# Yarra Open Space Strategy 2020

# Public Open Space Contributions

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Prepared for the City of Yarra

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Yarra Open Space Strategy 2020
Public Open Space Contributions

This report provides background information and explains the method used to establish the recommended public open space contribution rate for inclusion in the schedule to Clause 53.01 of the Yarra Planning Scheme. The report should be read in conjunction with the *Yarra Open Space Strategy 2020*.

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# 1. Introduction

## 1.1 Scope of this report

The City of Yarra commissioned Thompson Berrill Landscape Design Pty Ltd in association with Environment & Land Management Pty Ltd to prepare a Yarra Open Space Strategy 2020 (the Strategy), which the Council adopted on 1 September 2020. The Strategy provides the framework and direction for the provision, design and management of public open space in the municipality. The Strategy comprises two documents being a summary report and a detailed Technical Report which includes the supporting rationale and detail presented in the summary report. Both of these documents are online at the City of Yarra web pages.

Preparation of the Strategy included a review of funding mechanisms to support the implementation of the Strategy, including the public open space contribution rate. This resulted in a recommendation that Council should increase the municipal wide public open space contribution rate from 4.5 per cent to 10.1 per cent and expand the rate to cover both residential and non-residential development.

The purpose of this report is to explain the method that was used to arrive at the proposed 10.1 per cent contribution rate. The method has previously been used to calculate the contribution rate for many municipal open space strategies, including the rate/s that are now included in the schedules to Clause 53.01 in the Glen Eira, Melbourne, Moonee Valley, Maribyrnong, Whitehorse and Yarra Planning Schemes.

## 1.2 Reason for the increase in the proposed contribution rate

A key reason that the new Yarra public open space contribution rate is proposed to increase from 4.5 to 10.1 per cent is that there is a substantial level of residential and employment population growth forecast in the City of Yarra.

For the period between 2016 and 2031, which is the time period for the data used in preparing the Strategy, the forecast population will increase by over 77,000 people, which represents a 41 per cent increase in the number of residents and a 47 per cent increase in the number of workers. The City of Yarra contains a mosaic of land uses and zones, with land that is available for more intensive redevelopment in all locations except for the heritage areas. However, even in the heritage areas there are newer buildings and redundant sites where redevelopment is occurring.

The forecast population is planned to be accommodated in medium to high density urban development located across the municipality outside the heritage areas, including in areas that have little or no access to existing public open space. This will drive the need for an expanded open space network that will require Council to purchase new land area for public open space. As most of the larger strategic sites in the City of Yarra have already been redeveloped, the Council will not be able to rely on land contributions to create the new open

spaces in all locations included in the Strategy and shown on Figure 1. Please note that the symbols shown on Figure 1 are symbolic and not to scale, and indicate a sub-precinct in which new open space is required. Refer to Figure 2 which illustrates the open space sub-precincts used in the Strategy.

The proposed new public open space contribution rate is intended to fund both improvements to existing open space and provide new open space on behalf of the forecast population. Council will fund the open space improvement works on behalf of the existing population from other sources of Council revenue including rates and grants.

