local roads and laneways within the study area.

A detailed review of the existing traffic management measures on arterial and local roads within the study areas is provided at Appendix B.

A detailed review of the existing conditions of ROWs is included at Appendix C of this report.

A map of existing vehicle access points to properties within the study area abutting arterial roads is included at Appendix D of this report.

There are a total of 5 Council arterial roads and 4 VicRoads arterial roads (Road Zone Category 1) within the study area. These are summarised in the following table.

*Table 5: Summary of Arterial Roads*

| Road Name | General Configuration | Speed Limit | Notes |
|---|---|---|---|
| Council Arterial Roads | | | |
| Brunswick Street | Traffic lane, parking lane and bicycle lane in each direction, separated by painted median | 40km/h | Central lane shared with trams |
| Smith Street | Traffic lane and shared bicycle/parking lane in each direction, separated by painted median | 40km/h | Central lane shared with trams |
| Wellington Street | Traffic lane and shared bicycle/parking lane in each direction, separated by painted median | 40km/h | To the south of Gipps Street, the bicycle lane is provided via Copenhagen style lanes. |
| Gertrude Street | Traffic lane and shared indented parking/bicycle lane in each direction | 40km/h | Central lane shared with trams, becomes Langridge Street to the west of Smith Street |
| Langridge Street | Traffic lane, parking lane and bicycle lane in each direction, separated by painted median | 40km/h | Becomes Gertrude Street to the east of Smith Street |
| VicRoads Arterial Roads | | | |
| Alexandra Parade | Three traffic lanes and a parking lane in each direction, separated by a central median | 60km/h | There are sections where a bicycle lane is provided, however this is not continuous |
| Johnson Street | A traffic lane and shared bus lane/kerbside parking lane in each direction. There is also a central contraflow traffic lane. | 40km/h 7am-3am, 60km/h all other times. | AM and PM clearway restrictions apply to the south and north kerbside lanes, at which times these lanes become dedicated bus lanes |

| Road Name | General Configuration | Speed Limit | Notes |
|---|---|---|---|
| Victoria Parade | Three traffic lanes, a bus lane and a parking lane in each direction, separated by a central median. Tram tracks are provided within the central median. | 60km/h | The bus lane is shared with cyclists. |
| Nicholson Street | Two traffic lanes in each direction, separated by a central tram fairway. Kerbside parking is also provided at sections of the road | 60km/h to the north of King William Street, 40km/h to the south | - |

### 5.2.1. Arterial Road Traffic Volumes

The following table sets out the Average Annual Daily Traffic Volumes of the arterial roads within the study area. This information is sourced from the VicRoads Arterial Road Database (April, 2018). Data is only available for the VicRoads arterial roads and does not include those operated by Council.

*Table 6: Arterial Road Traffic Volumes (Source: VicRoads Arterial Road Database – April 2018)*

| Road Name | Average Annual Daily Traffic Volume |
|---|---|
| Alexandra Parade | |
| Btw Nicholson/Brunswick | 77,000 |
| Btw Queens/George | 71,000 |
| Btw Smith/Wellington | 66,000 |
| Johnson Street | |
| Btw Nicholson/Brunswick | 19,300 |
| Btw Brunswick/Smith | 20,000 |
| Btw Smith/Wellington | 18,400 |
| Victoria Parade | |
| Btw Nicholson/Gisborne | 36,000 |
| Btw Gisborne/Brunswick | 42,000 |
| Btw Brunswick/Lansdowne | 48,000 |
| Btw Lansdowne/Smith | 40,000 |

| Road Name | Average Annual Daily Traffic Volume |
|---|---|
| Btw Smith/Clarendon | 43,000 |
| Btw Clarendon/Wellington | 46,000 |
| Nicholson Street | |
| Btw Victoria/Gertrude | 17,200 |
| Btw Gertrude/Johnson | 17,300 |
| Btw Johnson/Princes | 20,000 |

### 5.2.2. Traffic Conditions

Key intersections along Brunswick Street and Smith Street and the surrounding arterial road network are operating at or near capacity during peak hours. Various traffic analysis conducted by Traffix Group and other consultants have found that these intersections operate at or near capacity during the commuter peak hours, with congestion on one or more legs at various times.

The provision of Clearways at commuter peak hours along Johnson Street provides addition capacity in the peak direction, however congestion is still experienced at other times of the day and on the weekend.

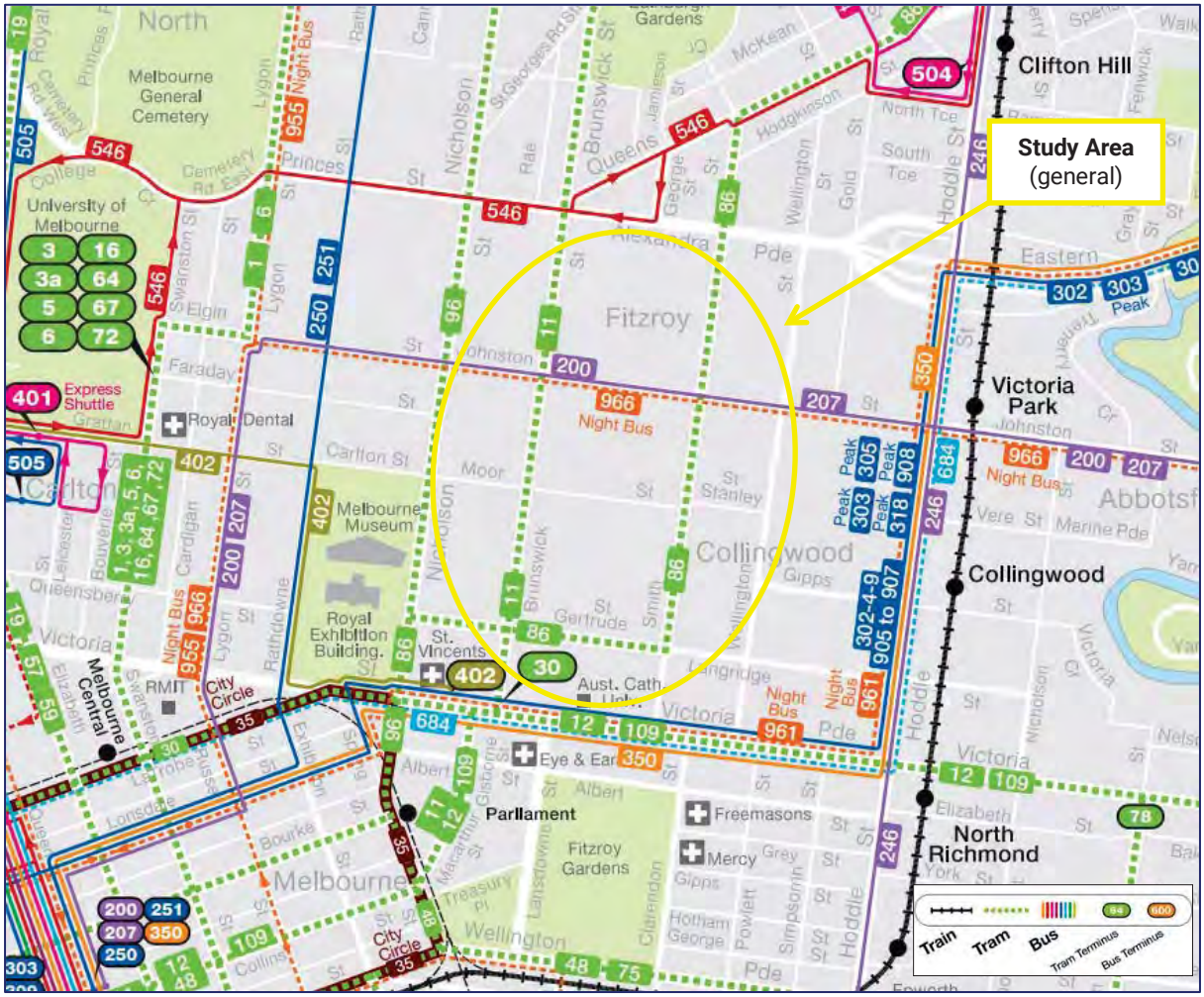
## 5.3. Public Transport

The subject site is located in an area that is well serviced by tram, bus and rail services as follows:

- Tram Route 11 operates between West Preston and Docklands via Northcote, Fitzroy and the city and runs along Brunswick Street.
- Tram Route 86 operates between Bundoora and Docklands via Northcote, Preston Collingwood and the city and runs along Smith Street and Gertrude Street.
- Tram Route 12 operates between Victoria Gardens and St Kilda via Richmond, the city and South Melbourne and runs along Victoria Parade.
- Tram Route 109 operates between Box Hill and Port Melbourne via Mont Albert, the city and Southbank and runs along Victoria Parade.
- Tram Route 96 operates between East Brunswick and St Kilda Beach via Fitzroy, the city, Southbank and Albert Park and runs along Nicholson Street.
- Two bus routes and a night bus operate along Johnson Street (Bus Route 200 and 207, plus additionally NightBus Route 966).
- A total of 11 different bus services operate along Hoddle Street to the east of the study area, adjacent to the Victoria Parade/Hoddle Street intersection.

- Parliament Railway Station, which is a part of the City Loop, is located to the south-west of the study area.

These public transport services are shown on the Public Transport Map at Figure 3 below.




Source: Public Transport Victoria

*Figure 3: Public Transport Map*

## 5.4. Sustainable Transport Modes

The study area is well served by alternative transport modes. Figure 4 below shows the Travel Smart Map for the study area.


Source: City of Yarra

*Figure 4: Travel Smart Map*

### 5.4.1. Car Share

As shown on the TravelSmart map at Figure 4, there are a number of car share vehicles located within the study area and surrounding streets.

The provision of these car share vehicles provides drivers with a viable alternative to owning their own personal vehicle and actively encourages the use of alternative transport modes. Residents within Fitzroy and Collingwood do not need a car for everyday trips as they have convenient access to public transport and are within convenient walking and cycling distance of many activities within the Melbourne CBD and nearby Activity Centres. Car share vehicles provide a car on demand for those trips that specifically require a vehicle.

### 5.4.2. Cycling

Brunswick Street and most of Smith Street are nominated as an informal bicycle routes. On-road bicycle lanes are provided on several nearby roads including Napier Street, George Street, Gore Street and Wellington Street. An off-road bicycle route is also located along Hoddle Street. It is of note that Nicholson Street, Brunswick Street, Wellington Street, Alexandra Parade and Victoria Street area all part of the Principal Bicycle Network (PBN)

The high level of bicycle infrastructure within and surrounding the study area provides cyclists with convenient access to the surrounding suburbs. Wellington Street is also part of the Strategic Cycling Corridor (SCC) which the State Government is currently planning.

### 5.4.3. Walking

The study area is highly walkable with many everyday services and destinations within convenient walking distance. The Walkscore[3] map for Collingwood and Fitzroy is below, with most areas of Collingwood scoring well over 92 and Fitzroy scoring 99 (classified as a 'Walkers Paradise'). The Melbourne CBD, Lygon Street, Victoria Street and Bridge Road are all within a walkable distance from Brunswick Street and Smith Street.

[3] https://www.walkscore.com/AU-VIC/Melbourne/Collingwood and https://www.walkscore.com/AU-VIC/Melbourne/Fitzroy


Source: Walkscore.com

*Figure 5: Walkscore Map – Collingwood and Fitzroy*

## 5.5. Demographics

The majority of new dwellings within the study area will be apartment style dwellings. A review of car ownership statistics for 'flats units and apartments' within the suburbs of Fitzroy and Collingwood and the City of Yarra highlights the following average car ownership statistics. This data was recorded by the Australian Bureau of Statistics (ABS) in the 2016 census.

These statistics indicate that the parking requirements for dwellings set out under Clause 52.06-5 of the Planning Scheme are generally higher than the car ownership statistics for households residing within apartments in Fitzroy and Collingwood. Not only are the average car ownership rates lower than Clause 52.06-5., there is a considerable proportion of households that do not require car parking including 44-48% of one-bedroom and 31-35% of two-bedroom households.

*Table 7: ABS car ownership statistics (2016) – Apartments*

| Type of Dwelling | Number of Cars | Fitzroy Suburb | Collingwood Suburb | Yarra LGA |
|---|---|---|---|---|
| **Studio/Bedsit Flat/Unit/Apartment** in one or more storey block | **Average no. of cars per dwelling** | **0.1** | **0.2** | **0.3** |
| | 0 cars | 86% | 82% | 73% |
| | 1 car | 14% | 18% | 25% |
| | 2 or more cars | 0% | 0% | 3% |
| **1 bedroom Flat/Unit/Apartment** in one or more storey block | **Average no. of cars per dwelling** | **0.6** | **0.6** | **0.7** |
| | 0 cars | 48% | 44% | 38% |
| | 1 car | 46% | 51% | 55% |
| | 2 or more cars | 6% | 5% | 7% |
| **2 bedroom Flat/Unit/Apartment** in one or more storey block | **Average no. of cars per dwelling** | **0.8** | **0.9** | **0.9** |
| | 0 cars | 35% | 31% | 26% |
| | 1 car | 52% | 54% | 56% |
| | 2 or more cars | 13% | 15% | 19% |
| **3 bedroom Flat/Unit/Apartment** in one or more storey block | **Average no. of cars per dwelling** | **1.1** | **1.0** | **1.2** |
| | 0 cars | 26% | 23% | 20% |
| | 1 car | 49% | 56% | 48% |
| | 2 or more cars | 25% | 20% | 25% |

### 5.5.1. Journey to Work Data

A review of Journey to Work data for the suburbs of Fitzroy and Collingwood, the City of Yarra and the Greater Melbourne highlights the following statistics. This data was recorded by the Australian Bureau of Statistics (ABS) in the 2016 Census.

This data highlights a much stronger reliance on public transport, walking and cycling for those living (in particular) and working within the study area compared with the Melbourne metropolitan area.

*Table 8: Journey to Work Data: 2016 Census, ABS*

| % mode of travel for 'journey to work' trip | Live within the area (i.e. place of residence) | | | | Work within the area (i.e. place of work) | | | |
|---|---|---|---|---|---|---|---|---|
| | Fitzroy | C.wood | City of Yarra | Greater Melb. | Fitzroy SA2 | C.wood SA2 | City of Yarra | Greater Melb. |
| Car as driver | 25% | 27% | 33% | 61% | 36% | 48% | 49% | 61% |
| Public Transport | 24% | 27% | 28% | 15% | 30% | 24% | 24% | 14% |
| Walking | 24% | 19% | 12% | 3% | 8% | 7% | 6% | 3% |
| Cycling | 8% | 8% | 9% | 1% | 6% | 5% | 4% | 2% |
| Other (car passenger, motorcycle, etc.) | 5% | 5% | 5% | 6% | 5% | 6% | 4% | 5% |
| Other Data (worked at home, did not go to work, mode not stated) | 14% | 14% | 13% | 14% | 15% | 10% | 13% | 15% |

# 6. Transport Impacts

The primary purpose of this study is to review the traffic engineering implications of the implementation of an amendment to the Planning Scheme, which introduces a range of built form controls to the Yarra Planning Scheme. This amendment is required to implement the recommendations of the Brunswick Street and Smith Street Built Form Review prepared by Hansen Partnership.

The key transport engineering impact of the proposed controls is the direction to use rear laneways for vehicle access to new developments wherever possible and avoid new crossovers to arterial roads within the study area. As a result, the use of the laneways with the study area will increase, in some cases substantially. This study reviews the potential impacts of new development and makes recommendations to manage the increased use of these laneways.

The following sections provide:

- An overview of the likely traffic impacts of increased development within the study area, by reviewing a case study of Victoria Street, Richmond.
- A description of why laneways should be used for vehicle access.
- An outline of the methodology behind our categorisation of laneways within the study area.
- A description of laneway characteristics and how these affect the capacity of laneways to accommodate vehicles, pedestrians and cyclists.
- A detailed description for each of the options considered to improve the laneway network.
- Analysis of the potential capacity of each laneway to accommodate additional traffic and recommendations to improve individual laneways.

## 6.1. Traffic Impacts Along Arterial Roads in Study Area

In order to assess the likely traffic impacts of increased development along the arterial roads within the study area, we have undertaken a case study and review of Victoria Street, Richmond. The review generally covers the period between 2006 and 2016.

Victoria Street is similar to the arterial roads within the study area in that is a key arterial road and transport link through Melbourne's inner suburbs and the CBD.

In April, 2010, Yarra City Council adopted the Victoria Street Structure Plan, a document that built on planning work that occurred between 2002 and 2010. Since that time, significant redevelopment has occurred, particularly within the eastern and western precincts identified by this structure plan.

The following reviews the changes to Victoria Street and the changes in transport along Victoria Street as a model for how the study area may evolve over time.

### 6.1.1. Case Study – Victoria Street Activity Centre

The number of people living within the Richmond Statistical Local Area has increased from 23,797 people in in 2001 to 26,121 in 2011[4], which is a 9.7% increase over that time period.

Yarra City Council has provided data on the increased development that has occurred directly adjacent to Victoria Street in the last 10 years. This data was sourced from the valuation and permit information data by Council and Housing Dwelling Development data provided by the State Government.

Table 9 sets out the change in dwelling numbers along Victoria Street.

Table 10 sets out the change in commercial floor space along Victoria Street.

*Table 9: Change in Dwelling Numbers along Victoria Street – 2007-2016*

| Year | Total Dwellings | Yearly Change | Net Change Since 2007 |
|---|---|---|---|
| 2007 | 135 | | |
| 2008 | 139 | +4 | +4 |
| 2009 | 200 | +61 | +65 |
| 2010 | 254 | +54 | +119 |
| 2011 | 347 | +93 | +212 |
| 2012 | 626 | +279 | +491 |
| 2013 | 1499 | +873 | +1364 |
| 2014 | 2119 | +620 | +1984 |
| 2015-2016 | 2490 | +371 | +2355 |

The change in dwelling density is highlighted in the following two maps.

[4] 2016 data is not available at the time of writing.

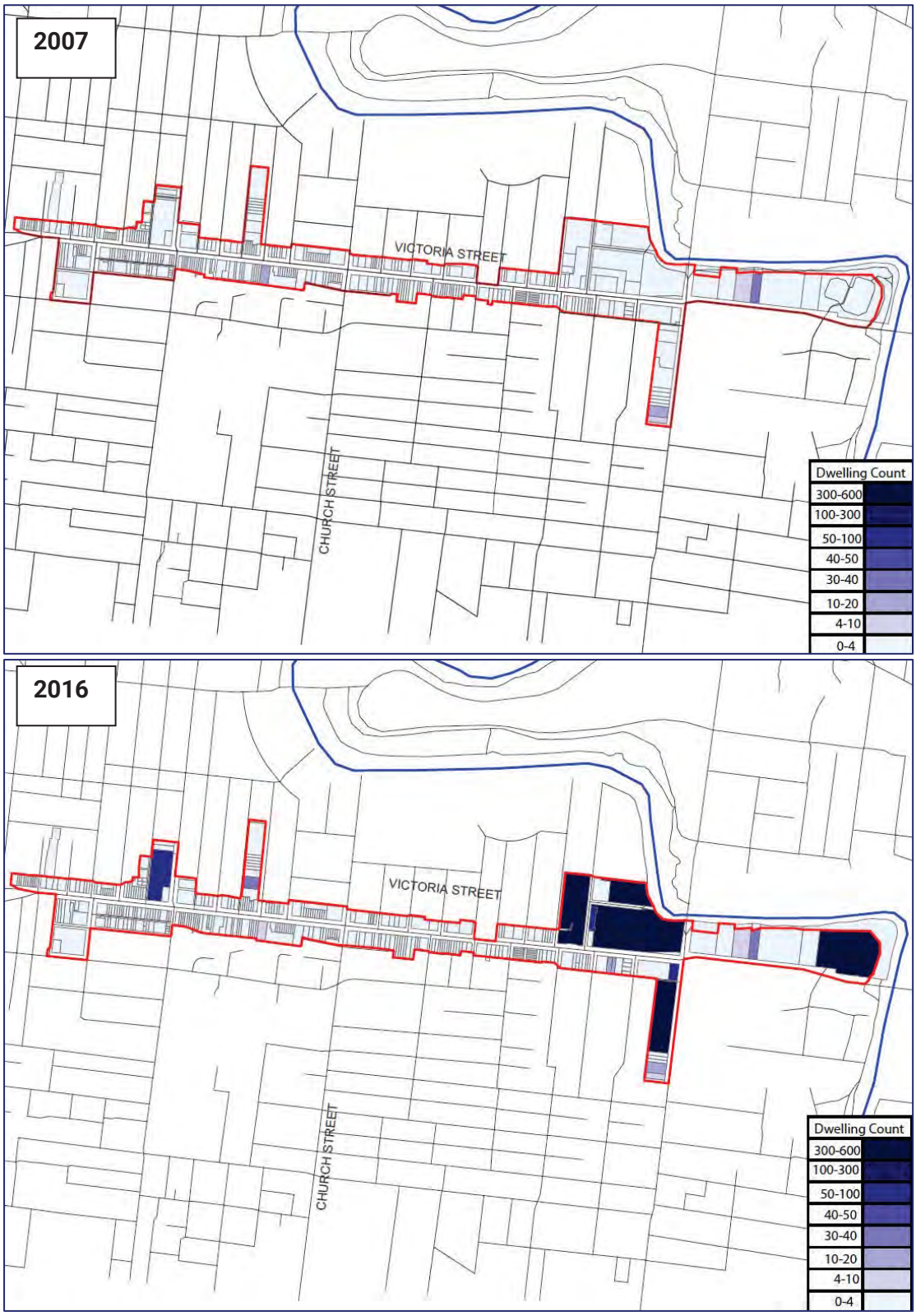



*Figure 6: Change in dwelling density – 2007-2016*

*Table 10: Change in Commercial Floor Space along Victoria Street – 2007-2013*

| Year | Commercial Floor Space | Yearly Change | Net Change Since 2007 |
|---|---|---|---|
| Pre-2007 | 46,737m$^2$ | | |
| 2009 | 45,006m$^2$ | -1,731m$^2$ | -1,731m$^2$ |
| 2010 | 46,609m$^2$ | 1,603m$^2$ | -128m$^2$ |
| 2013 | 42,814m$^2$ | -3,795m$^2$ | -3,923m$^2$ |

### 6.1.2. Review of Arterial Road Traffic Volumes

The following presents a review of arterial road traffic volumes over the last 10 years of available data for the three key parallel traffic routes through Richmond, Swan Street, Victoria Street and Bridge Road. This is set out in detail in Table 6.

*Table 11: Arterial Road Traffic Volumes (Source: VicRoads Arterial Road Database - Feb 2017)*

| Road Name | Two-Way Annual Average Daily Traffic Volume[1] by Year | | | | | |
|---|---|---|---|---|---|---|
| | 2006 | 2013 | 2014 | 2015 | 2016 | Change 2006-2016 |
| **Swan Street** | | | | | | |
| Btw Church/Lennox | 18,000 | 17,800 | 17,300 | 17,200 | 17,200 | -800 |
| Btw Coppin/Church | 21,000 | 21,000 | 20,600 | 20,300 | 20,300 | -700 |
| Btw Burnley/Coppin | 19,600 | 20,300 | 20,200 | 20,300 | 20,200 | +600 |
| Btw Madden/Burnley | 15,300 | 15,600 | 15,600 | 15,600 | 15,200 | -100 |
| **Victoria Street** | | | | | | |
| Btw Church/Hoddle | 22,700 | 18,600 | 18,300 | 18,200 | 18,000 | -4,700 |
| Btw Burnley/Church | 22,000 | 20,000 | 18,800 | 18,500 | 18,300 | -3,700 |
| Btw High/Burnley | 24,000 | 23,000 | 23,000 | 23,000 | 23,000 | -1,000 |
| **Bridge Road** | | | | | | |
| Btw Hoddle/Lennox | 20,000 | 18,400 | 18,300 | 18,300 | 17,900 | -2,100 |
| Btw Lennox/Church | 19,500 | 18,700 | 18,500 | 18,400 | 18,200 | -1,300 |
| Btw Church/Coppin | 22,000 | 20,800 | 19,500 | 19,500 | 18,600 | -3,400 |

| Road Name | Two-Way Annual Average Daily Traffic Volume[1] by Year | | | | | |
|---|---|---|---|---|---|---|
| | 2006 | 2013 | 2014 | 2015 | 2016 | Change 2006-2016 |
| Btw Coppin/Burnley | 23,000 | 20,700 | 20,600 | 20,600 | 20,600 | -2,400 |
| Btw Burnley/Yarra | 27,000 | 24,000 | 24,000 | 23,000 | 23,000 | -4,000 |
| Note: Annual Average Daily Traffic Volume is the sum of all traffic over the year divided by 365 | | | | | | |

The above illustrates that arterial road traffic volumes have generally fallen between 2006 and 2016. Traffic volumes on Victoria Street in particular have fallen substantially over the last 10 years. There has not been a significant change to the traffic carrying capacity of these streets within this time period[5].

Furthermore, this decrease in traffic volumes is also reflected at key intersections during the commuter peak hours. Table 12 provides a comparison between current and historical data for two key intersections along Victoria Street and illustrates a drop in traffic volumes at these locations during peak hours. The Burnley Street/Victoria Street and Flockhart Street/Victoria Street intersections are the closest signalised intersections to where the highest level of development has occurred.

*Table 12: Review of Peak Hour Traffic on Victoria Street*

| Intersection & Year of Survey | Two-Way Peak Hour Traffic Volume on Victoria Street | |
|---|---|---|
| | AM Peak | PM Peak |
| **Flockhart Street (west of)** | | |
| 2006[1] | 2,203 | 2,267 |
| 2015[2] | 1,827 | 1,957 |
| Change | -376 (-21%) | -310 (-16%) |
| **Burnley Street (east of)** | | |
| 2012[3] | 1,933 | 1,831 |
| 2016[4] | 1,709 | 1,649 |
| Change | -224 (-13%) | -182 (-11%) |
| Notes:<br>Data collected by Grogan Richards dated 11th July, 2006.<br>Data sourced from VicRoads by Cardno, dated 11-15th May, 2015.<br>Data sourced from VicRoads by Traffix Group, dated 7th June, 2012.<br>Data collected by Ratio Consultants dated 14th April, 2016. | | |

[5] Accessible tram stops were installed in Bridge Road in 2013 and Victoria Street in 2016, however these continue to accommodate two traffic lanes during clearway times.

### 6.1.3. Review of Travel to Work Behaviour from ABS Data

The following tables review the journey to work data sourced from the Australian Bureau of Statistics for the period from 2001 to 2016. Table 13 presents data for journey to work based on place of residence within the City of Yarra.

Table 14 presents data for journey to work for people working within the Richmond Statistical Local Area (workers do not necessarily need to reside within Richmond).

The data indicates a clear trend over time for a decrease in the mode share of private cars. For people living within the City of Yarra, this decrease is realised by an increase in bicycle and walking trips. This is a strong indication of local living and working locally.

For people working within Richmond, the decrease in mode share of cars is higher. The change has resulted in a significant increase in public transport use (an almost 90% increase) and to a lesser extent walking and cycling. This is reflective of residents outside of Richmond travelling further and accordingly cycling and walking in particular are not a suitable mode for these longer trips.

*Table 13: Journey to Work Data - Place of Residence within City of Yarra*

| Mode of Travel | Year | | | | Change 2001-2016 |
|---|---|---|---|---|---|
| | 2001 | 2006 | 2011 | 2016 | |
| Car as Driver | 48% | 43% | 40% | 38% | -10% |
| Car as Passenger | 4% | 3% | 3% | 2% | -2% |
| P/Trans | 30% | 28% | 30% | 32% | +2% |
| Motorcycle | 1% | 1% | 1% | 1% | - |
| Bicycle | 5% | 8% | 10% | 10% | +5% |
| Walked | 11% | 15% | 13% | 14% | +3% |
| Other | 1% | 2% | 3% | 3% | +1% |
| Total | 100% | 100% | 100% | 100% | |

*Table 14: Journey to Work Data - Place of Work within Richmond SLA*

| Mode of Travel | Year | | | | Change 2001-2016 |
|---|---|---|---|---|---|
| | 2001 | 2006 | 2011 | 2016 | |
| Car as Driver | 73% | 67% | 61% | 56% | -12% |
| Car as Passenger | 5% | 4% | 4% | 3% | -1% |
| P/Trans | 15% | 19% | 24% | 28% | +13% |
| Motorcycle | 0% | 1% | 1% | 1% | +1% |
| Bicycle | 1% | 2% | 3% | 4% | +3% |
| Walked | 5% | 6% | 6% | 7% | +1% |
| Other | 1% | 1% | 1% | 1% | - |
| Total | 100% | 100% | 100% | 100% | |

### 6.1.4. Change in Public Transport Services

The key public transport service for Victoria Street is tram services that run the length of the Activity Centre. Victoria Street is currently serviced by the following tram routes:

- Route 109 – service between Box Hill and Port Melbourne via the CBD.
- Route 12 – service between Victoria Gardens and St Kilda. This route commenced operation in July, 2014[6].

The changes in July, 2014 doubled the number of services between Victoria Street, Richmond and the CBD. While Tram Route 24 was removed at the same time, this service only operated during the AM and PM peak periods (approximately 7-9am and 4:30-6:30pm).

On Church Street, the peak hour only service Route 79 was terminated with Route 78 being extended to operate more than 18 hours per day.

Bus Route 684 used to operate along Victoria Street, however this service did not stop along Victoria Street (service between the CBD and Eildon via Healesville).

The key public transport service on Victoria Street is the tram services along Victoria Street and these have significantly improved in frequency over the last 10 years.

[6] http://web.archive.org/web/20140726093749/http://www.yarratrams.com.au/media-centre/news/articles/2014/capacity-boost-for-tram-passengers/

### 6.1.5. Increase in Bicycle Use

As set out above, the mode share of bicycles for journey to work purposes has increased from 5% to 10% by residents of Richmond and increased from 1% to 4% for employees within Richmond.

For Victoria Street, the Super Tuesday bicycle counts undertaken by Bicycle Network illustrate an increase in cycling numbers. The Super Tuesday counts are undertaken on an annual basis over the surveyed two hour, 7-9am commuter peak hour.

For the intersection of Victoria Street/Burnley Street/Walmer Street (which connects to the Capital City Trail along the Yarra River), the number of cyclists increased from 298 to 483 cyclists over the two hour period between 2011 and 2015 (62% increase).

### 6.1.6. Rise of Car Share

Car sharing schemes provide an alternative to car ownership for residents and actively encourage the use of alternative transport modes. Residents within Richmond do not need a car for everyday trips as they have easy access to public transport and are within convenient walking and cycling distance of many activities within the Melbourne CBD and Activity Centres. Car share vehicles provide a car on demand for those trips that specifically require a vehicle.

A study by Phillip Boyle & Associates (dated 18th June, 2015) was recently completed on behalf of the City of Melbourne, which reviewed car share policy in the City of Melbourne. This review found that car share significantly reduced car ownership and car use by members. The review identified that each new car share vehicle results in residents disposing of 10 privately owned vehicles (a net reduction of nine vehicles).

The study found that car ownership is reduced by:

- People replacing a private car with a car share membership as it is more cost-effective if you travel low kilometres (less than 15,000km per annum) and use alternative modes for many trips, and
- People who do not own a car, postpone or avoid purchasing a car by using a car share service.

In 2006, car share was in its infancy. The two leading car share company's today in Melbourne are Fleixcar (founded in 2004) and GoGet (arrived in Melbourne in 2004).

There are now multiple car share pods operated by three companies within close proximity of Victoria Street. The availability of these car share pods supports residents who do not own a car and businesses by providing a share car for work based business trips (which allows employees not to drive to work).

### 6.1.7. Summary of Case Study and Implications for Study Area

Based on the above, the following conclusions can be drawn from the development of Victoria Street over the last 10 years:

- Victoria Street has experienced significant development over the last 10 years, with over 3,000 new dwellings being constructed on properties that directly abut Victoria Street.
- The daily volume of traffic on Victoria Street has decreased, in some sections by up to 25%.
- Sustainable transport modes for journey to work purposes have significantly increased within the City of Yarra and Richmond for both residents and employees in Richmond.
- Public transport services (trams) on Victoria Street have doubled.
- Bicycle usage has increased significantly as a transport mode within Richmond and Victoria Street.
- Alternative transport modes such as car share vehicles have become available over time.

From the review of case study data, a modal shift is certainly occurring and it is modal shift that is accommodating the increased transportation activity within Richmond. While the population and development intensity along Victoria Street has increased, the daily traffic volumes along Victoria Street and parallel traffic routes has reduced over time and been taken up by alternative transport modes.

It is not evident from the arterial road volume data that non-local traffic is dispersing to other routes. The traffic volumes on Victoria Street, Bridge Road and Swan Street have all fallen over the last 10 years. While, locally generated traffic within Richmond would be displacing non-local or through traffic, however the main shift appears to be towards sustainable transport modes.

A key driver of this change is due to:

- Changes in land use over time along Victoria Street with a shift away from manufacturing towards service and professional industries,
- An increasing mix of land uses including a significant increase in dwellings and new mix of commercial uses in place of industrial uses, and
- A change in demographic with the gentrification of Richmond. Residents of Richmond are increasingly younger persons employed in professional industries who live and work locally (including the CBD and nearby Activity Centres). Travel by private car is not necessarily the most convenient mode of travel for many trips to either work or everyday destinations (shopping, etc.). The increased number of dwellings on Victoria Street are well served for everyday needs by a short walk to Victoria Gardens.

We are satisfied that the transport impacts of the densification of the activity centres and MUZ areas in Fitzroy and parts of Collingwood are manageable for the following key reasons:

- The Activity Centres are highly accessible by existing public transport services, which supports both residents and workers within the centre. This reduces reliance on private car travel.

- The Activity Centres benefits from close proximity to a number of other Activity Centres and the Melbourne CBD, all of which are readily accessible by alternative transport modes to a private car.
- The mix of land uses and local services within the Activity Centres support local living by residents.

## 6.2. Review of Car Parking Provision

In order to assess the likely traffic impacts of these redevelopments, we have primarily had regard to the proposed building heights in the absence of detailed yield calculations. We have also had regard to current trends in car parking provision and assessment within the study area.

**Challenges with On-Site Car Parking Provision**

It should be noted that there are substantial challenges with providing car parking on many sites within the study area. There are many sites which will be unable to provide a substantial level of car parking without lot consolidation, which will naturally lead to lower levels of traffic generation and laneway impacts.

The subdivision pattern in many cases is finely grained. Many lots are very narrow, less than 10m wide and have heritage shop frontages reliant on good walking conditions. This has practical implications for the provision of car parking on these sites.

For lots of this size, car parking can only be arranged length-wise to the site. A 5m wide site only accommodates one car space in width, a second car may be parked in tandem. A 7m wide site might accommodate 2 car spaces side by side. In either case, options of providing additional car parking via car stackers is also limited. There is unlikely to be any significant gain in a 5m wide site. A 7m wide site may increase the car parking from 2 (4 in tandem) to 4 or 5 (up to 8 in tandem).

It needs to be also recognised that for developments with access to 3m wide laneways, an increased setback is required to physically accommodate vehicle access as 3m is too narrow an access aisle for most car parking arrangements. As a general rule, new developments would typically need to setback the car parking approximately 3m from the edge of the laneway to facilitate vehicle access. This setback combined with the laneway effectively provides a 6m wide access aisle.

Sketches of arrangements are shown in the figures below.

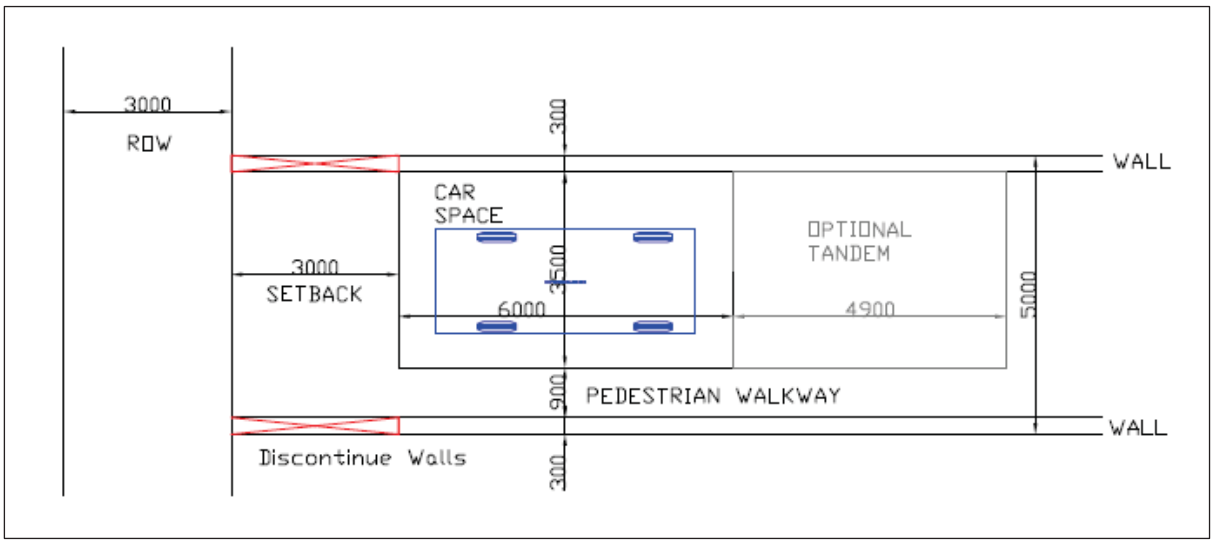



*Figure 7: Example layout of a 5m wide side*

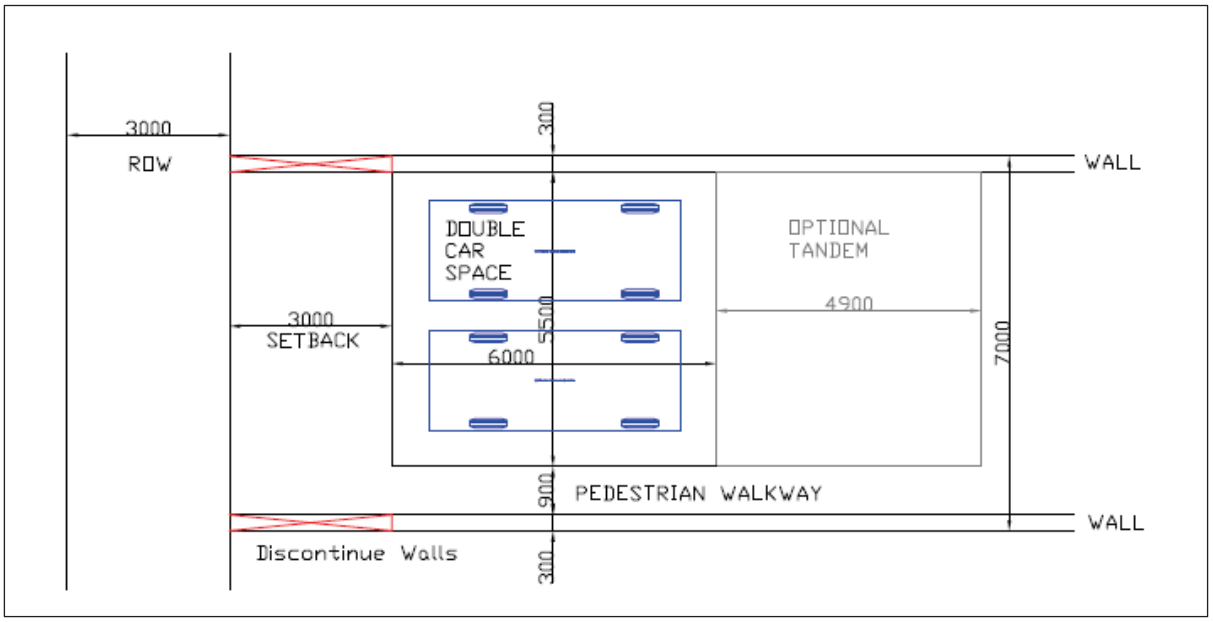



*Figure 8: Example layout of 7m wide side*

There is an opportunity to effectively widen the functional area of the laneways to 6m in width over time if a consistent 3m setback is applied to new developments (which is likely to be necessary for vehicle access to many individual sites in any event). It means that new developments should avoid constructing side walls out to the laneway within the 3m setback. The building could cantilever over the ground floor setback at upper floors (subject to other planning and structural requirements). However, this requirement would not be necessary in cases where adjacent sites will not be redeveloped (e.g. heritage sites).

The above two diagrams are an example of commonly seen development types in our experience. Other arrangements are possible, such as a very wide single car garage with

minimal setback. However, these examples provide a good illustration as to the type of car parking arrangements likely on the narrow sites common the study area.

Many of the lots within the study area have proposed maximum heights of 5-6 storeys, including many narrow lots. The development intensity facilitated by the height controls is generally excess of the site's ability to provide a matching level of car parking in strict accordance with current minimum Planning Scheme requirements.

**Car Parking Provision**

The level of car parking provided to new developments in the study area is likely to be lower than the current statutory controls, but this is not inconsistent with current Council practice and is supported through various VCAT decisions. Yarra City Council has regularly supported developments within the municipality and within the study area with minimal or even zero on-site car parking.

In our view, this should continue in the future. Providing a low level of car parking strongly supported by Yarra City Council's local planning policies and under the car parking reduction decision guidelines of Clause 52.06-5. In particular:

- Analysis of empirical data indicates that a substantial number of households within apartments do not require car parking in this area, which is reflective of the transport rich nature of the area.
- Reducing car parking, particularly for residents and staff has a positive impact on traffic conditions in the local area. Staff in particular are most likely to travel on the road network during peak hours and contribute the most to traffic congestion.
- The area is well serviced by public transport services, including train, tram and bus services.
- The area has good access to cycling infrastructure and many local destinations within easy cycling distance, including the Melbourne CBD and numerous inner-city Activity Centres.
- The area is highly walkable, with many everyday services readily accessible by walking, instead of by private car.
- There are numerous car share pods in the nearby area, providing on-demand access to a car for those trips that specifically require a car.
- There is limited long-term on-street car parking in the nearby area, which will naturally decrease over time as it has with other inner urban Activity Centres. New developments will not be eligible for car parking permits and accordingly constrained from owning cars where no on-site parking is provided.

The following provides some commentary on current trends in car parking provision within the study area.

- Based on the ABS data presented in Section 5.5.1, an average of 1 car space per apartment is broadly reflective of the current car ownership levels of households occupying apartments. However, there are many households that do not require car parking in these areas.

- Office parking is provided at a rate of 1 space per 100m$^2$. This rate is lower than the current statutory requirement of 3 spaces per 100m$^2$ under Clause 52.06-5, however it is consistent with recent planning approvals by the City of Yarra, as shown in the table below.

| Development | Yield (Approx.) | Car Parking Rate |
|---|---|---|
| 20-30 Mollison Street, Abbotsford | 12,800m$^2$ | 1.10 car space per 100m$^2$ |
| 506-510 Church Street, Cremorne | 22,000m$^2$ | 1.06 car spaces per 100m$^2$ |
| 484-486 Swan Street, Richmond | 18,600m$^2$ | 0.82 car spaces per 100m$^2$ |
| 2-16 Northumberland Street, Collingwood | 15,500m$^2$ | 0.88 car spaces per 100m$^2$ |
| 459-471 Church Street, Richmond | 23,500m$^2$ | 0.86 car spaces per 100m$^2$ |

- Retail uses provide car parking only for staff, with no on-site car parking for customers. Staff parking is typically provided at a rate of 1 space per 100m$^2$.

  While this is lower than the current statutory car parking rate under Clause 52.06-5 (3.5 car spaces per 100m$^2$), this is consistent with current industry practice for retail uses within inner Melbourne. Currently, almost every retail use within the study area does not provide car parking for customers.

# 7. Control of Vehicle Access Locations

The following section sets out our recommendations around the provision of vehicle access points for developments within the study area.

## 7.1. Access Management Principles

VicRoads generally adopts the AustRoads Guide to Traffic Management with regard to its access management principles for managing the arterial road network. In particular, the AustRoads Guide to Traffic Management Part 5: Road Management sets out the following relevant guiding principles:

- *Transport and other functions served by roads, the needs of abutting land use, along with wider government strategic objectives, all influence how roads are managed. The functional classification of a road relates to its role within the road network. There are two main functions of road networks and roads:*
  - *'mobility' that is concerned with the movement of through traffic and focussed on the efficient movement of people and freight, and*
  - *'access' that relates to the ease with which traffic from land abutting roads can enter or leave the road.*
- *Recent developments in policy and strategic planning initiatives are aimed at giving greater recognition to walking activity in road and transport planning. This has arisen from policy settings in the transport and health sectors recognising the need to move towards more sustainable forms of transport (by foot, bicycle or public transport) and towards healthier activity (walking, cycling) by the community generally (AustRoads 2013a).*
- *This has led to recognition of the need for planning and providing a road network which caters for the potential increase in active travel such as walking and cycling. This is a fundamental factor for consideration in striving for balance between the mobility and access functions of roads in the network.*

Importantly, in the context of Brunswick Street and Smith Street, as inner-city areas (the south-western ends of which is less than 500m walking distance from the CBD), the move to sustainable forms of transport (foot, bicycle or public transport) has more than just health benefits. It is an integral component to the success of The Frameworks (and ultimately structure plans), having regard to the significant capacity constraints of the existing road network to accommodate additional private vehicle movements.

Accordingly, it is imperative that the planning for an increase in the density of development within the Brunswick Street and Smith Street Activity Centres is accompanied by an access management strategy that recognises the importance of these sustainable transport modes, and also plans for the inevitable increase in pedestrians and cyclists as well as improvements to the public transport network along these important corridors.

The AustRoads Guide to Traffic Management Part 5: Road Management states the following in relation to the role of different road types:

- *The primary function or balance of different functions may be reflected in the classification of a road. In its purest form, road classification may consist of two basic road types which have fundamentally different traffic and environmental goals:*
  - *arterial roads, the main function of which is to provide for the safe and efficient movement of people and freight, and*
  - *local roads, which provide direct access to abutting land uses and which contribute to the overall functioning of areas bounded by arterial roads or other barriers. The basic function of a local road is to provide a good environment in which to live or conduct a business and to enable vehicular access to abutting land.*
- *The need for access planning and management arises because vehicle movements generated by abutting properties can potentially create interruptions in the traffic flow along a road. On many roads, these interruptions are of little or no concern. However, on arterial roads carrying high traffic volumes or fast moving traffic, where traffic efficiency is of greater importance, these interruptions can create a greater risk of crashes, inefficiencies and other costs to the community. An effective access management strategy for a road or site contributes to the best outcome for the community by protecting the level of traffic service on important through traffic routes while providing road users with safe and appropriate access to adjacent land.*

These roles of the arterial road network within the study area (priority public transport route and activated pedestrian links) creates an environment which is not conducive to providing direct vehicular access to properties which could create interruptions in the flow of both vehicular and pedestrian traffic along these links.

Accordingly, taking into account Brunswick Street and Smith Street primary purpose, and noting that within the study areas the majority of properties have alternative access potential (via rear laneways and/or local roads), there should be strong policy support within any Planning Scheme amendment (such as a DDO) to guide future access to development to be via the lower order road network.

**Safety**

Part 13 of the AustRoads Guide to Traffic Management addresses Road Environment Safety, as follows:

- *Managing safety in the road environment means managing the risk that injury will occur, whether it arises from the behaviour of road users, the performance of vehicles or the characteristics of the road environment. Making roads safer means reducing the risk. This applies to all road users – vehicle drivers, riders, passengers, cyclists, and pedestrians.*
- *Safe operation of the road and traffic system is a fundamental goal for road designers and traffic engineers who have a prime responsibility for addressing the safety factors related directly to the road environment itself.*

Fundamental principles for managing safety in road design, traffic management and remedial treatment practice include:

- speed management,

- conflict management,
- hazard management, and
- road user information management.

In the context of managing vehicular access to Brunswick Street and Smith Street, conflict management is the primary safety principle which can be influenced.

Notably, it is important to provide a continuous safe environment for pedestrians at-grade along the Brunswick Street and Smith Street public realm, and this can be achieved by minimising (if not removing all together) intermediate private property access points.

**Policy Support**

Clause 22.07-1 of the Yarra Planning Scheme specifically supports the role of laneways for vehicle access.

*The Yarra Municipal Strategic Statement (MSS) identifies the need to retain existing laneways and enhance their amenity. It also states that, where appropriate, laneway access for vehicles is to be used in preference to street frontages to reduce vehicle crossovers.*

Council's Strategic Transport Statement sets out the following hierarchy of transport modes which forms the basis for decision making and actions related to transport in the City:

1. Pedestrians (including wheelchairs and walking with prams)
2. Cyclists
3. Tram
4. Bus/train
5. Taxi users/car sharers
6. Freight vehicles
7. Motorcyclists
8. Multiple occupants local traffic
9. Single occupants local traffic
10. Multiple occupants through traffic
11. Single occupants through traffic

Council's transport modal hierarchy for decision making places pedestrians, cyclists and trams in the top 3, and places vehicular traffic at the bottom.

This hierarchy recognises the importance of sustainable modes into the future and supports the recommended access management strategy to utilise rear laneways and side streets wherever possible. Direct access to arterial roads being a last resort (with consideration for "no parking provision" potentially being preferable for some sites), noting the importance of Brunswick Street and Smith Street for pedestrians and trams in particular.

## 7.2. Benefits of Limiting Vehicle Access to Arterial Roads

The principle of limiting direct vehicle access to arterial roads provides the following key benefits:

- It promotes a safe and friendly pedestrian walking environment, by reducing breaks in the footpath, reducing pedestrian-vehicle conflict points and increasing the amount of active street frontage along these streets. It also eliminates instances of vehicles blocking the footpath.
- It eliminates the potential conflict between the introduction of future accessible tram stop upgrades and property access points. The design of accessible tram stops is generally incompatible with property access points.
- It limits vehicle access to arterial roads to public road intersections, where Council and VicRoads have a greater degree of control in the implementation of traffic management measures. This improves the efficiency and safety of the road network for all users.
- The reduced number of intersections allows the concentration of effort of traffic management measures and safety improvements at a limited number of locations.
- It reduces the number of locations where right turn movements occur, thereby potentially reducing delays to trams and improving road safety.

However, the benefits of limiting vehicle access to arterial roads need to be tempered against other competing demands, including:

- For some land uses (such as supermarkets), convenient and direct access to the arterial road network is important for the viability of the use and to minimise impact on local roads.
- Access for trucks undertaking on-site loading may be a desirable outcome (although any loading facilities should be internal to the building). This includes business deliveries, waste collection and providing a loading bay for residents to move into/out of buildings. These may not be possible from within laneways for some sites and depending on the land use proposed. Such movements would be infrequent and may be necessary if alternative access is not available.
- Some sites do not have alternative access options and have existing access points to arterial roads. It is not possible to deny access to sites that already have direct access to arterial roads and do not have reasonable alternatives. However, upon redevelopment these accesses can include new controls to limit their impact, in particular left-in/left-out restrictions. A left-in/left-out restrictions results in the smallest impact on the arterial road network from an efficiency and safety perspective.

## 7.3. Control of Vehicle Access

The vehicle access hierarchy has been defined in accordance with the following hierarchy (from highest to lowest preference):

1. Laneways
2. Local Streets
3. Arterial Roads – no access unless there is no alternative

Arterial roads include:

- Brunswick Street
- Smith Street
- Wellington Street
- Gertrude Street/Langridge Street
- Johnston Street
- Nicholson Street
- Alexandra Parade
- Victoria Parade

It is recommended that this hierarchy is also included in the future planning controls for the study area.

In some instances, the strict use of laneways for sole vehicle access may overload the capacity of the laneways in their current form. The following section reviews the capacity of the existing laneways within the study area to accommodate additional development.

# 8. Right-of-Way Management

The following sections provide:

- An outline of the methodology behind our categorisation of laneways within the study area
- A description of laneway characteristics and how these affect the capacity of laneways to accommodate vehicles, pedestrians and cyclists.
- A detailed description for each of the options considered to improve the laneway network.

## 8.1. Categorisation of Laneways

As part of the review process of the current capacity of existing laneways to accommodate additional future development traffic volumes, we have reviewed and categorised laneways within the study areas into 3 categories (unconstrained, partially constrained or highly constrained) in order to better understand their potential to currently accommodate additional traffic under their existing conditions and configuration.

Key factors include laneway width, laneway length, laneway connections (i.e. continuous or dead-end) and physical layout (i.e. bends within the laneway network). These factors are discussed in more detail below.

The laneway assessment classified all laneways within the study area by their potential to accommodate additional traffic. Laneways have initially been classified at three levels:

**Unconstrained** – these laneways have very few, if any, development constraints. As a result, they are well suited to accommodating additional traffic. Changing the laneway to operate one-way (where possible) has not been considered as a constraint.

**Partially Constrained** – these laneways have some potential constraints that limit their capacity to accommodate traffic, however they are generally easily addressed. Common issues include insufficient width, long length and lack of splays at critical locations.

**Highly Constrained** – this laneway has fundamental issues that cannot easily resolved. This usually relates to very narrow laneways or heritage constraints that limit the opportunities to alter the laneways.

When assessing the capacity of laneways, a number of factors need to be considered. For most laneways, it is a combination of factors that contribute to its classification.

The key factors that influence the classification of a laneway are outlined below:

**Laneway width.** This is the single most important factor to the operation and capacity of a laneway. To provide a single traffic lane, a laneway should be at least 3.0m wide. A width slightly less than 3.0m (down to 2.8m) is also functional, although constrained. Laneways less than 2.8m wide are problematic for vehicle access and should be considered as pedestrian only laneways and/or have very limited development potential (it is acknowledged that some narrow laneways within the study area are in practice used for vehicle access currently).

Laneways become capable of supporting simultaneous two-way traffic at a width of 5.5m if not built up (i.e. 5.5m between walls) or 6.0m wide between building walls. This width removes most capacity constraints of laneways and effectively makes them unconstrained.

**One-way or two-way operation.** For single width laneways, a one-way laneway has a significantly higher capacity than a laneway permitting two-way traffic. One-way operation eliminates vehicle conflict within the laneway and can support a high level of access/development from the laneway. One-way laneways are unconstrained in this assessment.

**Continuous.** A continuous laneway can generally be made to operate in a one-way direction. Generally, a continuous, straight laneway was classified as unconstrained because it can be made one-way to address capacity constraints.

A dead end laneway has less capacity to handle additional traffic and the laneway cannot be made one-way to manage traffic flow. However, this factor is only relevant for single width laneways, a laneway wide enough for two-way traffic is not constrained just because it has a dead end.

**Laneway Length.** This factor ties into laneway width and whether it is a continuous laneway or not. A long, single width (3m up to 6.0m wide) laneway will experience a high level of vehicle conflict due to higher traffic volumes, higher development potential (more properties accessing it) and more chances of vehicles meeting the laneway.

There are no set rules regarding the 'tipping point' for when two-way traffic in a single width laneway reaches capacity. It is a combination of factors including traffic volume, configuration and length that contribute to a laneway's capacity. Laneway length is therefore a contributing factor that impacts on laneways in combination with other factors.

**Physical layout.** A straight laneway has the highest vehicle carrying capacity**.** Bends in laneways may create operational issues, particularly if:

- There are no splays around the inside corner of the bend to facilitate vehicle access. For instance, a 90° bend between two 3m wide laneways is inaccessible to vehicles without a splay.
- Due to a lack of sight distance, vehicles cannot see each other approaching the blind corner. For single lane laneways, this can be a serious issue if drivers meet near the bend, the laneways are long and there are no passing opportunities.

**Number of Abutting Properties and Frontage.** The number of properties and their frontages are relevant to the potential future traffic conditions of a laneway. There are a number of ways this factor can influence laneways:

- Short laneways may only serve a limited number properties and accordingly with a low development potential, a short laneway may effectively be 'unconstrained'.
- A large number of narrow lots might make widening a laneway problematic.
- If the number of abutting properties to the laneway is small, a short, narrow laneway is unlikely to be constrained.

**Heritage constraints.** We are not heritage experts and we have relied on information provided by Council in this regard. Properties that have heritage value may create issues in that they

may not easily be modified and this was taken into account during our initial review. Heritage properties abutting a laneway may limit options to widen the laneway.

The follow factors were not considered when assessing the development potential of laneways:

- The condition of the laneway (does it need maintenance? Is it in disrepair?).
- The material the laneway is constructed with or type of surface treatment (gravel, asphalt, bluestone, etc.).

As existing Council assets, the condition of the laneway is not especially relevant. It is Council's on-going responsibly to maintain laneways as appropriate.

Some larger developments will warrant upgrading the surface of laneways (for instance, from gravel to asphalt). However, the condition of the laneway is less relevant than its physical configuration. Council also has a number of methods of upgrading the surfaces of laneways, including as permit conditions for significant developments or special charge schemes of abutting properties. These issues are easier to resolve than physical issues with a laneway's configuration.

**Summary**

From the above, it is apparent that the capacities of laneways are impacted by a large number of factors. In addition, it is challenging to concisely quantify how all the various factors influence each other. There are very few 'hard and fast' rules that define when a laneway is constrained or not and accordingly, this assessment is somewhat subjective and our assessment is based on our engineering judgement and experience.

## 8.2. Upgrading the Capacity of Laneway

**Capacity of a standard 3m wide laneway**

Under Clause 56.06 of the Planning Scheme, Table C1 provides an outline of the design of roads, one of which includes an 'Access Lane', which is defined as *a side or rear lane principally providing access to parking on lots with another street frontage.* Table C1 continues on to state that an Access Lane has a traffic volume of up to 300 vehicles per day (vpd) and this is typically adopted as the environmental capacity laneway. This also represents an indicative peak volume of 30 vehicles per peak hour (two-way).

The options in terms of increasing the traffic capacity of existing laneways follows:

**Conversion to one-way operation.** For single-width laneways, a one-way laneway has a significantly higher capacity than a laneway permitting two-way traffic. One-way operation eliminates vehicle conflicts within the laneway and can support a high level of access/development from the laneway. The key advantages of this option are that it is usually easy to implement as it does not require/rely on additional private land. For this reason, one-way operation is our preferred solution to upgrading laneways, particular within this study area. One-way laneways are effectively unconstrained and their environmental capacity is typically taken as being in the order of 1,000 vehicles per day.

**Laneway width.** One of the most important factors to the operation and capacity of a laneway. To provide a single traffic lane, a laneway should be at least 3.0m wide. A width

slightly less than 3.0m (down to 2.8m) is also functional, although constrained. Laneways less than 2.8m wide are problematic for vehicle access and should be considered as pedestrian only laneways and/or have very limited development potential (it is acknowledged that some narrow laneways within the study area are in practice used for vehicle access currently).

Laneways become capable of supporting simultaneous two-way traffic at a width of 6.0m, which removes most capacity constraints of laneways and makes them unconstrained. However, widening laneways can be problematic, particularly in situations where a large number of properties front a ROW or the subdivision pattern is finely grained.

Where widening occurs, the minimum road reserve width should be 6.0m. This can be achieved by setting back buildings, which are the overhang the ROW on the levels above. It is recommended that a height clearance of 3.5m is provided in these circumstances (which is usually achievable with ground floor commercial uses).

**Splays**. ROWs often incorporate bends and for narrow ROWs, splays are essential to facilitate vehicle access. This study recommends a universal splay of 3m x 3m is provided on the inside of all ROW bends and intersections between two ROWs. This splay facilitates access by vehicles up to the B99 design car from AS2890.1-2004 (i.e. not trucks), which is appropriate in our view.

The shape of the splay can be vary depending on the width(s) of the intersecting ROWs. These arrangements are shown in the figures below.

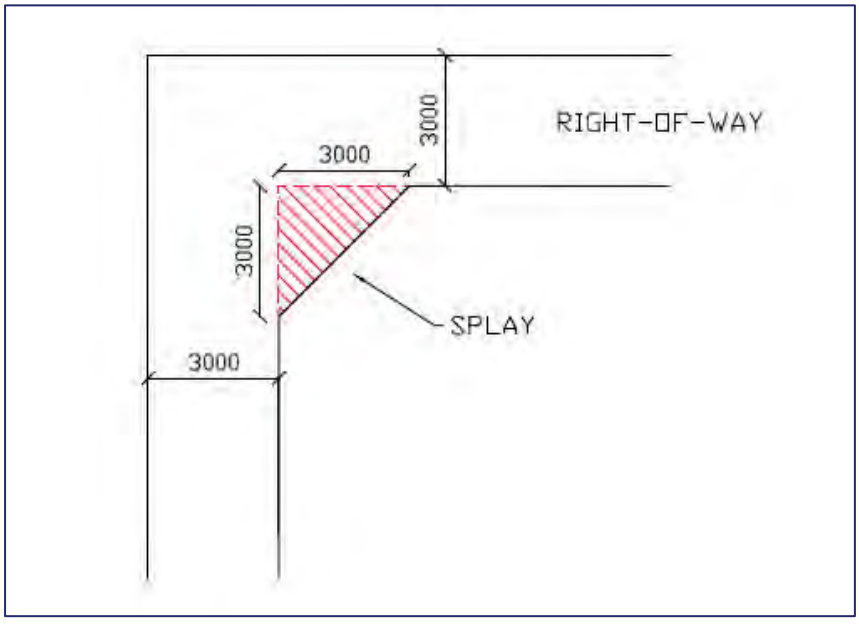



*Figure 9: Standard 3m-wide ROW 90-degree Splay*

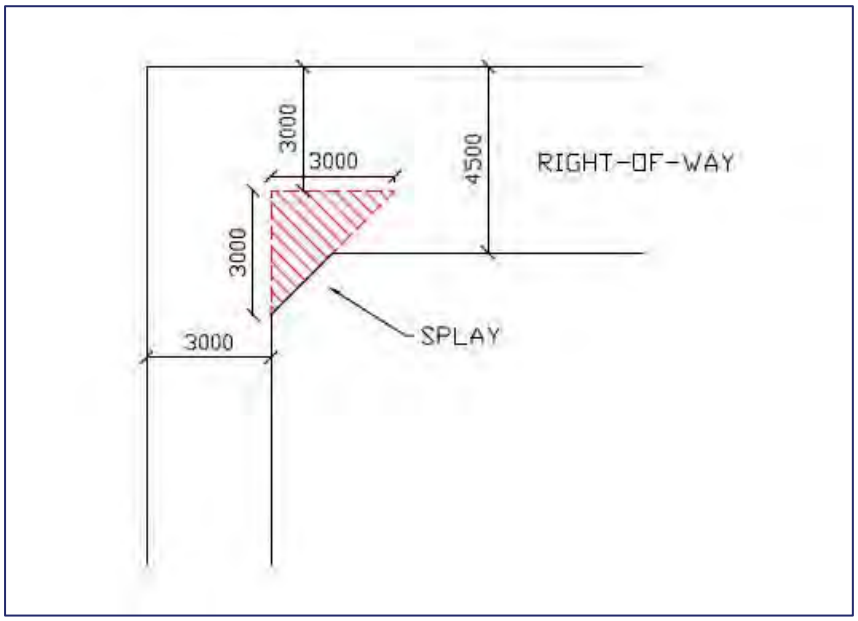



*Figure 10: Non-Standard Varied-Width ROW Splay*

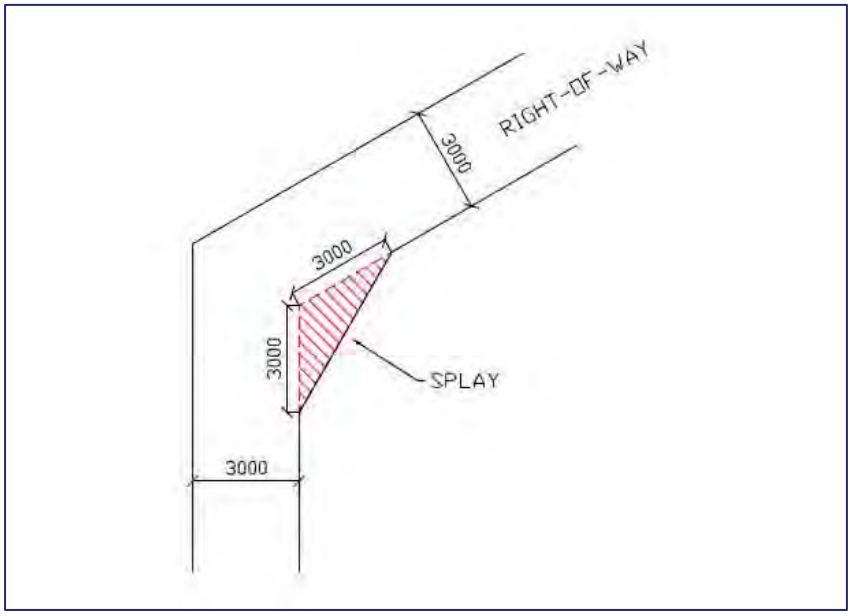



*Figure 11: Standard 3m-wide ROW Non-Right-Angle Splay*

Some laneways already have splays of various sizes. This study recommends that the splays available are standardised over time to be 3m x 3m.

**Passing bay at entrance to laneway.** In some situations, it may not be possible to widen laneways or enforce a one-way operation due to varying constraints, including dead end laneways. A potential solution is to provide for a passing bay either at the entrance to the laneway (ideally) or elsewhere along the laneway.

This passing area allows any conflicting vehicle movements to pass away from the road network and pedestrian footpaths. As a guide, Clause 52.07-9 (which applies to private

accessways) requires passing areas to be 6.1m wide for a distance of at least 7m from the major road boundary.

The width required to achieve this passing area would be required to be taken from one (or more) of the properties located on either side of the entry to the laneway. Alternatively, informal passing areas may be provided within the laneways as a result of buildings setting back their ground floor to facilitate vehicle access to and from their sites (i.e. car spaces or garages that are directly accessed from the laneway). This setback may allow for informal passing opportunities within laneways, thereby increasing the capacity of the laneway.

A passing area allows drivers to manage vehicle conflicts within laneways more easily and raises the capacity of the laneway above 30 vehicles per hour. If all properties along a laneway are required to setback to achieve a 6m width (to increase the laneway capacity), each setback incrementally increases the capacity of the laneway and over time achieves a full two-way laneway

## 8.3. Upgrades to Laneways to Accommodate Non-Vehicle Use

The sharing of the road space in laneways between pedestrians and vehicles is common practice and acceptable. Accordingly, there is no specific need or requirement to widen laneways to provide separate pedestrian spaces. Generally, issues only arise if laneways carry a high volume of vehicles.

For the most part, it is our view that laneways within the study areas should be used primarily for vehicle access, rather than pedestrian movement. It is our view is that in most cases, pedestrians within the activity centres should ideally be walking along the footpaths of main roads or other local roads where pedestrian amenity is higher, footpaths are wider and of higher quality and there is more activity along the street.

There are properties within the study area that may provide some uses accessed directly from laneways. For instance, dwellings that only front a laneway and rely on the laneway as their sole pedestrian access point. In these instances, new development should provide a pedestrian refuge area, which could be a separate footpath along the site's frontage or similar separation between the laneway and the building façade. A full pedestrian connection or separate footpath to the nearest road is not required, but a separate area for pedestrians to safely enter/exit a building directly fronting a laneway is necessary.

Cyclists generally don't use laneways, unless it is the final stage of their journey to a property. Most laneway surfaces can accommodate cyclists, although some bluestone laneways can be uncomfortable to use and cyclists may prefer to walk their bicycles the final stage of the journey. In our view, there is no need to upgrade laneway surfaces specifically for cyclists.

**Shared Zones**

There are a number of laneways within the study area that have intermediate widths (3-6m wide) that provide carriageways in the order of 3m wide and narrow footpaths (<1m) on one or both sides of the road. Often these footpaths are obstructed by poles. An example would be Little Smith Street.. These laneways would function better if reconfigured as Shared Zones. An example of which is Little Buckingham Street (between Church Street and Lambert Street) in Richmond. The essential feature of the Shared Zones is the removal of separate footpaths and provision of flush, shared surface. This provides an enhanced pedestrian environment and also assists vehicle access to abutting properties.

A shared zone is a road or network of roads where pedestrians, cyclists and vehicles shared the roadway. A shared zone provides improved amenity for pedestrians and an improved streetscape.

The *VicRoads' Supplement to Austroads Guide to Traffic Management Part 8: Local Traffic Area Traffic Management (2008) (dated October, 2015),* provides guidance as to appropriate locations for a shared zone, including design guidelines.

A summary of these guidelines is provided below:

**Appropriate Locations**

- Low volume streets where pedestrians outnumber motor vehicles and where the pedestrian needs are best met by walking on the roadway, and
- Where the street has been constructed or reconstructed to a sufficient degree to ensure significant visual interruption and where speed is physically restrained, and

- Where there is no cross traffic.

**Inappropriate Locations**

- Not suitable where traffic volumes exceed 200 vehicles in a peak hour, or over 1000 vehicles between 7am and 7pm.
- If there is a history of vehicle speed problems.
- Unprotected locations where approach speeds exceed 40-50km/h.

**Design Guidelines**

- The road should be discontinuous and any kerb removed to enhance the sense of equality between pedestrians and vehicles.
- Speed reduction devices installed at a spacing of approximately 40m and staggered if possible.
- Straight lengths of no more than 50m without speed reduction devices.
- Maximum design speed of 20km/h – typically either 10km/h or 20km/h.
- Entry and exit points to be clearly signed.
- No provision for traffic to flow across the path.
- Surface texture treatment in order to differentiate between the shared zone and surrounding road network.

An example of a shared zone in a laneway environment is Little Buckingham Street in Richmond. An aerial view of how this treatment has been implemented for part of the laneway (the portion which has been recently developed) and a street level view are shown at Figure 12 and Figure 13, respectively.

*Figure 12: Shared Zone Example - Little Buckingham Street, Richmond*


*Figure 13: Shared Zone Example – Little Buckingham Street, Richmond*

**Other Considerations**

Some consideration should be provided to allowing for 'pedestrian sight triangles' at the exit location of laneways at their intersections with roads. Under Clause 52.06 of the Planning Scheme and AS2890.1-2004, pedestrian sight triangles measuring 2.5m into the property and 2m along the property boundaries are required on both sides of a single-width accessway (i.e. 3m or similar), whilst in cases of widened accessways, a pedestrian sight triangle is only required on the departure side of the laneway. This is shown at Figure 14 below.

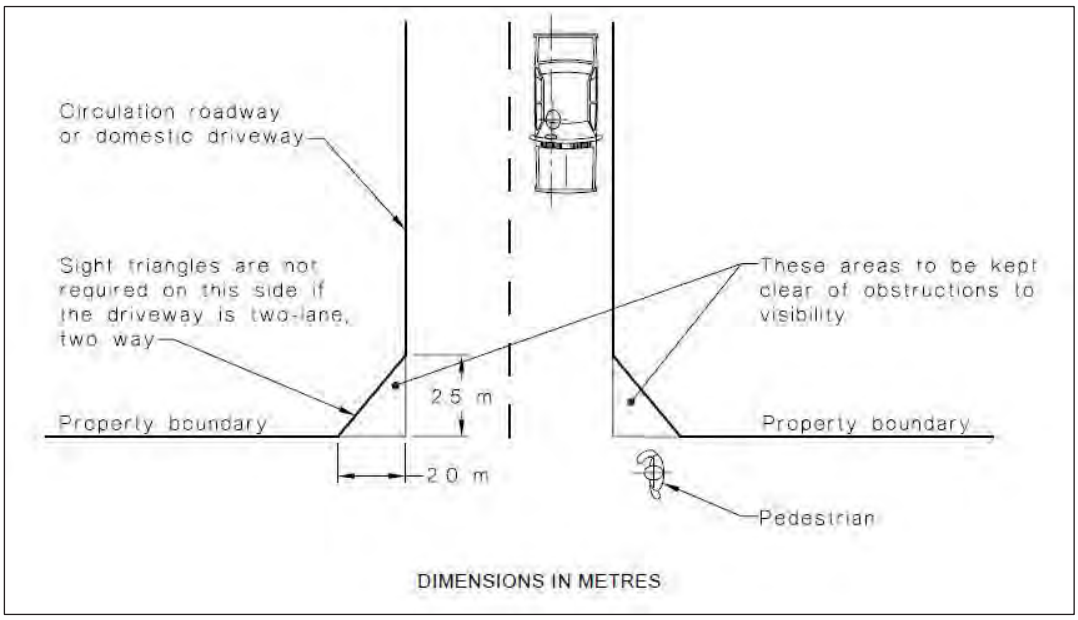



*Figure 14: Minimum sight lines for pedestrian safety (Figure 3.3 - AS2890.1-2004)*

Both of these standards refer to private driveways (not public roads), however the principle is a valid. It should be acknowledged that in practice, most laneways in the City of Yarra would not provide pedestrian sight triangles and that providing sight triangles may be problematic for heritage sites.

For these reasons, we have not specifically recommended splays at every ROW entrance. Splays can be required of individual sites as part of future planning permit conditions.

## 8.4. Recommendations

Our recommendations regarding various laneway upgrades are summarised at Table 15. The table provides the detailed reason behind the recommendations for the various laneways within the study area and references the laneways by the numbers defined in Appendix C.

Laneways not included in the following table will not need modifications, either due to already being functional for higher traffic volumes or being within areas already flagged for low development potential.

There are a couple of instances where laneways are discussed in more detail, after the table. In these cases, the issues are more complex and require further discussion.

Following this review, it is evident the recommendations for various laneways generally fall into two groups. These are described below:

**One-Way Laneways**

There are many laneways within the study area that run parallel with the arterial road and are relatively short in length (under 100m) and provide straight, through links between two local roads. These generally serve properties that have preferred building heights of 5-6 storeys. Examples include Laneways 1-4.

Instead of physical changes (such as widening), the recommended solution to increased traffic volumes is that these laneways are made one-way to eliminate capacity constraints. The direction of the one-way arrangement would be subject to consultation.

Council has the option to either:

- Pro-actively make these changes now, to provide certainty to all landowners and developers about the future operation of these laneways, or
- Change these laneways on a case-by-case basis as development proposal eventuate. We do not prefer this option, because it provides no certainty to developers or the community in regards to the laneway. The outcome of this uncertainty is each individual developments will apply a heterogeneous mix of solutions to improve the laneway for their individual needs and the simple solution of a one-way arrangement (avoiding land loss) is rarely implemented. As changes to one-way operation requires community consultation, there is no certainty of Council support to change a laneway to one-way if proposed by a development.

**Geometrically constrained laneways**

These laneways typically have physical issues such as:

- No splays on corners and limited ability to provide them with properties outside of the study area, new buildings that did not provide the splays or heritage issues.
- Limited ability to widened the ROW due to heritage issues, subdivision pattern or properties abutting the laneway falling outside the study area.
- Dead ends

Examples of this type of laneway include No. 14 and 21.

These laneways have a finite capacity that is unlikely to be improved or the solutions are unfeasible in our view. In this case, it is recommended that Council encourage limited car parking on sites relying on these laneways.

*Table 15: Recommendations for ROW upgrades*

| ROW | Classification | Modifications | Reason |
|---|---|---|---|
| 1: ROW (from Alexandra Parade to Cecil Street) | Unconstrained laneway | One-way traffic flow | The length of each of these ROWs and development potential (6 storeys) means that a one-way arrangement should be provided. |
| 2: ROW (from Cecil Street to Westgarth Street) | Unconstrained laneway | | |
| 3: ROW (from Westgarth Street to Leicester Street) | Unconstrained laneway | | |
| 4: ROW (from Leicester Street to Rose Street) | Unconstrained laneway | | |

| ROW | Classification | Modifications | Reason |
|---|---|---|---|
| 6: ROW (from Kerr Street to END) | Partially constrained | No change recommended. Likely outcomes are abutting properties widen the ROW or provide limited car parking. | This laneway is only 2.5m wide and incapable of accommodating vehicles. However, it only abuts 3 properties and a redevelopment of these sites could modify the laneway as needed. |
| 7: ROW (from Kerr Street to Argyle Street) | Unconstrained | One-way traffic flow | The length this ROW and development potential (5-6 storeys) means that a one-way arrangement should be provided. |
| 9: ROW (from Johnston Street to Victoria Street) | Unconstrained laneway | | |
| 10: ROW (from Victoria Street to Greeves Street) | Unconstrained laneway | | |
| 11: ROW (from Greeves Street to Bell Street) | Unconstrained laneway | | |
| 12: Fisher Lane (from Bell Street to END) | Partially constrained | See next section for detailed discussion of modifications. | Unusual laneway layout which requires more detailed works. |
| 13: Fisher Lane (from Moor Street to END) | Partially constrained | | |
| 14: ROW (from Moor Street to END) | Highly constrained | Allow development with no vehicle access or car parking. | Narrow 2.5m wide laneway with two 90 degree bends means that it is not a trafficable laneway in its present form. |
| 15: ROW (from Moor Street to END) | Partially constrained | No modifications required | Buildings accessing laneway will be limited to 5-storey, which is considered appropriate given the laneway configuration |
| 18: Brunswick Place (from south side of Hanover Street to Fitzroy Street) | Unconstrained laneway | One-way traffic flow | The length this ROW and development potential means that a one-way arrangement should be provided. |
| 20: ROW (from Palmer Street to END) | Partially constrained | Encourage limited or no parking. | Narrow laneway at 2.75m wide, which is too narrow for regular vehicle accessway. Widening is problematic as it would require |

| ROW | Classification | Modifications | Reason |
|---|---|---|---|
| | | | multiple properties to setback on the west. |
| 21: ROW (from Fitzroy Street to END) | Partially constrained | Encourage low car parking provision and monitor over time. | Unable to achieve two-way traffic flow given heritage buildings and other buildings outside study area. |
| 22: Alma Street (north-south section from Gertrude Street to END) | Highly constrained | See next section for detailed works proposed. | Unusual laneway layout which requires more detailed works. |
| 23: Alma Street (east-west section from Fitzroy Street to END) | Unconstrained laneway | | |
| 24: ROW (north-south from Alma Street) | Highly constrained | | |
| 28: ROW (from Alexandra Parade to Cecil Street) | Unconstrained laneway | One-way traffic flow. | The length of each of these ROWs and development potential (5-6 storeys) means that a one-way arrangement should be provided. |
| 29: ROW (from ROW 28. to Young Street) | | | |
| 30: ROW (from Cecil Street to Westgarth Street) | | | |
| 31: ROW (from Westgarth Street to Leicester Street) | | | |
| 32: ROW (from Leicester to Rose) | | | |
| 33: ROW (from Kerr Street to Argyle Street) | | | |
| 34: ROW (from Argyle Street to END) | Partially constrained | Encourage limited or no parking. | Narrow laneway at 2.75m wide, which is too narrow for regular vehicle accessway. Only services 3 properties. |

| ROW | Classification | Modifications | Reason |
|---|---|---|---|
| 35: ROW (from Johnston Street to END) | Partially constrained | Encourage limited or no parking. | Narrow laneway at 2.8m wide, which is too narrow for regular vehicle accessway. |
| 36: ROW (from Johnston Street to Victoria Street) | Unconstrained laneway | One-way traffic flow. | The length of each of these ROWs and development potential means that a one-way arrangement should be provided. |
| 37: ROW (from ROW 36. to Young Street) | | | |
| 38: ROW (from Victoria Street to Greeves Street) | | | |
| 46: Macrobertsons Lane (from Kerr Street to Argyle Street) | | | |
| 47: Macrobertsons Lane (from Argyle Street to Johnston Street) | | | |
| 49: ROW (from Gore Street to END) | Highly constrained | Encourage limited or no parking. | Services a number of properties with development potential of 6 storeys. The laneway only provides a single lane for two-way traffic and the ability to widen it is limited due to heritage constraints and the subdivision pattern. |
| 53: ROW (from Charles Street to Webb Street) | Unconstrained laneway | One-way traffic flow. | The length of this ROW and development potential (5-8 storeys) means that a one-way arrangement should be provided. |
| 55: Little Smith Street (from Gertrude Street Little Victoria Street only) | Unconstrained laneway | One-way traffic flow or shared area. | The length of this ROW and development potential means that a one-way arrangement could be provided.<br>Alternatively, the road reserve (6.2m) allows for a two-way shared zone. |
| 59: ROW (from Emma St to Emma Street) | Partially constrained | Provide splay on southern corner No. #35 Emma St. | A splay is needed to make the ROW traversable at its southern end. |

| ROW | Classification | Modifications | Reason |
|---|---|---|---|
| 60: ROW (from Emma Street to END) | Unconstrained laneway | Provide splay at No. 23 Emma St. | A splay is needed to facilitate access to properties around the bend. |
| 61: ROW (from Emma Street to END) | Partially constrained | Provide splay at No. 7 Emma St. | A splay is needed to facilitate access to properties around the bend. |
| 64: ROW (from Smith Street to END) | Highly constrained | No changes. | Extremely narrow, but serves only 1 property, so no changes required (property can provide own setback if developed). |
| 71: ROW (from Otter Street to END) | Partially constrained | Encourage limited or no parking. | Only a short laneway serving a limited number of properties with heritage walls at entrance limiting widening opportunities. |
| 72: ROW (from Otter Street to END) | Partially constrained | Provide passing at entrance. See next section. | High development potential (6-7 storeys), length and dead end nature means that a passing area is required. |
| 86: ROW (from Mason Street to END) | Highly constrained | No changes required. | Laneway is non-functional given its layout. Abutting properties to upgrade it, if required. |
| 95: ROW (from Argyle Street to END) | Partially constrained | Provide a through traffic link to Johnson Street,<br>or<br>encourage limited or no parking,<br>or<br>encourage side acces outcomes (Napier St, George St) | High development potential (9 storeys). Single width laneway with no ability to widen at entrance due to new apartment buildings. |
| 98: ROW (from Elliot Street to Chapel Street) | Partially constrained | Encourage limited or no parking. | Narrow laneway with limited scope to remedy effectively due to fine subdivision pattern. |
| 114: ROW (east-west ROW abutting Gertrude Street properties, Connected to Little Gore Street) | Partially constrained | No changes required. | The challenge is access around entrance to Gore Street. Due to narrow width, properties on the north side will need to be setback for vehicle access to properties, alleviating issues at the corner. |

| ROW | Classification | Modifications | Reason |
|---|---|---|---|
| 124: ROW (from Derby Street to Victoria Parade) | Partially constrained | One-way traffic flow | This laneway is long and abuts numerous properties. |

### 8.4.1. Fisher Lane Network

The Fisher Lane Network includes ROW numbers 12 and 13 (called Fishers Lane) and ROW 14.

An aerial photograph of this network is shown in Figure 15.

Given the lack of splay, Fishers Lane is considered a partially constrained laneway.

Given the width of ROW 14, it is considered a highly constrained laneway.

Within Fishers Lane, there are no splays on bends or intersections of the laneways. Essentially in vehicle access terms, this laneway network needs to be considered as three separate laneways connecting to Bell Street, Fitzroy Street and Moor Street, meaning that navigating the bend is not required.

For the laneway accessed via Bell Street, the two-way width of Fisher Lane to the south of the T-intersection allows for passing opportunities. Accordingly, we are satisfied that this provides opportunities to accommodate additional traffic.

Properties with access to the southern portion of Fishers Lane would take access to/from Moor Street. This section provides only a single lane for two-way traffic. However, there are only two properties abutting this laneway (within the study area) and these can manage the laneway by widening the laneway for passing opportunities, if needed.

ROW 14 is highly constrained and has limited opportunity to remedy this. Accordingly, this laneway is more suitable for lower density development, or developments without car parking.


Source: nearmap.com

*Figure 15: Fishers Lane network*

### 8.4.2. Alma Street network

The Alma Street network includes ROW numbers 22 and 23 (called Alma Street) and ROW 24.

An aerial photograph of this network is shown in Figure 16.

Given the lack of splay, vehicles cannot navigate the bend from one end of Alma Street to the other.

The north-south section of Alma Street is also very narrow at 2.55m wide (ROW 22), making it unsuitable for standard vehicle access. It is effectively a pedestrian only laneway.

Given the lack of the splay from Alma Street to ROW 24, ROW 24 is very difficult for vehicles to navigate.

Because of the above, sites adjoining to ROWs 22 and 24 are not suitable for vehicle access in the their current form and Council should allow no car parking to be provided on these sites.


Source: nearmap.com

*Figure 16: Alma Street network*

### 8.4.3. ROW 72

ROW 72 is located on the south side of Otter Street, approximately 35m east of Smith Street.

An aerial photograph of this network is shown in Figure 16.

There are a number of constraints with this laneway.

Firstly, the width of the ROW (4.25m) only allows for one-way movement. There is a heritage building on the south-western corner of the intersection between Otter Street and Smith Street. Additionally, the site at 1-3 Otter Street has a permit for a development that does not provide a setback (PLN15/0947).

Accordingly, there is no opportunity to provide a passing area at the entrance to the site.

Because of this, there will need to be passing areas provided at sections within the ROW at other properties in order to accommodate high intensity development for abutting properties.


Source: nearmap.com

*Figure 17: ROW 72*

# 9. Design and Development Overlay – Draft Schedule

The following section sets a series of recommendation in regards to transport engineering that could be incorporated into a Design and Development Overlay.

**DDO – Fitzroy East and Johnson Street North Access Management**

**Schedule XX to the DESIGN AND DEVELOPMENT OVERLAY**

**Design Objectives**

- To encourage the creation of a high-quality public realm with active street frontages at ground level.
- To ensure that vehicular access to development does not adversely impact on the amenity of neighbouring properties.
- To ensure that vehicular access to development does not adversely impact on the efficient and safe operation, and the primary pedestrian realm, along Brunswick Street, Smith Street Johnson Street, Gertrude Street, Langridge Street, Wellington Street, Alexandra Parade and Victoria Parade.

**Application Requirements**

An application for development of land within the precinct must include, as appropriate, the following information to the satisfaction of the Responsible Authority:

- A Traffic Engineering Report prepared by a suitably qualified traffic engineer that demonstrates how the development:
  - minimises impacts on the level of service, safety and amenity of the arterial road network (including tram services),
  - reduces car dependence and promotes sustainable transport modes, and
  - which includes an assessment of the cumulative impacts of traffic and parking in the Precinct including an assessment of the ongoing functionality of laneway/s, where applicable.

**Buildings and Works**

**Car Parking and Access**

- Car parking should be located within a basement or concealed from the public realm.
- Vehicle access should be from laneways or local streets (in that order of preference).
- Vehicular access points to Brunswick Street, Smith Street, Johnson Street, Alexandra Parade, Gertrude Street/Langridge Street, Wellington Street and Victoria Parade will not be permitted unless there is no alternative and only in instances where it is not practical to waive the car parking and/or loading requirements and facilitate waste collection on-street.

- Where developments setback from a laneway for vehicle access, this setback should provide a minimum clear laneway width of 6m along the entire length of the laneway. Developments can build over the laneway on upper floors, subject to the provision of a 3.5m headroom clearance.
- Properties on the inside corner of bends in laneways or at intersections between two laneways should provide a minimum 3m x 3m splay to facilitate vehicle access.
- Bicycle parking should be located and designed to be secure and conveniently accessible from the street and associated uses.
- Vehicle ingress and egress into development, including loading facilities and building servicing, should be designed to ensure a high-quality pedestrian amenity and limit potential conflict between vehicle movements and pedestrian activity.
- Pedestrian access to buildings should be achieved via streets and must be clearly visible, secure and have an identifiable sense of address. Residential and commercial entrances should be distinguishable from each other. Primary access from laneways should be avoided.
- Pedestrian access to laneways should be provided in a safe manner and include a pedestrian refuge or landing.

**Decision Guidelines**

Before deciding on an application, the responsible authority must consider, as appropriate:

- The impact on the operation of all transport modes, including public transport services, walking and cycling
- The contribution the development makes to walkability, permeability and streetscape appearance of the area.
- The layout and appearance of areas set aside for vehicular access, loading and unloading and the location of any proposed car parking.
- The cumulative impact of development on traffic and parking in the nearby area, including on the functionality of laneways.

**Reference Documents**

- Brunswick and Smith Street Built Form Review – Background Analysis Report, 2019
- Johnston Street Built Form Framework, June 2019
- Fitzroy East Built Form Framework, June 2019
- Traffic Engineering Assessment by Traffix Group, October, 2019

# 10. Conclusions and Recommendations

Access Management Plans have been prepared for all properties identified within the Brunswick Street and Smith Street Activity Centre study areas, which includes (but not limited to) properties abutting Brunswick Street and Smith Street, to detail how vehicle access to new developments can be managed to reduce the impact of vehicle access directly Brunswick Street and Smith Street. Suitably designed and controlled vehicle access is a key component in achieving the objectives of maximising the efficiency of the arterial road network and providing a high-quality pedestrian environment.

This report also recommends a series of traffic engineering requirements for a future Design and Development Overlay.

# Appendix A

## Clause 18 of the Yarra Planning Scheme

# 18.01 INTEGRATED TRANSPORT

31/07/2018
VC148

## 18.01-1S Land use and transport planning

31/07/2018
VC148

### Objective

To create a safe and sustainable transport system by integrating land use and transport.

### Strategies

Develop integrated and accessible transport networks to connect people to jobs and services and goods to market.

Plan urban development to make jobs and services more accessible by:

- Ensuring equitable access is provided to developments in accordance with forecast demand, taking advantage of all available modes of transport and to minimise adverse impacts on existing transport networks and the amenity of surrounding areas.
- Coordinating improvements to public transport, walking and cycling networks with the ongoing development and redevelopment of urban areas.
- Requiring integrated transport plans to be prepared for all new major residential, commercial and industrial developments.
- Focussing major government and private sector investments in regional cities and centres on major transport corridors, particularly railway lines, in order to maximise the access and mobility of communities.

Integrate public transport services and infrastructure into new development.

Improve transport links that strengthen the connections to Melbourne and adjoining regions.

### Policy documents

Consider as relevant:

- *The Victorian Transport Plan* (Victorian Government, 2008)
- *Public Transport Guidelines for Land Use and Development* (Victorian Government, 2008)
- *Cycling into the Future 2013-23* (Victorian Government, 2012)
- *Principal Public Transport Network 2017* (Department of Economic Development, Jobs, Transport and Resources, 2017)

## 18.01-2S Transport system

31/07/2018
VC148

### Objective

To coordinate development of all transport modes to provide a comprehensive transport system.

### Strategies

Reserve land for strategic transport infrastructure.

Require transport system management plans for key transport corridors and for major investment proposals.

Incorporate the provision of public transport, cycling and walking infrastructure in all major new state and local government road projects.

Locate transport routes to achieve the greatest overall benefit to the community to making the best use of existing social, cultural and economic infrastructure, minimising impacts on the environment and optimising accessibility, safety, emergency access, service and amenity.

Locate and design new transport routes and adjoining land uses to minimise disruption of residential communities and their amenity.

Plan or regulate new uses or development of land near an existing or proposed transport route to avoid detriment to and where possible enhance, the service, safety and amenity desirable for that transport route in the short and long terms.

Facilitate infrastructure that connects and improves train services between key regional cities and townships and Melbourne.

Ensure that pedestrian and cyclist access to public transport is facilitated and safeguarded.

Ensure the design, construction and management of all transport modes reduces environmental impacts.

Ensure careful selection of sites for freight generating facilities to minimise associated operational and transport impacts to other urban development and transport networks.

Consider all modes of travel, including walking, cycling, public transport, taxis and private vehicles (passenger and freight) in providing for access to new developments.

### Policy guidelines

Consider as relevant:

- Any applicable highway strategy published by VicRoads.

### Policy documents

Consider as relevant:

- *The Victorian Transport Plan* (Victorian Government, 2008)
- *Freight Futures: Victorian Freight Network Strategy for a more prosperous and liveable Victoria* (Victorian Government, 2008)
- *Public Transport: Guidelines for land use and development* (Victorian Government, 2008)

## 18.02 MOVEMENT NETWORKS

31/07/2018
VC148

# 18.02-1S Sustainable personal transport

31/07/2018
VC148

## Objective

To promote the use of sustainable personal transport.

## Strategies

Ensure development and the planning for new suburbs, urban renewal precincts, greyfield redevelopment areas and transit-oriented development areas (such as railway stations) provide opportunities to promote more walking and cycling.

Encourage the use of walking and cycling by creating environments that are safe and attractive.

Develop high quality pedestrian environments that are accessible to footpath-bound vehicles such as wheelchairs, prams and scooters.

Ensure cycling routes and infrastructure are constructed early in new developments.

Provide direct and connected pedestrian and bicycle infrastructure to and between key destinations including activity centres, public transport interchanges, employment areas, urban renewal precincts and major attractions.

Ensure cycling infrastructure (on-road bicycle lanes and off-road bicycle paths) is planned to provide the most direct route practical and to separate cyclists from other road users, particularly motor vehicles.

Require the provision of adequate bicycle parking and related facilities to meet demand at education, recreation, transport, shopping and community facilities and other major attractions when issuing planning approvals.

Provide improved facilities, particularly storage, for cyclists at public transport interchanges, rail stations and major attractions.

Ensure provision of bicycle end-of-trip facilities in commercial buildings.

## Policy documents

Consider as relevant:

- *Guide to Road Design, Part 6A: Paths for Walking and Cycling*
- *Cycling into the Future 2013–23* (Victorian Government, 2012)

## 18.02-1R Sustainable personal transport - Metropolitan Melbourne

31/07/2018
VC148

### Strategies

Improve local travel options for walking and cycling to support 20 minute neighbourhoods.

Develop local cycling networks and new cycling facilities that support the development of 20-minute neighbourhoods and that link to and complement the metropolitan-wide network of bicycle routes - the Principal Bicycle Network.

# 18.02-2S Public Transport

31/07/2018
VC148

## Objective

To facilitate greater use of public transport and promote increased development close to high-quality public transport routes.

## Strategies

Maintain and strengthen passenger transport networks.

Connect activity centres, job rich areas and outer suburban areas through high-quality public transport.

Improve access to the public transport network by:

- Ensuring integration with walking and cycling networks.
- Providing end-of-trip facilities for pedestrians and cyclists at public transport interchanges.

Plan for bus services to meet the need for local travel.

Ensure development supports the delivery and operation of public transport services.

Plan for and deliver public transport in outer suburban areas that is integrated with land use and development.

Provide for bus routes and stops and public transport interchanges in new development areas.

## Policy documents

Consider as relevant:

- *Public Transport Guidelines for Land Use and Development* (Victorian Government, 2008)
- *The Victorian Transport Plan* (Victorian Government, 2008)
- *Cycling into the Future 2013-23* (Victorian Government, 2012)

## 18.02-2R Principal Public Transport Network

31/07/2018
VC148

### Strategies

Facilitate high-quality public transport access to job-rich areas.

Maximise the use of existing infrastructure and increase the diversity and density of development along the Principal Public Transport Network, particularly at interchanges, activity centres and where principal public transport routes intersect.

Identify and plan for new Principal Public Transport Network routes.

Support the Principal Public Transport Network with a comprehensive network of local public transport.

Plan for local bus services to provide for connections to the Principal Public Transport Network.

Improve the operation of the Principal Public Transport Network by providing for:

- A metro-style rail system.
- Extended tram lines and the establishment of a light rail system.
- Road space management measures including transit lanes, clearways, stops and interchanges.

## 18.02-3S Road system

31/07/2018
VC148

### Objective

To manage the road system to achieve integration, choice and balance by developing an efficient and safe network and making the most of existing infrastructure.

### Strategies

Plan and regulate the design of transport routes and nearby areas to achieve visual standards appropriate to the importance of the route with particular reference to landscaping, the control of outdoor advertising and, where appropriate, the provision of buffer zones and resting places.

Provide for grade separation at railway crossings except with the approval of the Minister for Transport.

Make better use of roads for all road users through the provision of wider footpaths, bicycle lanes, transit lanes (for buses and taxis) and specific freight routes.

Selectively expand and upgrade the road network to provide for:

- High-quality connections between Metropolitan Melbourne and regional cities, and between regional cities.
- Upgrading of key freight routes.
- Ongoing development in outer suburban areas.
- Higher standards of on-road public transport.
- Improved key cross-town arterial links in the outer suburbs including circumferential and radial movement.

Ensure access to jobs and services in growth areas and outer suburban areas by improving roads for all road users.

Improve the management of key freight routes to make freight operations more efficient while reducing their external impacts.

Ensure that road space complements land use and is managed to meet community and business needs.

## 18.02-4S Car parking

31/07/2018
VC148

### Objective

To ensure an adequate supply of car parking that is appropriately designed and located.

### Strategies

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.

Encourage the efficient provision of car parking by consolidating car parking facilities.

Design and locate local car parking to:

- Protect the role and function of nearby roads.
- Enable easy and efficient use.
- Enable the movement and delivery of goods.
- Achieve a high standard of urban design and protect the amenity of the locality, including the amenity of pedestrians and other road users.
- Create a safe environment, particularly at night.
- Facilitate the use of public transport.

Protect the amenity of residential precincts from the effects of road congestion created by on-street parking.

Make adequate provision for taxi ranks as part of activity centres, transport interchanges and major commercial, retail and community facilities.

### Policy documents

Consider as relevant:

- *Public Transport Guidelines for Land Use and Development* (Victorian Government, 2008)

# 18.03 PORTS

31/07/2018
VC148

# 18.03-1S Planning for ports

31/07/2018
VC148

## Objective

To support the effective and competitive operation of Victoria's commercial trading ports at local, national and international levels and to facilitate their ongoing sustainable operation and development.

## Strategies

Provide for the ongoing development of ports at Melbourne, Geelong, Hastings and Portland in accordance with approved Port Development Strategies.

Identify and protect key transport corridors linking ports to the broader transport network.

Manage any impacts of a commercial trading port and any related industrial development on nearby sensitive uses to minimise the impact of vibration, light spill, noise and air emissions from port activities.

## Policy documents

Consider as relevant:

- *The Victorian Transport Plan* (Victorian Government, 2008)
- *Victorian Ports Strategic Framework* (Department of Infrastructure, 2004)
- *Freight Futures: Victorian Freight Network Strategy for a more prosperous and liveable Victoria* (Victorian Government, 2008)
- *Statement of Planning Policy No 1 - Western Port* (1970-varied 1976)
- *Port Futures* (Victorian Government, 2009)
- *Port of Hastings Land Use and Transport Strategy* (Port of Hastings Corporation, 2009)
- *Port of Portland - Port Land Use Strategy* (Port of Portland Pty Limited, 2009)
- *Port of Geelong - Development Strategy* (Victorian Regional Channels Authority, 2013)
- *Port Development Strategy 2035 Vision* (Port of Melbourne Corporation, 2009)

## 18.03-2S Planning for port environs

31/07/2018
VC148

### Objective

To plan for and manage land near commercial trading ports so that development and use are compatible with port operations and provide reasonable amenity expectations.

### Strategies

Protect commercial trading ports from encroachment of sensitive and incompatible land uses in the port environs.

Plan for and manage land in the port environs to accommodate uses that depend upon or gain significant economic advantage from proximity to the port's operations.

Ensure that industrially zoned land within the environs of a commercial trading port is maintained and continues to support the role of the port as a critical freight and logistics precinct.

Identify and protect key transport corridors linking ports to the broader transport network.

Ensure any new use or development within the environs of a commercial trading port does not prejudice the efficient and curfew free operations of the port.

Ensure that the use and intensity of development does not expose people to unacceptable health or safety risks and consequences associated with an existing major hazard facility.

Ensure that any use or development within port environs:

- Is consistent with policies for the protection of the environment.
- Takes into account planning for the port.

### Policy documents

Consider as relevant:

- *Freight Futures: Victorian Freight Network Strategy for a more prosperous and liveable Victoria* (Victorian Government, 2008)
- *Statement of Planning Policy No 1 - Western Port* (1970-varied 1976)
- *Port Futures* (Victorian Government, 2009)
- *Port of Hastings Land Use and Transport Strategy* (Port of Hastings Corporation, 2009)
- *Port of Portland - Port Land Use Strategy* (Port of Portland Pty Limited, 2009)
- *Port of Geelong - Development Strategy* (Victorian Regional Channels Authority, 2013)
- *Port Development Strategy 2035 Vision* (Port of Melbourne Corporation, 2009)

# 18.04 AIRPORTS

31/07/2018
VC148

# 18.04-1S Planning for airports and airfields

31/07/2018
VC148

## Objective

To strengthen the role of Victoria's airports and airfields within the state's economic and transport infrastructure, facilitate their siting and expansion and protect their ongoing operation.

## Strategies

Protect airports from incompatible land uses.

Ensure that in the planning of airports, land use decisions are integrated, appropriate land use buffers are in place and provision is made for associated businesses that service airports.

Ensure the planning of airports identifies and encourages activities that complement the role of the airport and enables the operator to effectively develop the airport to be efficient and functional and contribute to the aviation needs of the state.

Ensure the effective and competitive operation of Melbourne Airport at both national and international levels.

Protect the environs of Avalon Airport so it can operate as a full-size jet airport focussing on freight, training and services.

Recognise Essendon Airport's current role in providing specialised functions related to aviation, freight and logistics and its potential future role as a significant employment and residential precinct that builds on the current functions.

Recognise Moorabbin Airport as an important regional and state aviation asset by supporting its continued use as a general aviation airport, ensuring future development at the site encourages uses that support and enhance the state's aviation industry and supporting opportunities to extend activities at the airport that improve access to regional Victoria.

Maintain Point Cook Airfield as an operating airport complementary to Moorabbin Airport.

Preserve long-term options for a new general aviation airport south-east of Metropolitan Melbourne by ensuring urban development does not infringe on possible sites, buffer zones or flight paths.

Avoid the location of new airfields in areas that have greater long-term value to the community for other purposes.

Plan the location of airfields, nearby existing and potential development, and the land-based transport system required to serve them as an integrated operation.

Plan the visual amenity and impact of any use or development of land on the approaches to an airfield to be consistent with the status of the airfield.

Plan for areas around all airfields such that:

- Any new use or development that could prejudice the safety or efficiency of an airfield is precluded.
- The detrimental effects of aircraft operations (such as noise) are taken into account in regulating and restricting the use and development of affected land.
- Any new use or development that could prejudice future extensions to an existing airfield or aeronautical operations in accordance with an approved strategy or master plan for that airfield is precluded.

## Policy documents

Consider as relevant:

- *National Airports Safeguarding Framework* (as agreed by Commonwealth, State and Territory Ministers at the meeting of the Standing Council on Transport and Infrastructure on 18 May 2012)

- *Avalon Airport Master Plan* (Avalon Airport Australia Pty Ltd, 2015)
- *Avalon Airport Strategy* (Department of Business and Employment/AeroSpace Technologies of Australia, 1993) and its associated Aircraft Noise Exposure Concepts

## 18.04-1R Melbourne Airport

31/07/2018
VC148

### Strategies

Protect the curfew-free status of Melbourne Airport and ensure any new use or development does not prejudice its operation.

Ensure any new use or development does not prejudice the optimum usage of Melbourne Airport.

### Policy documents

Consider as relevant:

- *Melbourne Airport Master Plan 2013 - People Place Prosperity* (Australia Pacific Airports (Melbourne) Pty Ltd, 2013)
- *Melbourne Airport Strategy* (Government of Victoria/Federal Airports Corporation, approved 1990) and its associated *Final Environmental Impact Statement*

# 18.05 FREIGHT

31/07/2018
VC148

# 18.05-1S Freight links

31/07/2018
VC148

## Objective

To develop the key Transport Gateways and freight links and maintain Victoria's position as the nation's premier logistics centre.

## Strategies

Support major Transport Gateways as important locations for employment and economic activity by:

- Protecting designated ports, airports, freight terminals and their environs from incompatible land uses.
- Encouraging adjacent complementary uses and employment generating activities.

Improve the freight and logistics network to optimise freight handling and maintain the efficiency and effectiveness of the network.

Support the development of freight and logistics precincts in strategic locations along key regional freight corridors.

Plan for improved freight connections that are adaptable to commodity, market and operating changes.

Link areas of production and manufacturing to export markets.

Improve freight efficiency and increase capacity of Transport Gateways while protecting urban amenity.

Facilitate increased capacity of Interstate Freight Terminals, both in regional areas and Metropolitan Melbourne.

Ensure an adequate supply of land is zoned to allow high-volume freight customers to locate adjacent to Interstate Freight Terminals.

Minimise negative impacts of freight movements on urban amenity.

Limit incompatible uses in areas expected to have intense freight activity by identifying and protecting key freight routes on the Principal Freight Network.

## Policy documents

Consider as relevant:

- *Freight Futures: Victorian Freight Network Strategy for a more prosperous and liveable Victoria* (Victorian Government, 2008)

## 18.05-1R Freight links - Metropolitan Melbourne

31/07/2018
VC148

### Strategy

Ensure suitable sites are provided for intermodal freight terminals at key locations around Metropolitan Melbourne, particularly for the Beveridge Interstate Freight Terminal and the Western Interstate Freight Terminal.

# Appendix B

## Existing Traffic Management  Conditions


**MAP NO.1**

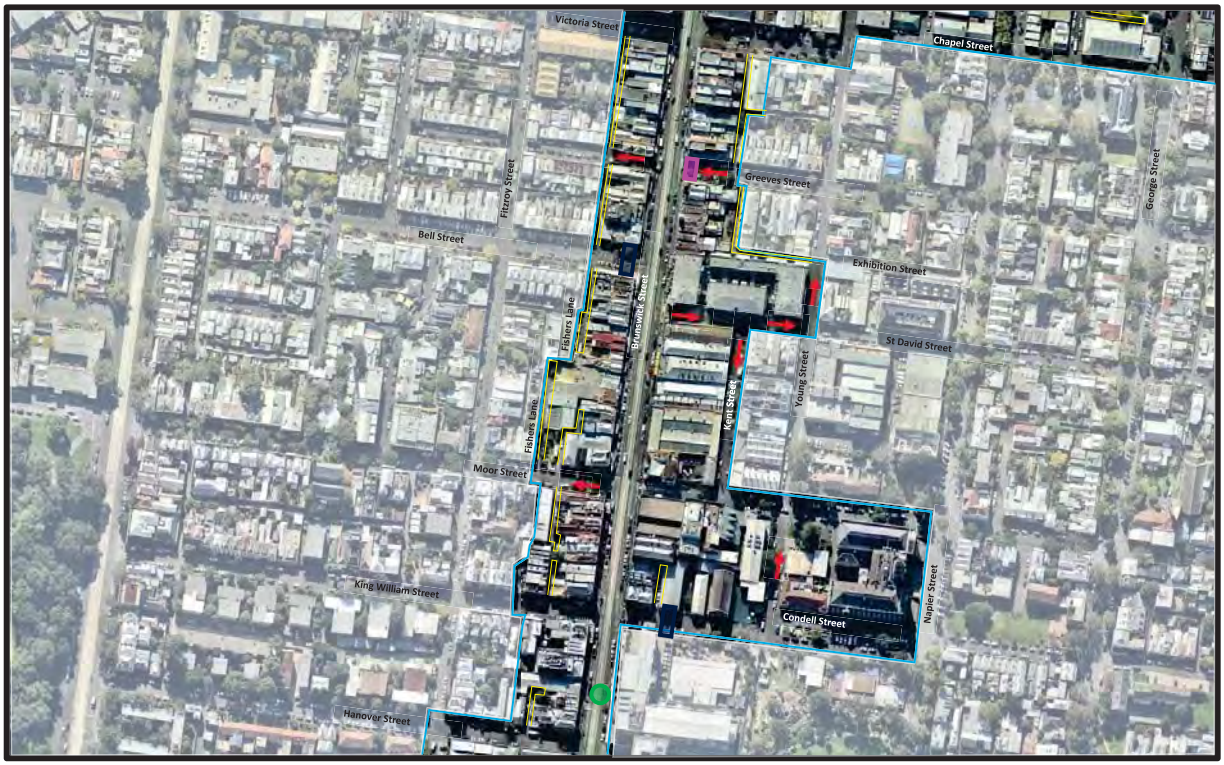
**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban


**MAP NO.2**

**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban




**MAP NO.3**

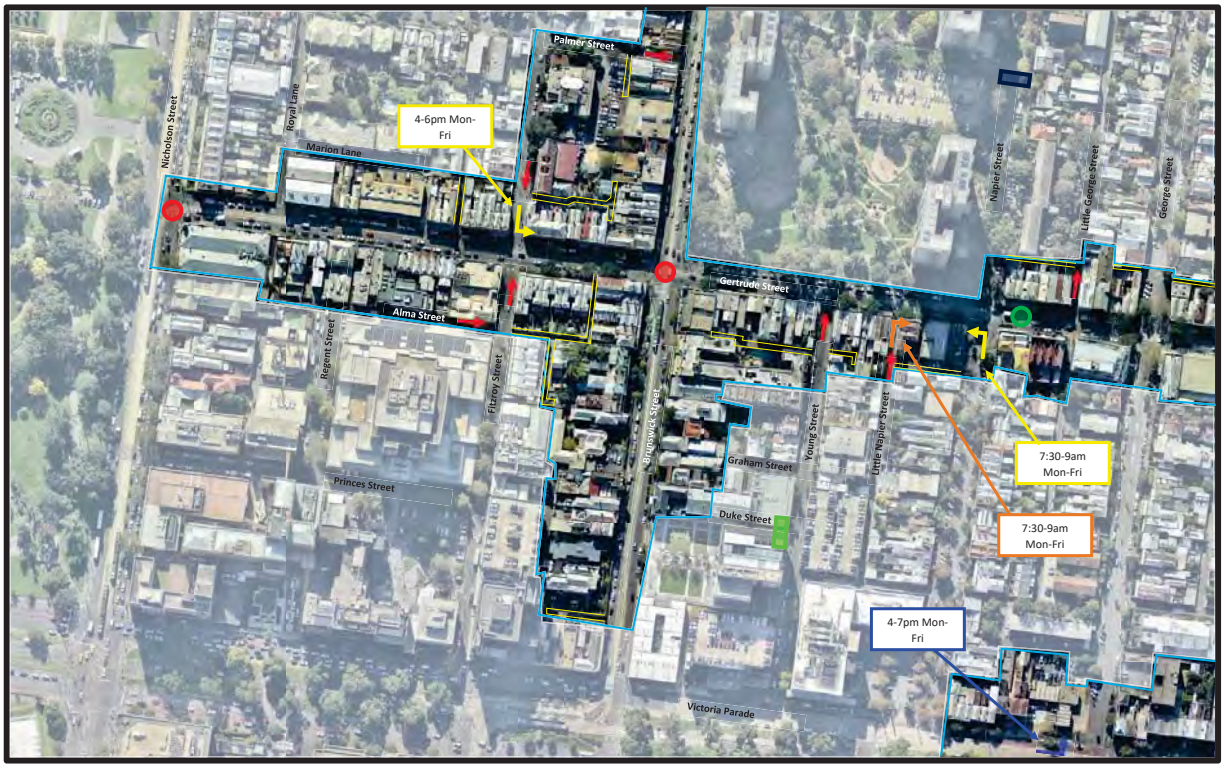
**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban


**MAP NO.4**

**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban




**MAP NO.5**

**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban


**MAP NO.6**

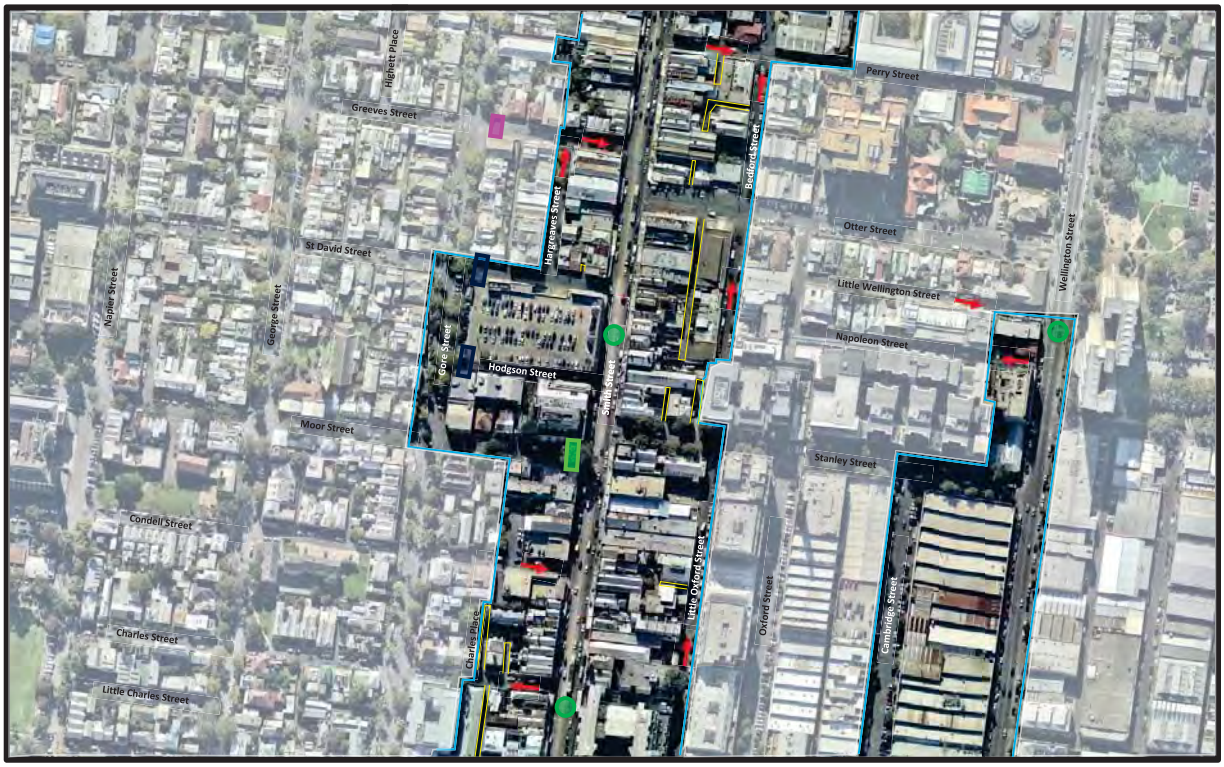
**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban


**MAP NO.7**

**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban




**MAP NO.8**

**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban


**MAP NO.9**

**Legend**

- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban

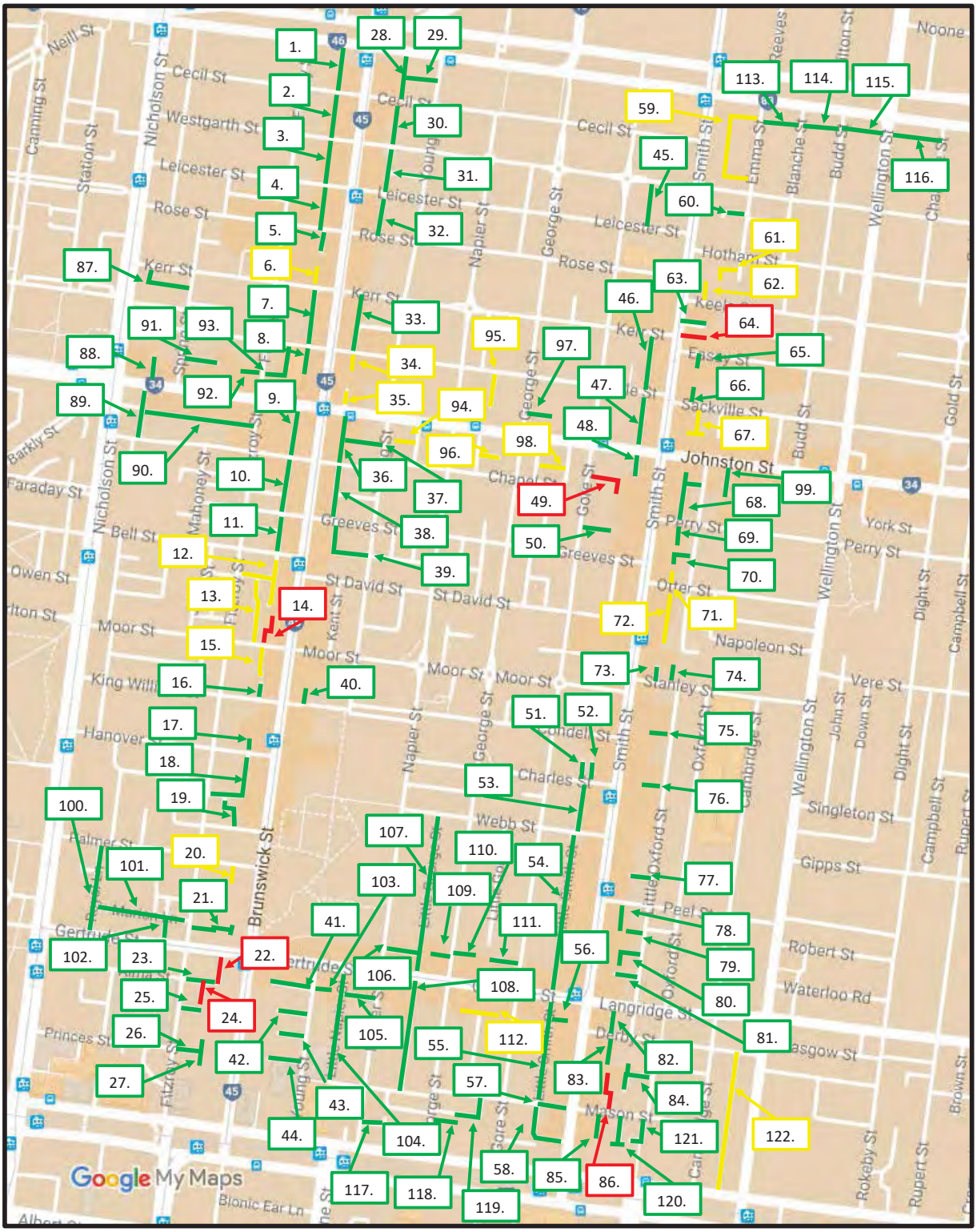

**MAP NO.10**

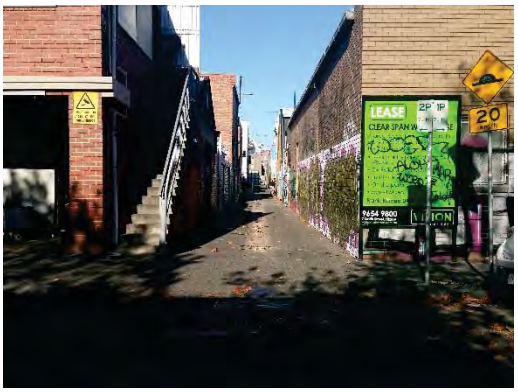
**Legend**

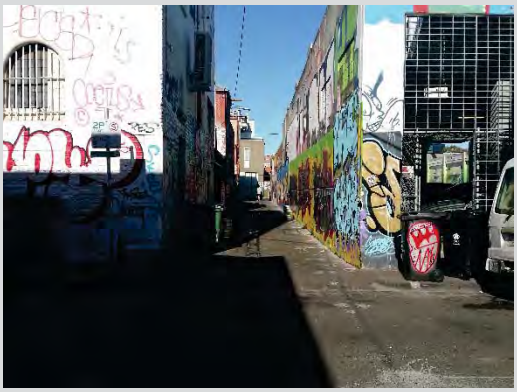
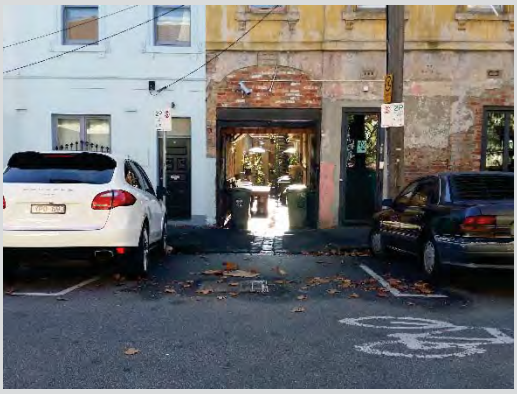
- Study Area Boundary
- Traffic Signals
- Pedestrian Signals
- Threshold Treatment
- No Entry (Exit Only)
- Right Turn Ban
- Left-turn Only
- One-way
- No Through Road Blockade
- Left Turn Ban

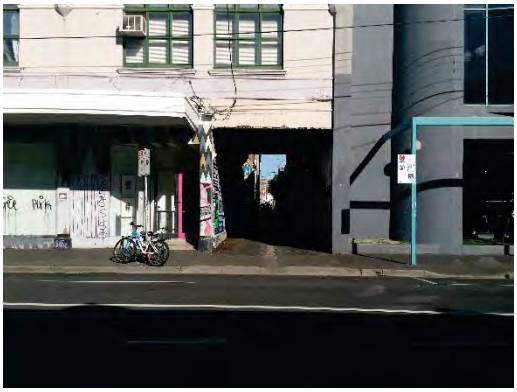
# Appendix C

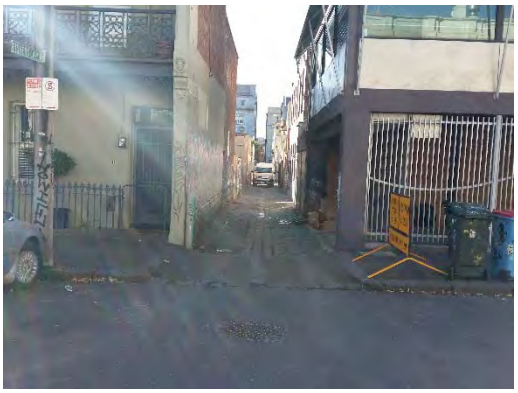
## Existing Laneway Conditions

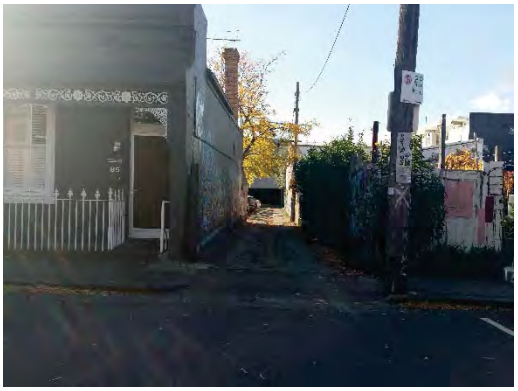

Legend
Unconstrained Laneway
Partially Constrained/Minor Improvement Required
Highly Constrained/Challenging to Remedy
Google My Maps
Brunswick St
Smith St
Johnston St
Wellington St
Napier St
George St
Moor St
Greeves St
St David St
Perry St
Leicester St
Rose St
Kerr St
Cecil St
Webb St
Charles St
Napoleon St
Stanley St
Otter St
Sackville St
Hotham St
Keele St
Fisher St
Chapel St
Gipps St
Singleton St
Robert St
Waterloo Rd
Peel St
Langridge St
Derby St
Mason St
Glasgow St
Princes St
Hanover St
Bell St
Owen St
Barkly St
Faraday St
Nicholson St
Canning St
Station St
Nicholson St
Cecil St
Westgarth St
Leicester St
Rose St
Kerr St
Neill St
Vere St
York St
Perry St
Napoleon St
Gipps St
Singleton St
Waterloo Rd
Robert St
Bionic Ear Ln

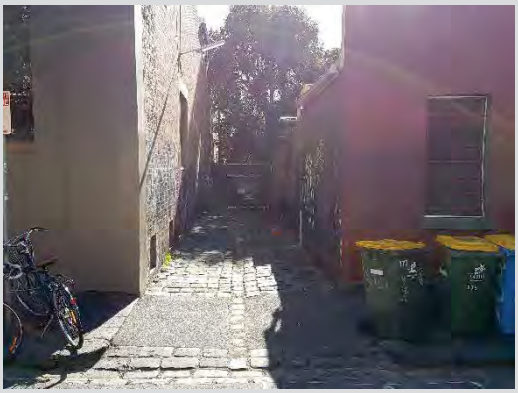
| Street Name | Description | Photo |
|---|---|---|
| **1: ROW (from Alexandra Parade to Cecil Street)** | **Existing Conditions:**<br>• Carriageway width – 3.4m<br>• Traffic management – Two-way, must turn left to/from Alexandra Parade. Cecil Street is one-way westbound.<br>• Parking – No Parking<br>• Footpath – No footpaths<br>• Material – Bluestone<br>• Layout features – there is a connecting ROW to the east which is currently inaccessible.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **2: ROW (from Cecil Street to Westgarth Street)** | **Existing Conditions:**<br>• Carriageway width – 3.6m<br>• Traffic management – Two-way, Cecil Street is one way westbound.<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **3: ROW (from Westgarth Street to Leicester Street)** | **Existing Conditions:**<br>• Carriageway width – 3.7m<br>• Traffic management – Two-way<br>• Parking – Car park on south side<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

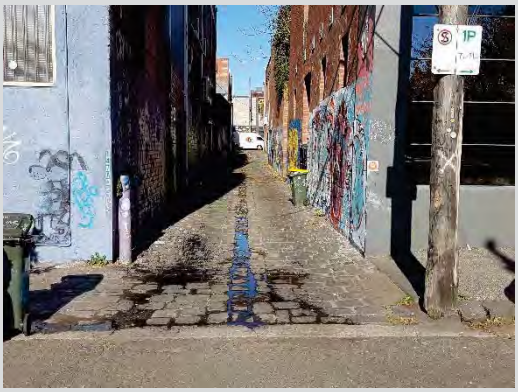
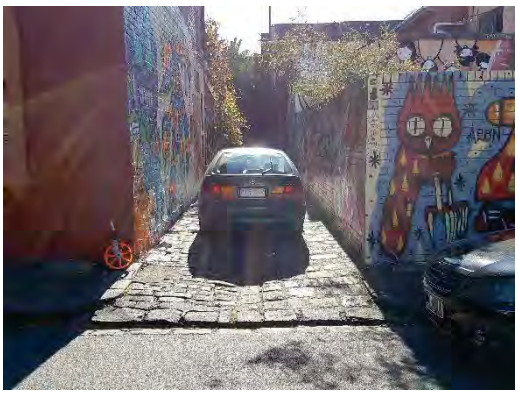
| Street Name | Description | Photo |
|---|---|---|
| **4: ROW (from Leicester Street to Rose Street)** | **Existing Conditions:**<br>• Carriageway width – 3.3m-3.6m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **5: ROW (from Rose Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.6m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – property on west side of ROW is set back from property boundary<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **6: ROW (from Kerr Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.5m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – very narrow and has a gate that can be closed<br>**Constraints: Partially constrained**<br>• Vertically constrained<br>• Narrow width – should be widened to at least 3m if used for vehicle access |  |

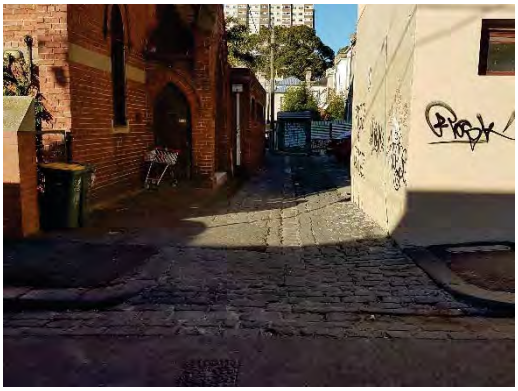
| Street Name | Description | Photo |
|---|---|---|
| **7: ROW (from Kerr Street to Argyle Street)** | **Existing Conditions:**<br>• Carriageway width – 3.6m-3.95m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **8: ROW (from Argyle Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.25m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **9: ROW (from Johnston Street to Victoria Street)** | **Existing Conditions:**<br>• Carriageway width – 3.5m-3.7m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the west, which is gated off to the public.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

| Street Name | Description | Photo |
|---|---|---|
| **10: ROW (from Victoria Street to Greeves Street)** | **Existing Conditions:**<br>• Carriageway width – 2.95m-4.45m<br>• Traffic management – Two-way, Greeves Street is one-way westbound.<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout Features – There is a connecting ROW to the west, with a splay provided on the northwest corner of the intersection.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **11: ROW (from Greeves Street to Bell Street)** | **Existing Conditions:**<br>• Carriageway width – 3.1m<br>• Traffic management – Two-way, Greeves Street is one-way westbound.<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW on the west, with no splays provided.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

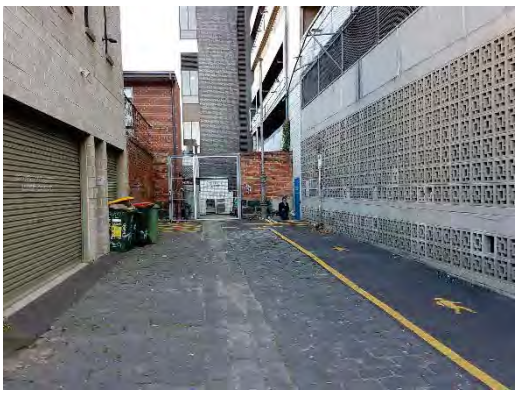
| Street Name | Description | Photo |
|---|---|---|
| **12: Fisher Lane (from Bell Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.85m-5.55m<br>• Traffic management – Two-way<br>• Parking – Parking provided in car park at southern end behind gate<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout Features – There is a ROW of width 3.05m on the west side of Fisher Lane which connects to Fitzroy Street to the west, and the continuation of Fisher Lane to the south. There are no splays at any of the intersections.<br>**Constraints: Partially constrained**<br>• Needs splays<br>• Needs connectivity with other section of Fisher Lane |  |
| **13: Fisher Lane (from Moor Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.05m<br>• Traffic management – Two-way, Moor Street is one-way westbound<br>• Parking – Large car park in the middle<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout Features – There is another ROW of width 3.05m to the north. This ROW connects to Fitzroy Street in the west, and the continuation of Fisher Street to the north. There are no splays on any of the intersections.<br>**Constraints: Partially constrained**<br>• Needs splays<br>• Needs connectivity with other section of Fisher Lane |  |

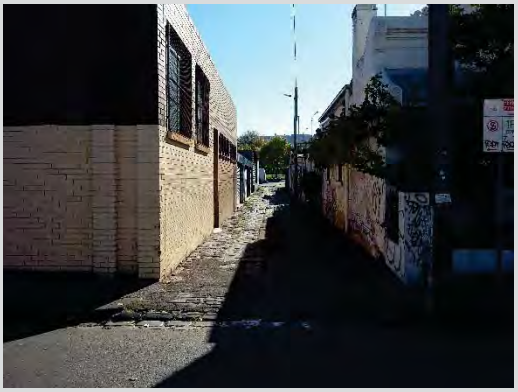
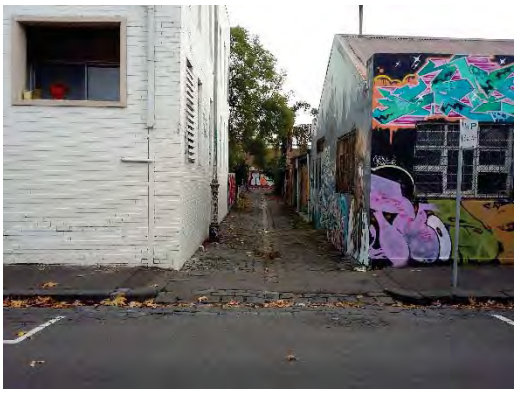
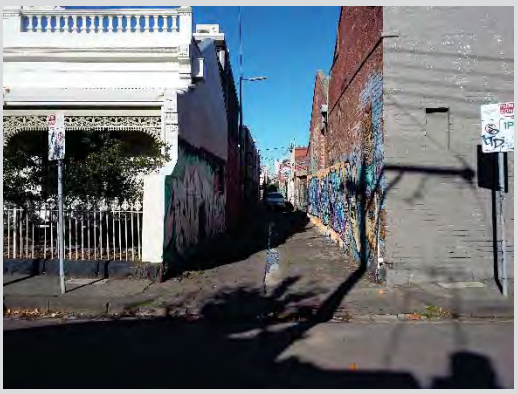
| Street Name | Description | Photo |
|---|---|---|
| **14: ROW (from Moor Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.55m<br>• Traffic management – Two-way, Moor Street is one-way westbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a zigzag bend in the ROW, with no splays provided.<br>**Constraints: Highly constrained**<br>• Needs splays<br>• Narrow |  |
| **15: ROW (from Moor Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.15m to 6m (at end)<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpaths – No footpaths<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend in the ROW, with no splay provided. The ROW continues north-south after the bend. The ROW does not provide a connection between the two streets.<br>**Constraints: Partially constrained**<br>• Needs splays |  |
| **16: ROW (from King William Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.0m<br>• Traffic Management – Two-way<br>• Parking –No Parking<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

| Street Name | Description | Photo |
|---|---|---|
| **17: ROW (from Hanover Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.55m<br>• Traffic management – Two-way<br>• Parking – No Parking<br>• Footpath – Small footpath on west side<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **18: Brunswick Place (from south side of Hanover Street to Fitzroy Street)** | **Existing Conditions:**<br>• Carriageway width – 3.65m<br>• Traffic management – Two-way<br>• Parking – No Parking within ROW, however parking is available around the 90 degree bend towards the west<br>• Footpath – Footpath available around the 90 degree bend towards the west<br>• Material – Bluestone<br>• Layout features – Operates as a single lane two-way ROW in a north-south direction before turning 90 degrees towards the west where two-way passing is available<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **19: ROW (from James Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.75m<br>• Traffic management – Two-way<br>• Parking – No Parking<br>• Footpath – No footpaths<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend in the ROW for pedestrian use only<br>**Constraints: Unconstrained laneway**<br>• Bend only accessible for pedestrians<br>• Suitable for properties fronting Brunswick Street |  |

| Street Name | Description | Photo |
|---|---|---|
| **20: ROW (from Palmer Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.75m<br>• Traffic management – Two-way<br>• Parking – Parking provided in car park at southern end<br>• Footpath – No footpaths<br>• Material – Bluestone<br>**Constraints: Partially constrained**<br>• Should be 3m wide<br>• Short in length |  |
| **21: ROW (from Fitzroy Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.7m to 3.7m. The ROW is 4.1m around the T-intersection.<br>• Traffic management – Two-way, traffic is restricted to travel south along Fitzroy Street<br>• Parking – No parking<br>• Footpath – No footpaths<br>• Material – Bluestone<br>• Layout features – There is a kink halfway along the ROW with splays. The ROW forms a T-intersection at its end<br>**Constraints: Partially Constrained**<br>• Lack of passing area |  |
| **22: Alma Street (north-south section from Gertrude Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.55m<br>• Traffic management – Not suitable for traffic movement. No vehicle access is provided to properties.<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Narrow and bends 90 degrees at the end towards the west<br>**Constraints: Highly constrained**<br>• Too narrow<br>• Limited ability to widen |  |

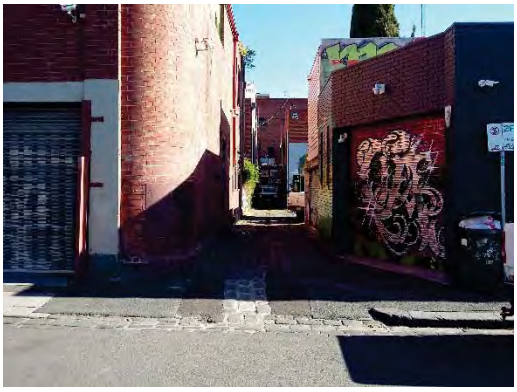
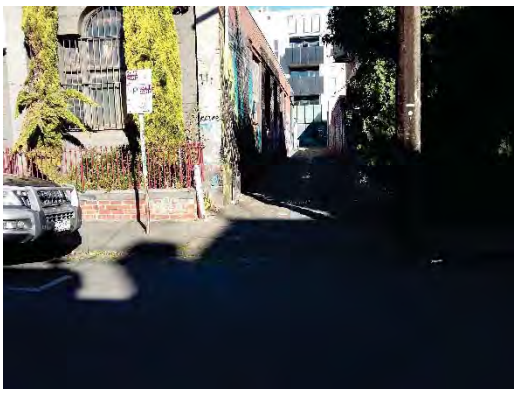
| Street Name | Description | Photo |
|---|---|---|
| **23: Alma Street (east-west section from Fitzroy Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.6m<br>• Traffic management – Two-way. Vehicles travelling to Fitzroy Street must travel towards the north from the ROW (one-way).<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Bends 90 degrees at the end towards the north (not suitable for vehicle access). A north-south ROW extends from the midpoint, with splays on one corner<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **24: ROW (north-south from Alma Street)** | **Existing Conditions:**<br>• Carriageway width – 3.1m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – splays on one corner<br>**Constraints: Highly constrained**<br>• Lacks splays<br>• Difficult to get into from Alma Street |  |
| **25: ROW (east-west from Fitzroy Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.0m-3.3m (around bend)<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend towards the south with no splay<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

| Street Name | Description | Photo |
|---|---|---|
| **26: Princes Street (east-west from Fitzroy Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.95m (including building setback)<br>• Traffic management – Two-way<br>• Parking – Parking on the north side of ROW within building setback<br>• Footpath – No footpath<br>• Material – Asphalt & Bluestone<br>• Layout features – Forms a T-intersection with ROW at the end in a north-south direction<br>**Constraints: Unconstrained laneway**<br>• Two-way traffic |  |
| **27: ROW (from Princes Street to END)** | **Existing Conditions:**<br>• Carriageway width – 6.1m (including footpath)<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Footpath on west side (south of Princes Street)<br>• Material – Asphalt & Bluestone<br>• Layout features – Includes footpath south of Princes Street.<br>**Constraints: Unconstrained laneway**<br>• Two-way traffic |  |

| Street Name | Description | Photo |
|---|---|---|
| **28: ROW (from Alexandra Parade to Cecil Street)** | **Existing Conditions:**<br>• Carriageway width – 3.65m<br>• Traffic management – Two-way, must enter/exit left at Alexandra Parade. Cecil Street is one-way westbound.<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Connects to ROW 29. on the eastern side. No splays are provided.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **29: ROW (from ROW 28. to Young Street)** | **Existing Conditions:**<br>• Carriageway width – 3.5m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout Features – Connects to ROW 28. on the western side. No splays are provided.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **30: ROW (from Cecil Street to Westgarth Street)** | **Existing Conditions:**<br>• Carriageway width – 3.5m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No Footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

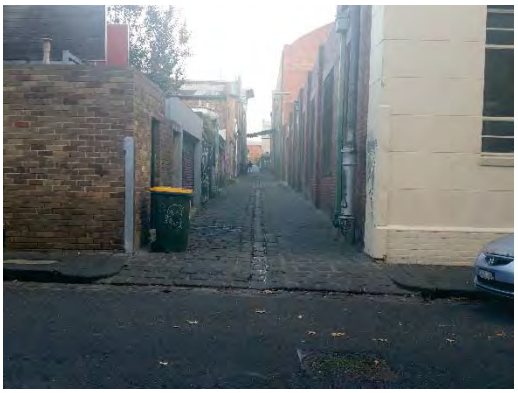
| Street Name | Description | Photo |
|---|---|---|
| **31: ROW (from Westgarth Street to Leicester Street)** | **Existing Conditions:**<br>• Carriageway width – 3.6m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW on the east side, which connects to Young Street<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **32: ROW (from Leicester to Rose)** | **Existing Conditions:**<br>• Carriageway width – 3.7m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **33: ROW (from Kerr Street to Argyle Street)** | **Existing Conditions:**<br>• Carriageway width – 2.9m-6.7m<br>• Trafficable Width – 2.9m-8.5m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Both sides of the road for the south section<br>• Material – Bluestone and Asphalt<br>• Layout features – The ROW is narrow for the norther section, but opens out into a wider ROW with footpaths and kerbing. The material also changes at this point from bluestone to asphalt. There is an east-west section at this point which connects to Young Street.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

| Street Name | Description | Photo |
|---|---|---|
| **34: ROW (from Argyle Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.5m<br>• Traffic management – Two-way<br>• Parking –No parking<br>• Footpath – No footpath<br>• Material – Gravel<br>**Constraints: Partially constrained**<br>• Narrow – less than 3m in width<br>• Short in length |  |
| **35: ROW (from Johnston Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.8m<br>• Traffic management – Two-way<br>• Parking –No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Partially constrained**<br>• Narrow – less than 3m in width<br>• Short in length |  |
| **36: ROW (from Johnston Street to Victoria Street)** | **Existing Conditions:**<br>• Carriageway width – 2.95m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – Connects to ROW 37. on the east side, with no splays provided<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

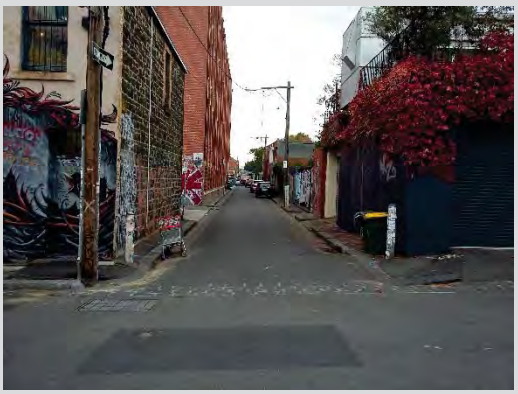
| Street Name | Description | Photo |
|---|---|---|
| **37: ROW (from ROW 36. to Young Street)** | **Existing Conditions:**<br>• Carriageway width – 3.05m<br>• Traffic management – Two-way, Young Street is one-way northbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Connects to ROW 36. on the west end, with no splays provided<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **38: ROW (from Victoria Street to Greeves Street)** | **Existing Conditions:**<br>• Carriageway width – 3.1m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW on the east side, with no splays provided.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **39: ROW (from Greeves Street to Young Street)** | **Existing Conditions:**<br>• Carriageway width – 3.05m-3.8m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend in the ROW, with a splay provided on the north-east corner.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

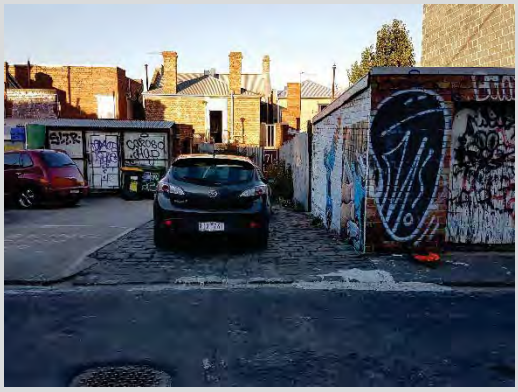
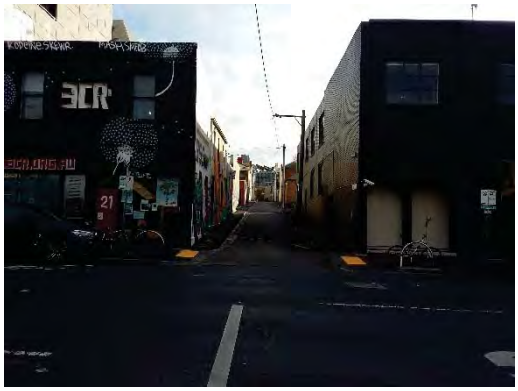
| Street Name | Description | Photo |
|---|---|---|
| **40: ROW (North-south section from King William Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.65m<br>• Traffic management – Two-way, must travel west on King William Street as a No Through Road is to the east (bollards)<br>• Parking – No Parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **41: ROW (from Young Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.85m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout Features – Kink located towards the western end of ROW<br>**Constraints: Partially constrained**<br>• Kink<br>• Length<br>• Slightly less than two-way traffic |  |
| **42: ROW (from Young Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.0m<br>• Traffic management – Two-way<br>• Parking – No Parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout Features – No properties take vehicle access from the ROW<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

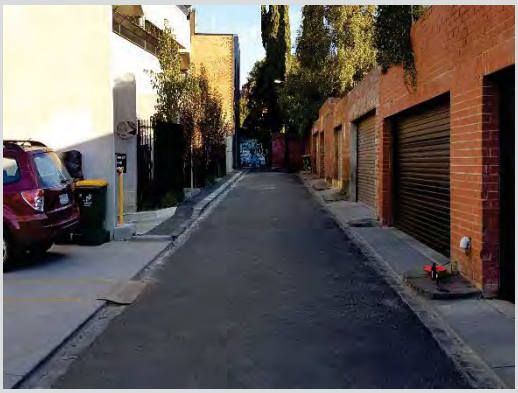
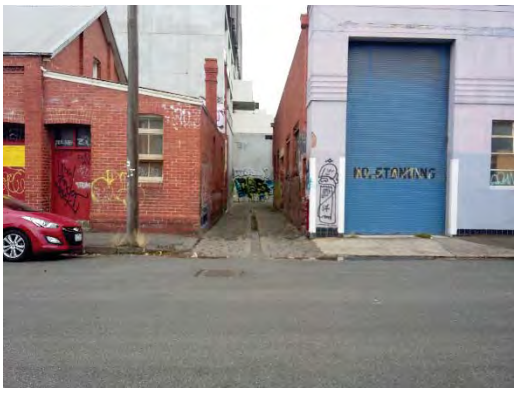
| Street Name | Description | Photo |
|---|---|---|
| **43: Graham Street (from Young Street to END)** | **Existing Conditions:**<br>• Carriageway width – 5.1m<br>• Road reserves – 8.0m<br>• Traffic management – Two-way<br>• Parking – Parking provided on the north side on-street<br>• Footpath – Footpaths on both the north and south side<br>• Material – Asphalt with bluestone kerb & channel<br>• Layout features – Operates with a single lane for two-way traffic. There is a dead-end at the western end.<br>**Constraints: Unconstrained laneway**<br>• Two-way traffic |  |
| **44: Duke Street (from Young Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.2m<br>• Road reserves – 7.8m<br>• Parking – No parking<br>• Footpath – Footpaths on both the north and south side<br>• Material – Bluestone slate<br>• Layout Features – No entry authorised vehicles expected.<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **45: ROW (from Westgarth Street to Leicester Street)** | **Existing Conditions:**<br>• Carriageway width – 3.05m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

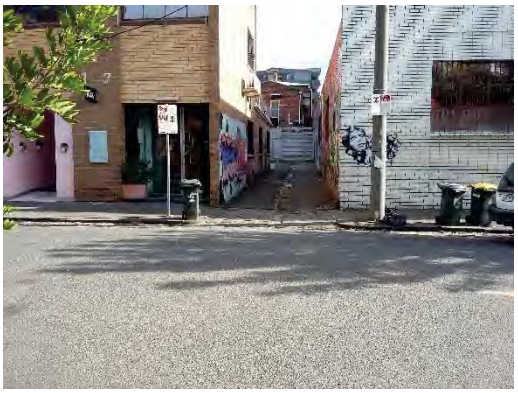
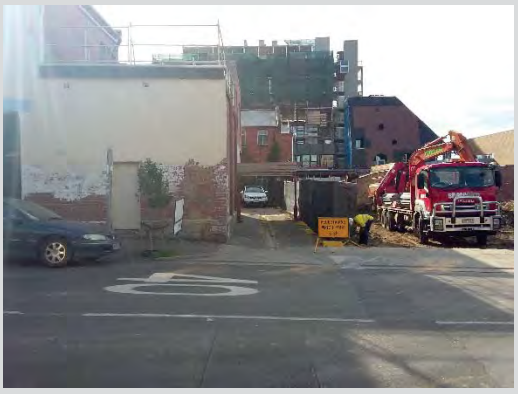
| Street Name | Description | Photo |
|---|---|---|
| **46: Macrobertsons Lane (from Kerr Street to Argyle Street)** | **Existing Conditions:**<br>• Carriageway width – 3.8m-4.05m<br>• Traffic management – Two-way, Argyle Street is one-way westbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **47: Macrobertsons Lane (from Argyle Street to Johnston Street)** | **Existing Conditions:**<br>• Carriageway width – 3.45m-3.8m<br>• Traffic management – Two-way, Argyle Street is one-way westbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **48: Macrobertsons Lane (from Johnston Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.1m-3.3m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

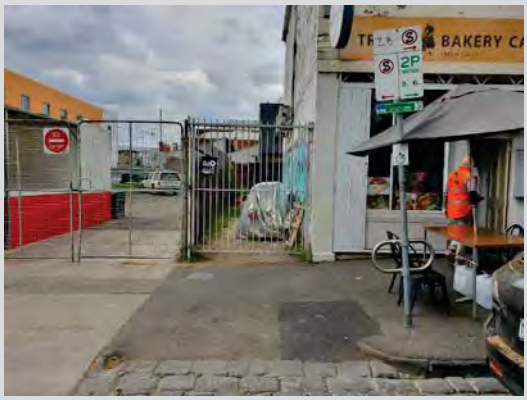
| Street Name | Description | Photo |
|---|---|---|
| **49: ROW (from Gore Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.8m-3.25m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend in the ROW, with a splay provided on the southwest corner<br>**Constraints: Highly Constrained**<br>• Narrow<br>• Bend<br>• Inability to widen |  |
| **50: ROW (from Gore Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.95m<br>• Traffic management – Two-way<br>• Parking – Car park at east end of ROW<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short |  |
| **51: ROW (from Charles Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in Length<br>• Dead End |  |

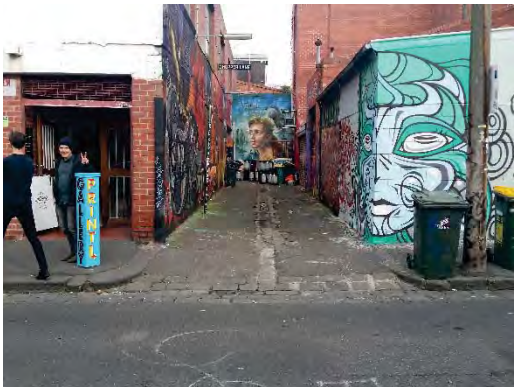
| Street Name | Description | Photo |
|---|---|---|
| **52: Charles Place (from Charles Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.75m<br>• Traffic management –Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **53: ROW (from Charles Street to Webb Street)** | **Existing Conditions:**<br>• Carriageway width – 4.05m<br>• Traffic management – Two-way, Charles Street is one-way westbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **54: Little Smith Street (from Webb Street to Gertrude Street)** | **Existing Conditions:**<br>• Carriageway width – 4.5m<br>• Road reserve – 5.8m<br>• Traffic management – One-way southbound<br>• Parking – No parking<br>• Footpath – Narrow path/kerbing on both sides<br>• Material – Asphalt<br>• Layout features – long and narrow<br>**Constraints: Unconstrained laneway**<br>• One-way<br>• Used for loading without adequate space |  |

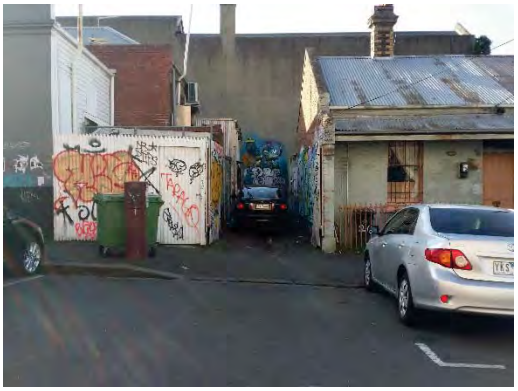
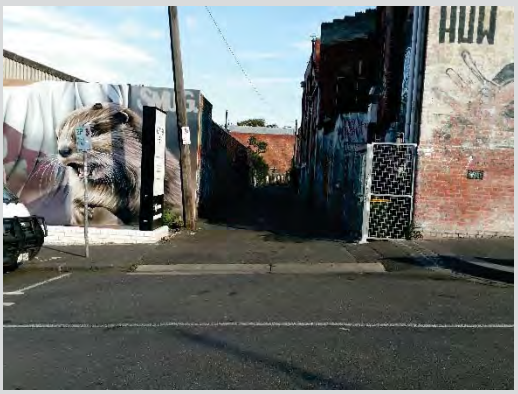
| Street Name | Description | Photo |
|---|---|---|
| **55: Little Smith Street (from Gertrude Street Little Victoria Street)** | **Existing Conditions:**<br>• Carriageway width – 4.2m<br>• Road Reserve – 6.2m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Narrow path/kerbing on both sides<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **56: ROW (from Little Smith Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.8m<br>• Traffic management –Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **57: Little Victoria Street (from Little Smith Street to Smith Street)** | **Existing Conditions:**<br>• Carriageway width – 4m<br>• Road Reserve – 6.35m<br>• Traffic management – One-way westbound<br>• Parking – No parking<br>• Footpath – Footpath on both sides<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length<br>• Continuous<br>• One-way |  |

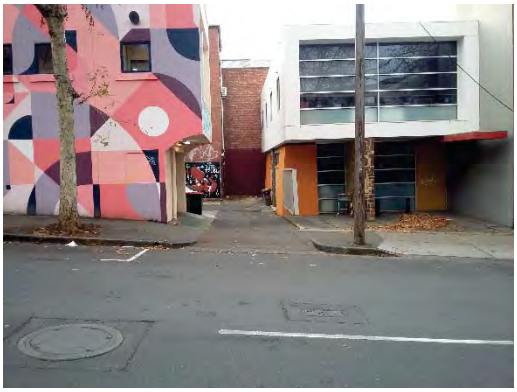
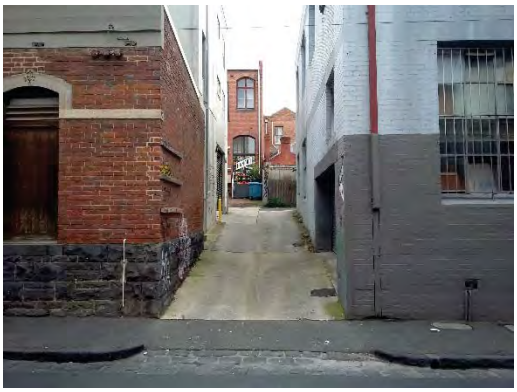
| Street Name | Description | Photo |
|---|---|---|
| **58: Little Smith Street (from Little Victoria Street to Smith Street)** | **Existing Conditions:**<br>• Carriageway width – 3.1m-4.5m<br>• Road Reserve – 3.1m-6.2m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Narrow path/kerbing on both sides for north-south section, none for east-west section<br>• Material – Asphalt and Bluestone<br>• Layout features – there is a 90 degree bend in the ROW with a narrow kink from the property on the southwest corner making it difficult to traverse.<br>**Constraints: Unconstrained Laneway**<br>• Short in length<br>• Corner does not need to be traversed |  |
| **59: ROW (from Emma St to Emma Street)** | **Existing Conditions:**<br>• Carriageway width – 2.9m-3.05m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – there are two 90 degree bends on the ROW, with a splay provided for the northern bend. The southern bend does not have a splay and is difficult to traverse. There is also construction going on adjacent to the ROW.<br>**Constraints: Partially constrained**<br>• Lack of splay on the southern bend |  |
| **60: ROW (from Emma Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.6m<br>• Traffic management – Two-way<br>• Parking – There is a car park at the western end of the ROW.<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

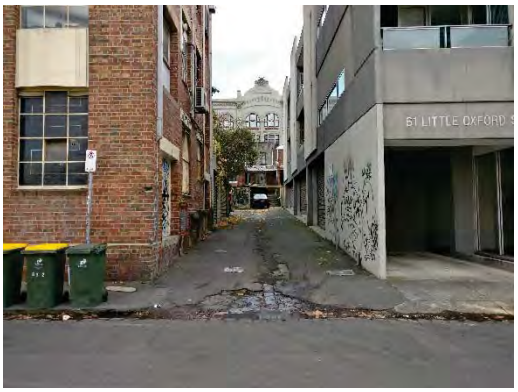
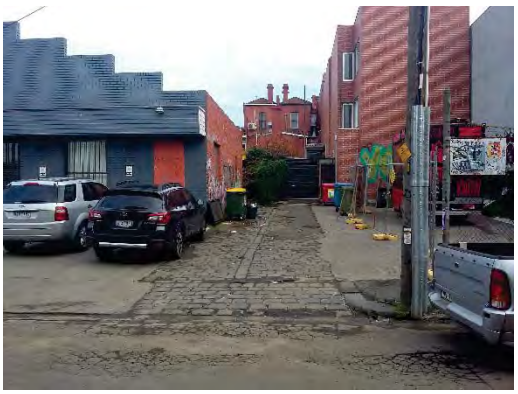
| Street Name | Description | Photo |
|---|---|---|
| **61: ROW (from Emma Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.05m-3.35m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No foothpath<br>• Material – Asphalt<br>• Layout features – there is a 90 degree bend at the end of the ROW, with no splays provided.<br>**Constraints: Partially constrained**<br>• Lacks splays |  |
| **62: ROW (from Keele Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.75m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Partially constrained**<br>• Narrow – less than 3m in width |  |
| **63: ROW (from Smith Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.05m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No foothpath<br>• Material – Concrete<br>**Constraints: Unconstrained Laneway**<br>• Short in length |  |

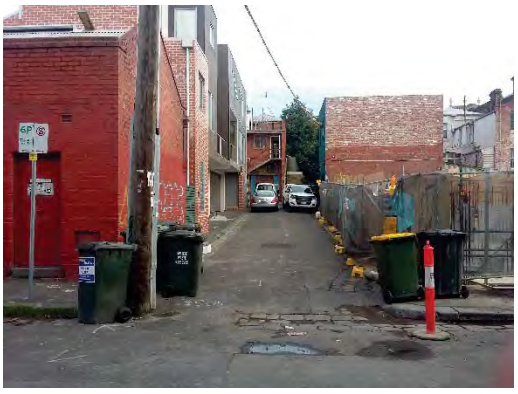
| Street Name | Description | Photo |
|---|---|---|
| **64: ROW (from Smith Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.2m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Unsealed<br>• Gated entrance<br>**Constraints: Highly Constrained**<br>Narrow width |  |
| **65: ROW (from Easey Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.0m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No foothpath<br>• Material – Asphalt<br>**Constraints: Unconstrained Laneway**<br>• Short in length |  |
| **66: ROW (from Sackville Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.9m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

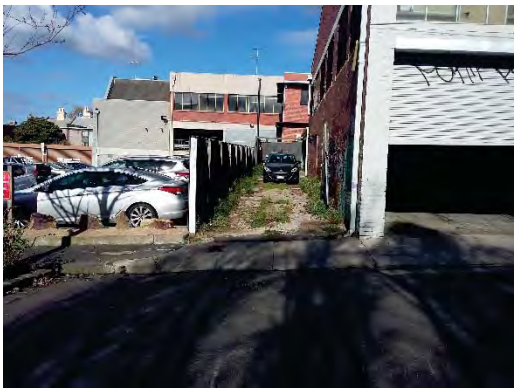
| Street Name | Description | Photo |
|---|---|---|
| **67: ROW (from Sackville Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.6m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Has a T-intersection with an east-west section. There are no splays, but the open section at the end allows for turning.<br>**Constraints: Partially constrained**<br>• Requires splays at T-intersection |  |
| **68: ROW (from Perry Street to Bedford Street)** | **Existing Conditions:**<br>• Carriageway width – 2.75m-3.1m, plus additional width due to property setback<br>• Traffic management – Two-way, Bedford Street is one-way northbound. Perry Street is one-way eastbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – The ROW has a T-intersection on the western side. At this point there is splays on both corners. The property along the south of the ROW is also setback from its boundary.<br>**Constraints: Unconstrained laneway**<br>• Two-way traffic flow |  |
| **69: ROW (from Perry Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.35m<br>• Traffic management – Two-way, Perry Street is one-way eastbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

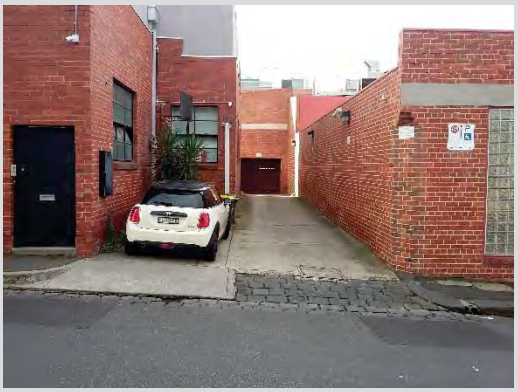
| Street Name | Description | Photo |
|---|---|---|
| **70: ROW (from Bedford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.2m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – The ROW has a 90 degree bend with a splay provided on the southeast corner.<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **71: ROW (from Otter Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.6m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – Narrow in width<br>**Constraints: Partially constrained**<br>• Narrow – less than 3m in width<br>• Short in length |  |
| **72: ROW (from Otter Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.25m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – Long ROW with large amount of vehicle access.<br>**Constraints: Partially constrained**<br>• Needs widening or passing area<br>• Length |  |

| Street Name | Description | Photo |
|---|---|---|
| **73: ROW (from Stanley Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.75m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length<br>• Narrow – but existing property setback makes width acceptable |  |
| **74: ROW (from Stanley Street to END)** | **Existing Conditions:**<br>• Carriageway width – 6.05m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **75: ROW (from Little Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Concrete<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **76: ROW (from Little Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.45m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

| Street Name | Description | Photo |
|---|---|---|
| **77: Oxford Place (from Little Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 5m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **78: ROW (from Peel Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.3m<br>• Road Reserve – 6.25m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Narrow footpath/kerbing on both sides<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **79: ROW (from Little Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.65m-4.45m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a slight kink in the ROW, with a splay provided.<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

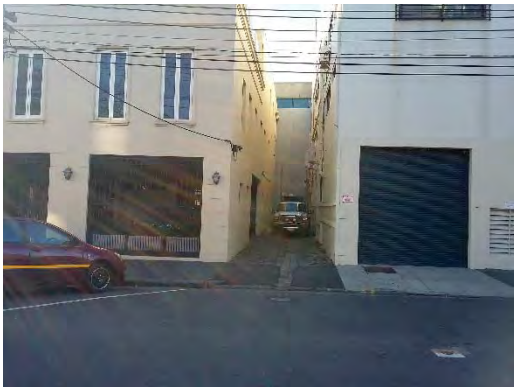
| Street Name | Description | Photo |
|---|---|---|
| **80: ROW (from Little Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.8m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – There is a 90 degree bend in the ROW, with a splay on the southeast corner<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **81: ROW (from Little Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.25m-7.65m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length<br>• Two-way for parts |  |
| **82: ROW (from Langridge Street to Derby Street)** | **Existing Conditions:**<br>• Carriageway width – 3.05m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

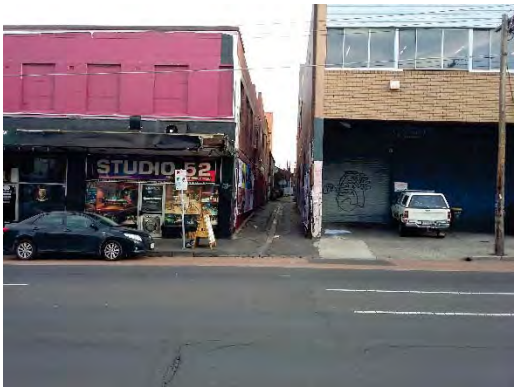
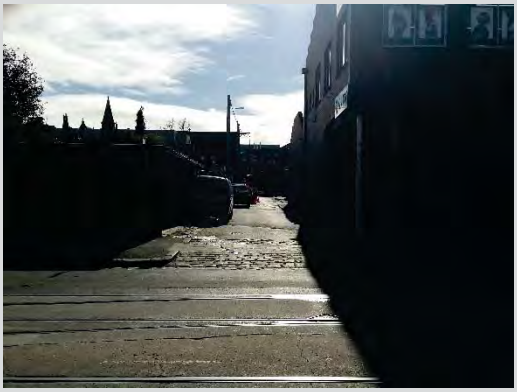
| Street Name | Description | Photo |
|---|---|---|
| **83: ROW (from Derby Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.95m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **84: ROW (from Oxford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.1m-5.7m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – there is a T-intersection at the west end, with enough space to manoeuvre corners<br>**Constraints: Unconstrained laneway**<br>• Short in length<br>• Wide enough to turn |  |
| **85: ROW (from Mason Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.3m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Unsealed road<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

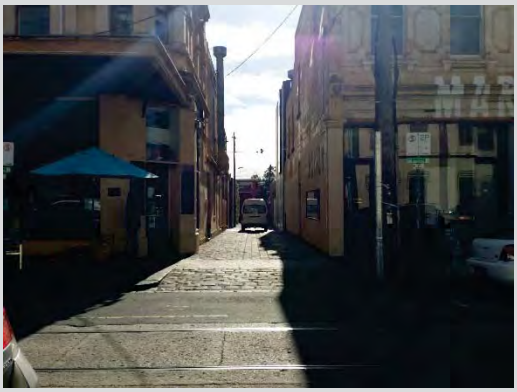
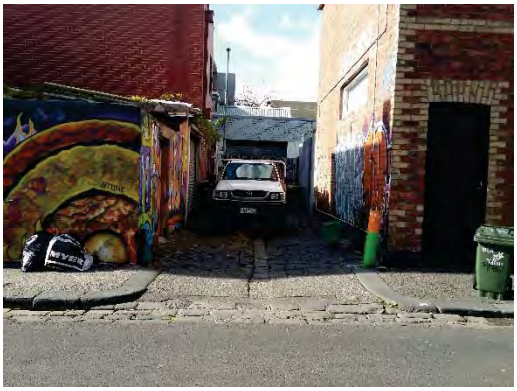
| Street Name | Description | Photo |
|---|---|---|
| **86: ROW (from Mason Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.1m-3.45m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – concrete<br>• There is a kink section in the middle, with splays provided at each turn<br>**Constraints: Highly Constrained**<br>• Bend<br>• Inability to widen |  |
| **87: ROW (from Kerr Street to Spring Street)** | **Existing Conditions:**<br>• Carriageway width – 4.15m-4.3m<br>• Traffic management – Two-way<br>• Parking – No Parking<br>• Footpaths – No footpaths<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend in the ROW, with no splay provided<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **88: Johnston Place (from Johnston Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.3m<br>• Road reserve – 5.85m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpaths – No footpaths<br>• Material – Bluestone<br>• Layout features – there is a section of low lying vegetation of the east side of the ROW<br>**Constraints: Unconstrained laneway**<br>• Short in length<br>• Two-way |  |

| Street Name | Description | Photo |
|---|---|---|
| **89: ROW (north-south section from Johnston Street to Victoria Street)** | **Existing Conditions:**<br>• Carriageway width – 4.4m-4.6m<br>• Traffic Management – Two-way<br>• Parking – Car park on west side of mid-point<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the east of the east which provides access to Fitzroy Street. No splays are provided, but the property to the south of the intersection is set back. Access to Johnston Street is provided via the private car park to the west.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **90: ROW (East-West section from ROW 86. to Fitzroy Street)** | **Existing Conditions:**<br>• Carriageway width – 6.1m<br>• Traffic management – Two-way<br>• Parking – Car park to the west end of ROW<br>• Footpaths – No footpaths<br>• Materials – Bluestone<br>• Layout features – connected to ROW 86. at the west end. Access to Johnston Street is provided via the private car par to the west.<br>**Constraints: Unconstrained laneway**<br>• Two-way |  |
| **91: Harrison Place (from Spring Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.1m<br>• Traffic management – Two-way<br>• Parking – No Parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There are 2 short ROWs on the north and south side of Harrison Place, with no splays provided at either<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

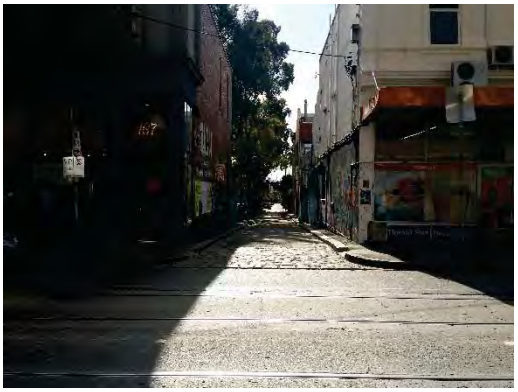
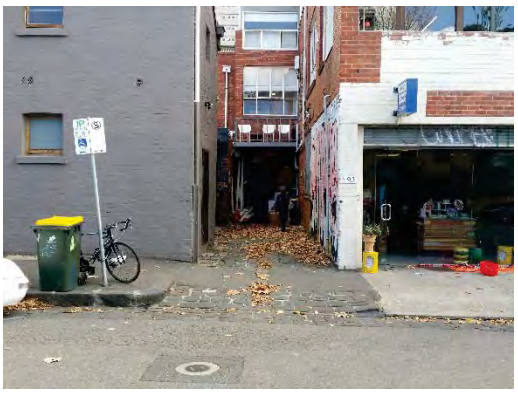
| Street Name | Description | Photo |
|---|---|---|
| **92: ROW (from west side of Fitzroy Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.2m<br>• Traffic management – Two-way<br>• Parking – Parking for adjacent properties along south side of ROW<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **93: ROW (from Fitzroy Street to Argyle Street)** | **Existing Conditions:**<br>• Carriageway width – 3.15m-3.25m<br>• Traffic management – Two-way<br>• Parking – No Parking<br>• Footpath – No footpaths<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend in the ROW, with no splay provided<br>**Constraints: Unconstrained laneway**<br>• Two short lengths |  |
| **94: ROW (from Hertford Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.75m – but hard to tell with construction occurring<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Partially Constrained**<br>• Short<br>• Narrow – however current construction may affect width |  |

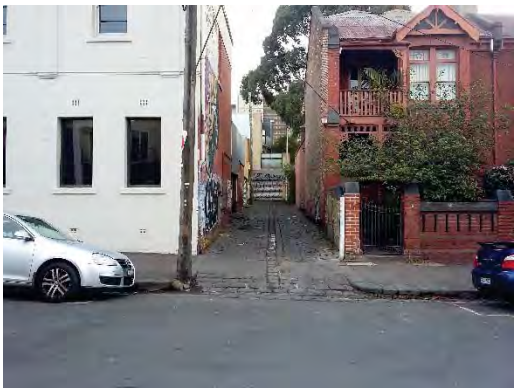
| Street Name | Description | Photo |
|---|---|---|
| **95: ROW (from Argyle Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4m<br>• Traffic management – Two-way, Argyle Street is one-way eastbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Partially Constrained**<br>• Needs widening<br>• High development potential |  |
| **96: ROW (from Rochester Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.8m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the north, with no splays provided at the intersection, however, properties on the south are set back.<br>**Constraints: Partially constrained**<br>• Narrow – less than 3m width<br>• Short |  |
| **97: ROW (from George Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.1m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

| Street Name | Description | Photo |
|---|---|---|
| **98: ROW (from Elliot Street to Chapel Street)** | **Existing Conditions:**<br>• Carriageway width – 2.7m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Partially constrained**<br>• Narrow – less than 3m width<br>• Short |  |
| **99: ROW (from Johnston Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.2m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short |  |
| **100: Royale Lane (from Gertrude Street to Palmer Street)** | **Existing Conditions:**<br>• Carriageway width – 3.9m<br>• Road reserve – 4.55m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Narrow path/kerbing on the east side<br>• Material – Asphalt<br>• Layout features – Connects to Marion Lane to the east, with a splay provided on the northeast corner<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

| Street Name | Description | Photo |
|---|---|---|
| **101: Marion Lane (from Royal Lane to Fitzroy Street)** | **Existing Conditions:**<br>• Carriageway width – 3.2m-6m<br>• Traffic management – Two-way, Fitzroy Street is one-way southbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Narrow at the east end, but widens out to allow vehicle passing<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **102: ROW (from Gertrude Street to Marion Lane)** | **Existing Conditions:**<br>• Carriageway width – 3.7m-3.8m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Intersects with Marion Lane, with little sight distance to see incoming traffic/pedestrians.<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **103. ROW (from Young Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.55m<br>• Traffic management – Two-way, Young Street is one-way northbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

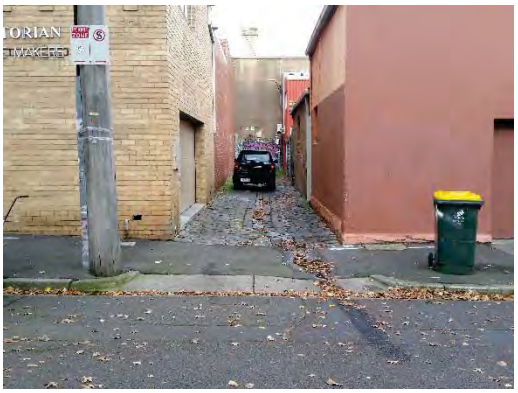
| Street Name | Description | Photo |
|---|---|---|
| **104: Little Napier Street (from Gertrude to Little Victoria Street)** | **Existing Conditions:**<br>• Carriageway width – 3.7m<br>• Road Rerseve – 5.2m<br>• Traffic management – One-way northbound<br>• Parking – No parking<br>• Footpath – Narrow kerbing/path on both sides<br>• Material – Asphalt<br>**Constraints: Unconstrained laneway**<br>• Already one-way |  |
| **105: ROW (from Little Napier to Napier)** | **Existing Conditions:**<br>• Carriageway width – 3.95m<br>• Traffic management – Two-way, Little Napier is one-way northbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **106: ROW (from Napier Street to Little George Street)** | **Existing Conditions:**<br>• Carriageway width – 3m<br>• Traffic management – Two-way, Little George is one-way northbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout Features – connects to Little George Street in the east, with a splay provided on the northwest corner<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

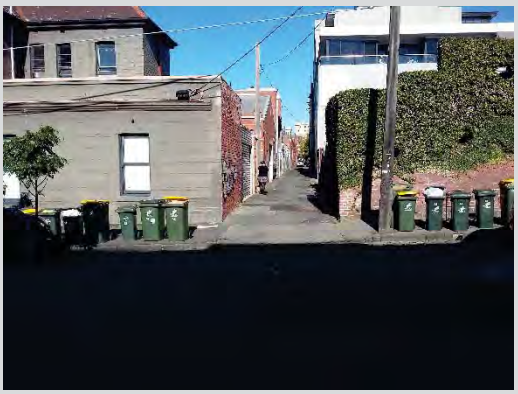
| Street Name | Description | Photo |
|---|---|---|
| **107: Little George Street (from Gertrude Street to Webb Street)** | **Existing Conditions:**<br>• Carriageway width – 3.75m<br>• Road Reserve – 5.05m<br>• Traffic management – One-way, northbound<br>• Parking – No parking<br>• Footpath – Narrow path/kerbing on each side<br>• Material – Bluestone<br>• Layout features – Connects to ROW 106. on the west side, with a splay on the northwest corner.<br>**Constraints: Unconstrained laneway**<br>• Already one-way |  |
| **108: Little George Street (from Gertrude Street to Little Victoria Street)** | **Existing Conditions:**<br>• Carriageway width – 3.2m<br>• Road Reserve – 4.6m<br>• Traffic management – One-way northbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – Has a connecting ROW on the west side, with no splays provided<br>**Constraints: Unconstrained laneway**<br>• Already one-way |  |
| **109: ROW (from George Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.9m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

| Street Name | Description | Photo |
|---|---|---|
| **110: ROW (from George Street to END)** | **Existing Conditions:**<br>• Carriageway width – 2.8m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **111: ROW (from Gore Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.7m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **112: ROW (east-west ROW abutting Gertrude Street properties, Connected to Little Gore Street)** | **Existing Conditions:**<br>• Carriageway width – 4.15m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – T intersection with Little Gore Street, which has a width of 4.3m (plus kerbing). Kerbing splays on southeast corner.<br>**Constraints: Partially constrained**<br>• Length of little Gore Street<br>• Lacks passing opportunities |  |

| Street Name | Description | Photo |
|---|---|---|
| **113: ROW from Emma Street to Blanche Street)** | **Existing Conditions:**<br>• Carriageway width – 2.8m<br>• Traffic management – Two-way, No entry from Alexandra Parade to both Blanche Street and Emma Street. Right turns are also not permitted from these streets to Alexandra Parade<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the south, with splays provided on both corners at the intersection<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **114: ROW (from Blanche Street to Budd Street)** | **Existing Conditions:**<br>• Carriageway width – 3m<br>• Traffic management – Two-way, No entry from Alexandra Parade to both Blanche Street and Budd Street. Right turns are also not permitted from these streets to Alexandra Parade<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the south, with a splay provided on the southeast corner.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

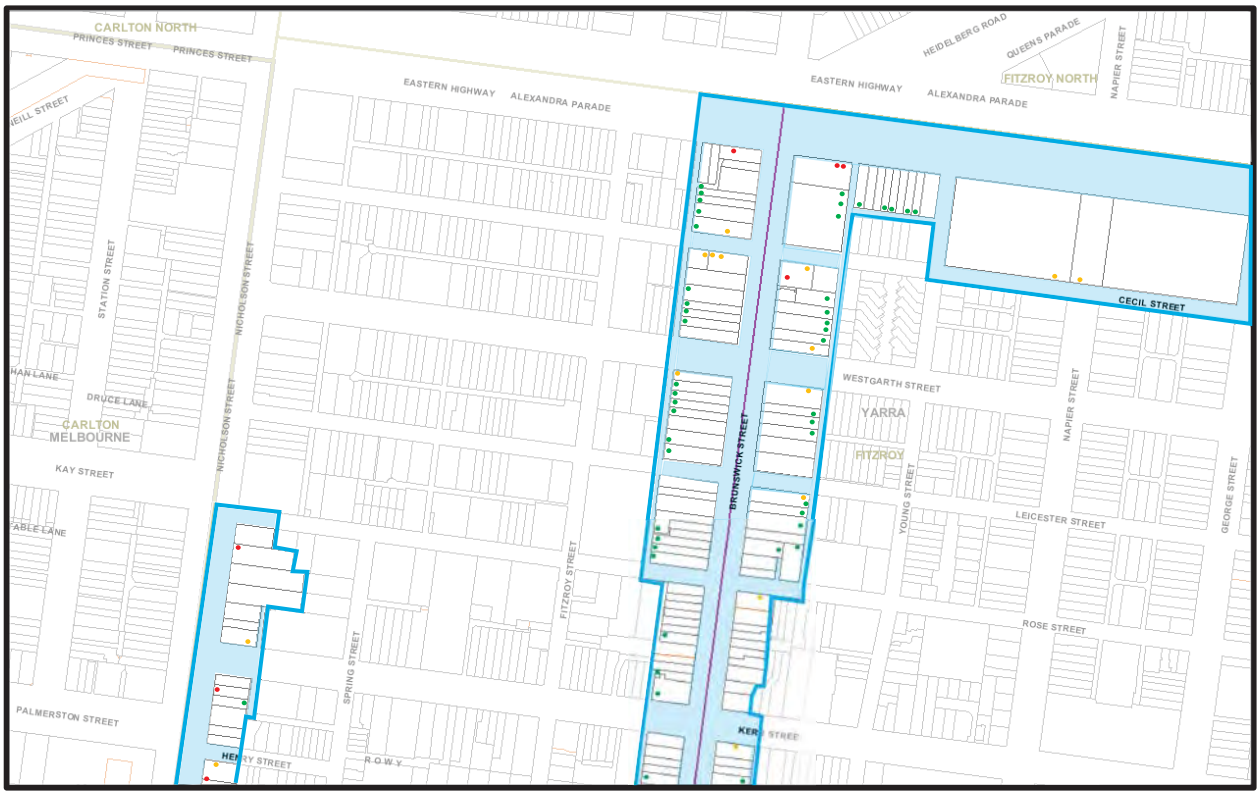
| Street Name | Description | Photo |
|---|---|---|
| **115: ROW (from Budd Street to Wellington Street)** | **Existing Conditions:**<br>• Carriageway width – 3.05m<br>• Traffic management – Two-way, No entry from Alexandra Parade to Budd Street. Right turns are also not permitted from Budd Street to Alexandra Parade<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the south, with a splay provided on the southeast corner.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |
| **116: ROW (from Wellington Street to Charlotte Street)** | **Existing Conditions:**<br>• Carriageway width – 3.15m<br>• Traffic management – Two-way, No entry from Alexandra Parade to Charlotte Street. Right turns are also not permitted from Charlotte Street to Alexandra Parade<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a connecting ROW to the south, with no splays provided.<br>**Constraints: Unconstrained laneway**<br>• Could be made one-way<br>• Continuous |  |

| Street Name | Description | Photo |
|---|---|---|
| **117: ROW (from Napier to END)** | **Existing Conditions:**<br>• Carriageway width – 3m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>• Layout features – There is a 90 degree bend with no splay provided<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **118: ROW (from George Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.55m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Bluestone<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **119: ROW (from Little Victoria Street to END)** | **Existing Conditions:**<br>• Carriageway width – 3.2m-3.65m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – There is a 90 degree bend, with a splay provided on the northwest corner<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |

| Street Name | Description | Photo |
|---|---|---|
| **120: ROW (from Mason Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4m-6.2m<br>• Road Reserve – 4.9m<br>• Traffic management – Two-way<br>• Parking – No parking<br>• Footpath – Footpath on west side<br>• Material – Asphalt<br>• Layout features – There is a T-intersection at the south end of the ROW, with an open car park section which allows for turning<br>**Constraints: Unconstrained laneway**<br>• Wide road, which allows easy manoeuvrability |  |
| **121: ROW (from Mason Street to END)** | **Existing Conditions:**<br>• Carriageway width – 4.2m-4.45m<br>• Traffic management – Two-way, Mason Street is one-way eastbound<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – There is a 90 degree bend at the south end of the ROW, with an open car park section which allows for turning<br>**Constraints: Unconstrained laneway**<br>• Short in length |  |
| **122: ROW (from Derby Street to Victoria Parade)** | **Existing Conditions:**<br>• Carriageway width –3.55m<br>• Traffic management – Two-way, vehicles must enter/exit left at Victoria Parade<br>• Parking – No parking<br>• Footpath – No footpath<br>• Material – Asphalt<br>• Layout features – Long and has a large number of vehicles taking access<br>**Constraints: Partially constrained**<br>• Length<br>• Should be one-way<br>• High development potential |  |

# Appendix D

## Existing Vehicle Access Arrangements




**MAP NO.1**

**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)


**MAP NO.2**

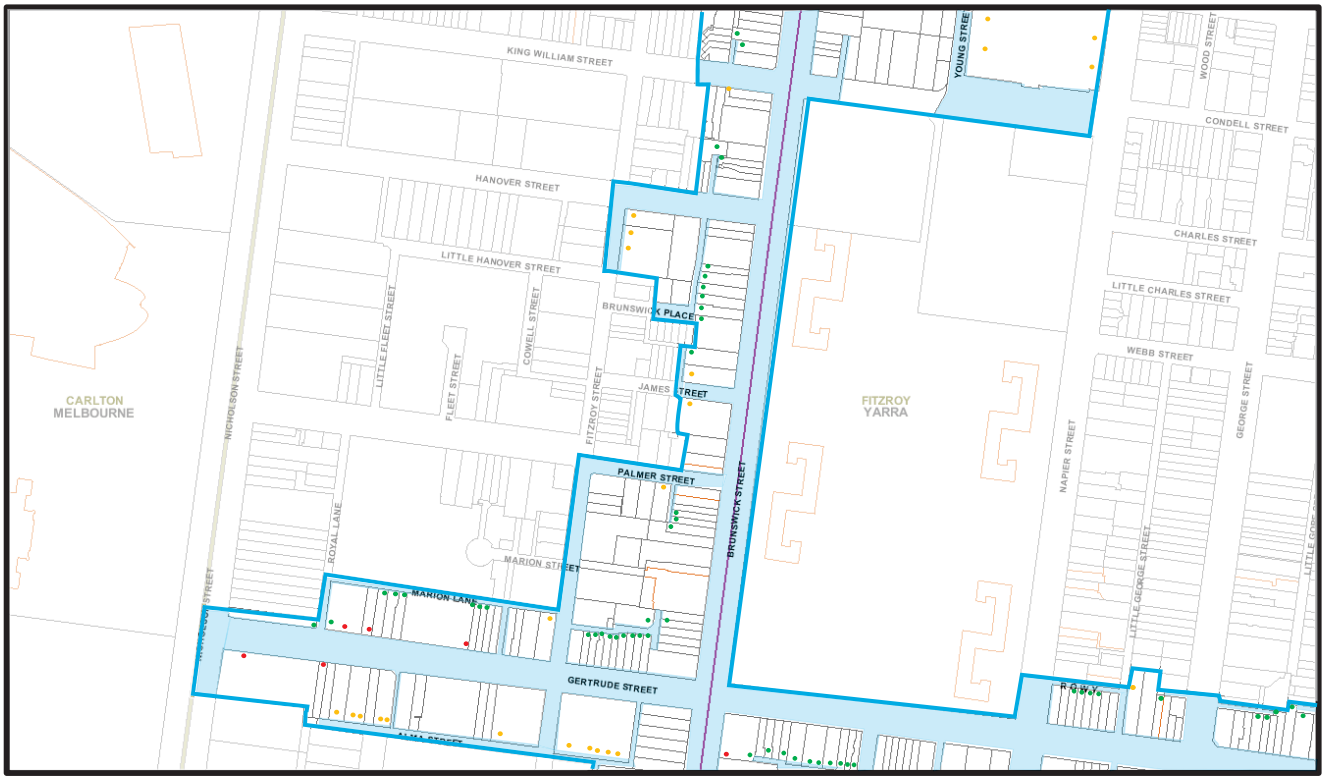
**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)


**MAP NO.3**

**Legend**

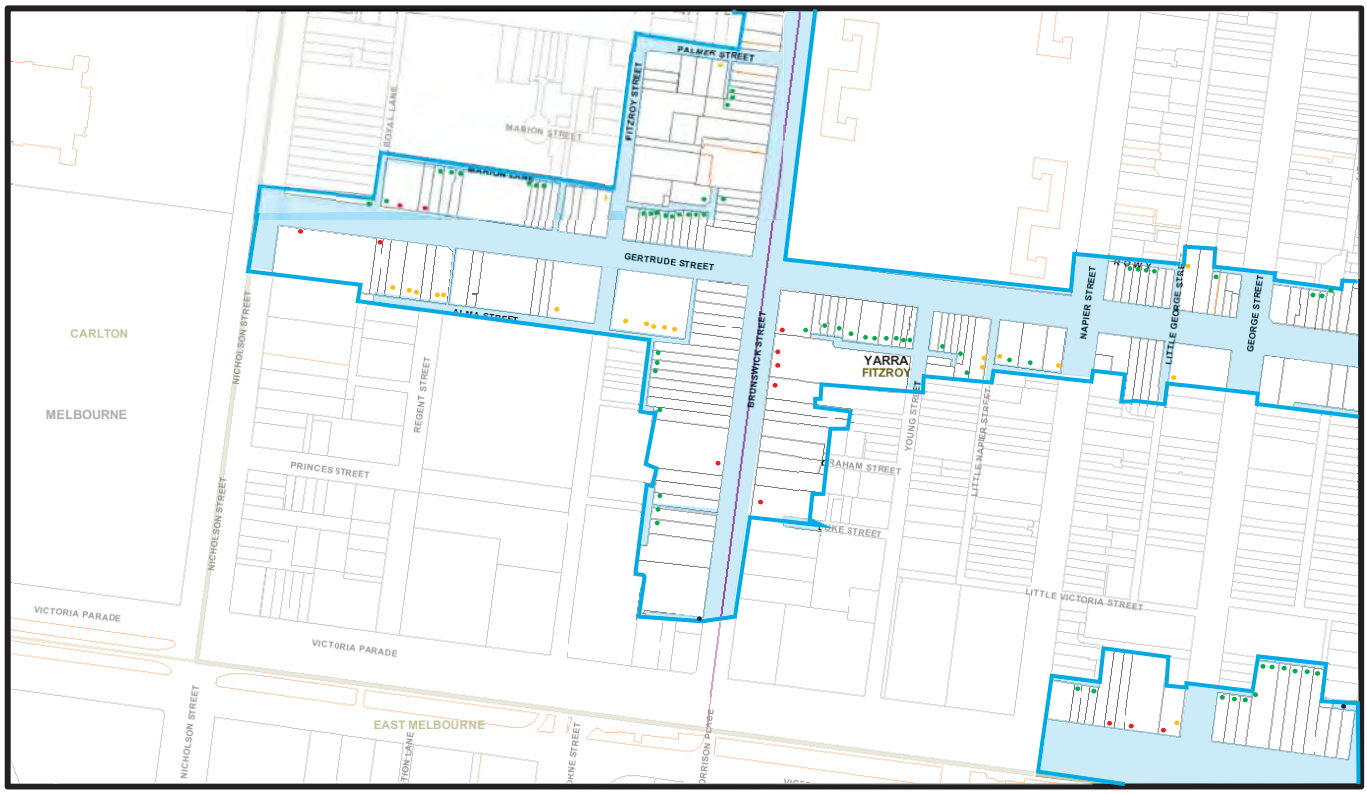
- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)




**MAP NO.4**

**Legend**

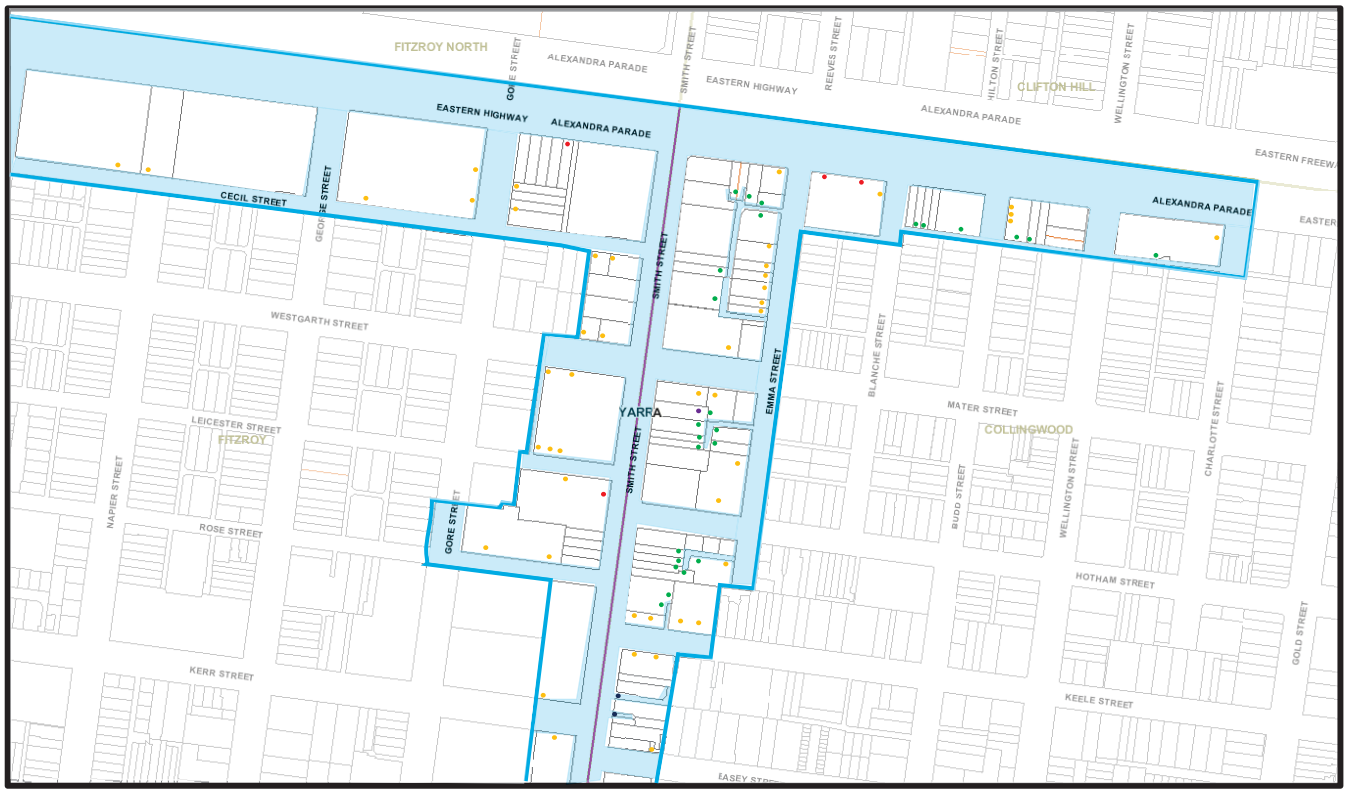
- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)




**MAP NO.5**

**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)




**MAP NO.6**

**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)


**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)

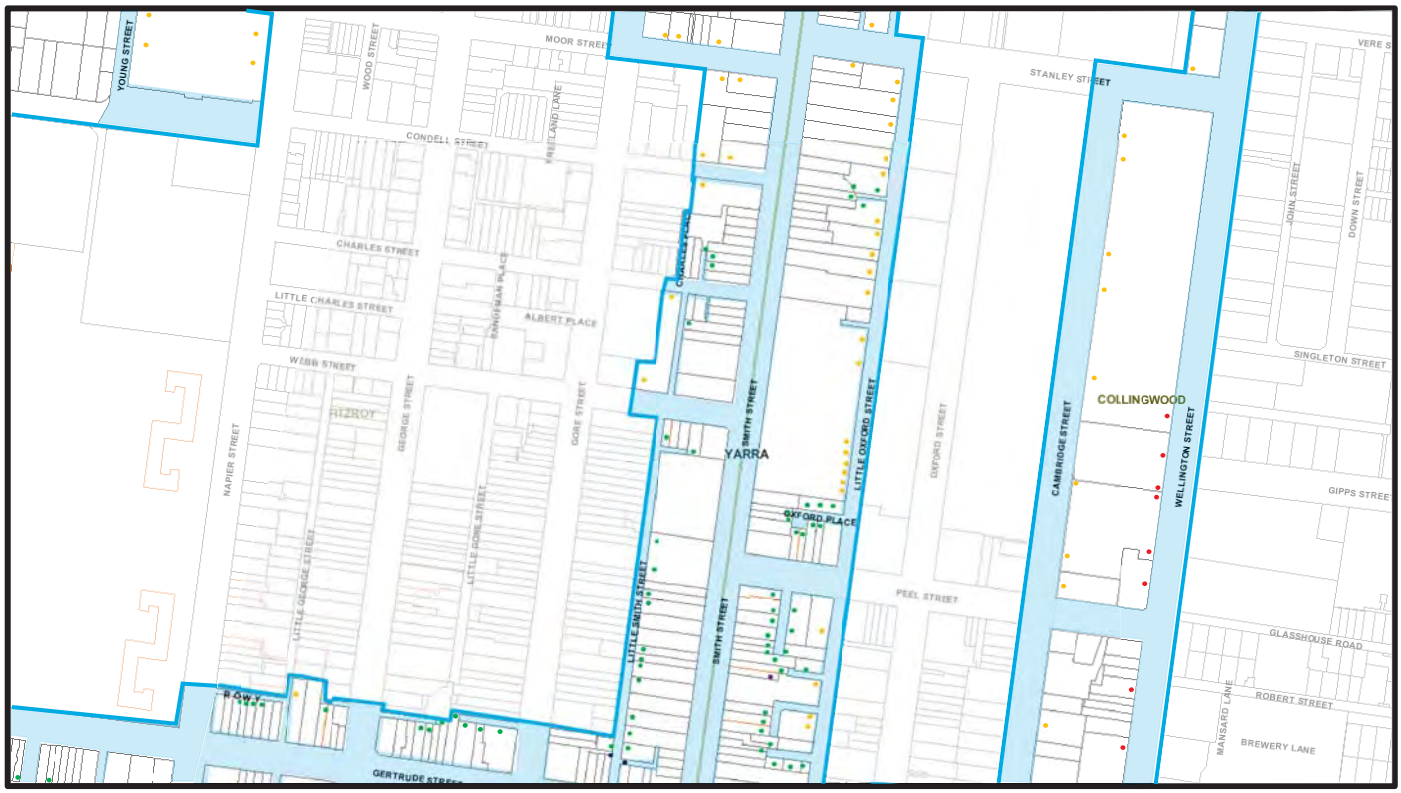
**MAP NO.7**

Existing Access Conditions G222790R-01A


**MAP NO.8**

**Legend**

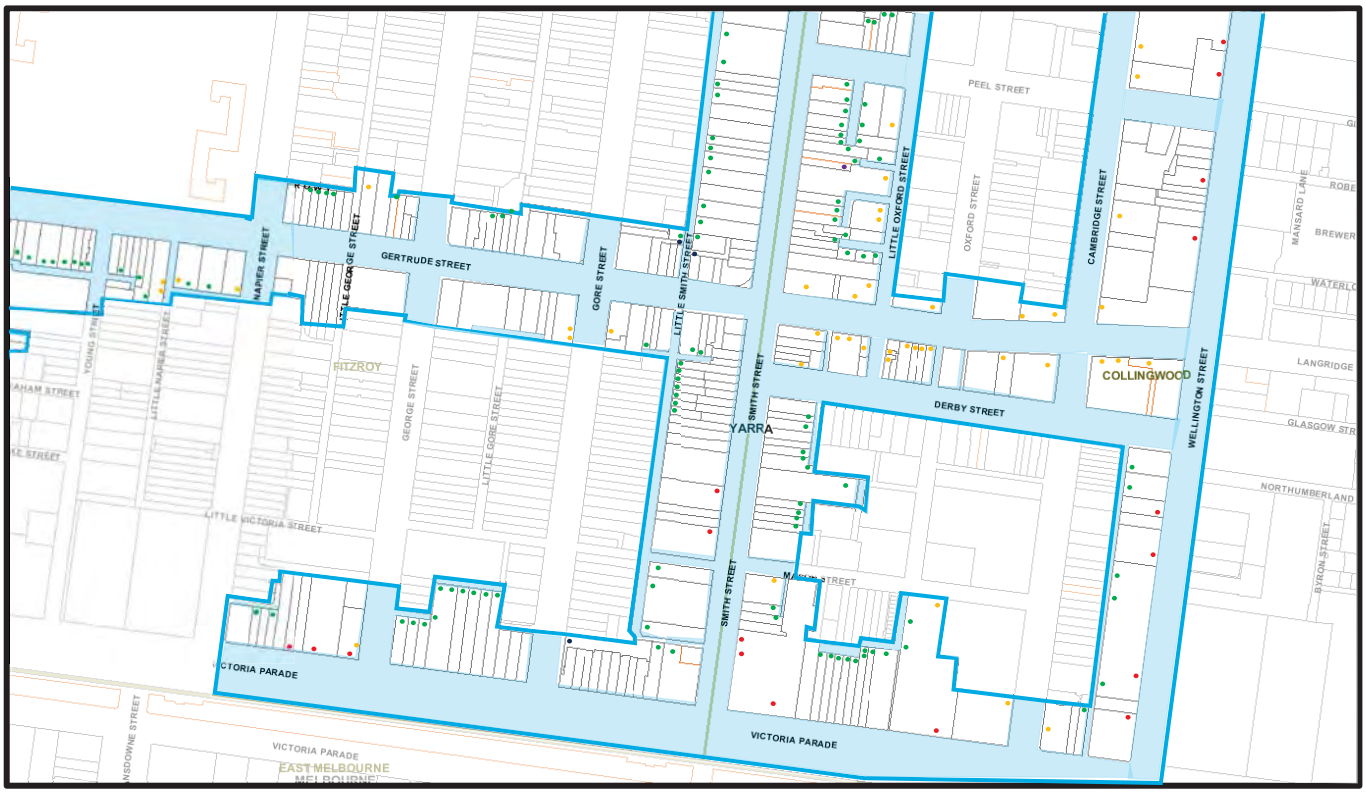
- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)




**MAP NO.9**

**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)




**MAP NO.10**

**Legend**

- Study Area Boundary
- Access to Victoria Street
- Access to side street
- Access to RoW
- Access via Common Land
- Access blocked (E.g. Gate)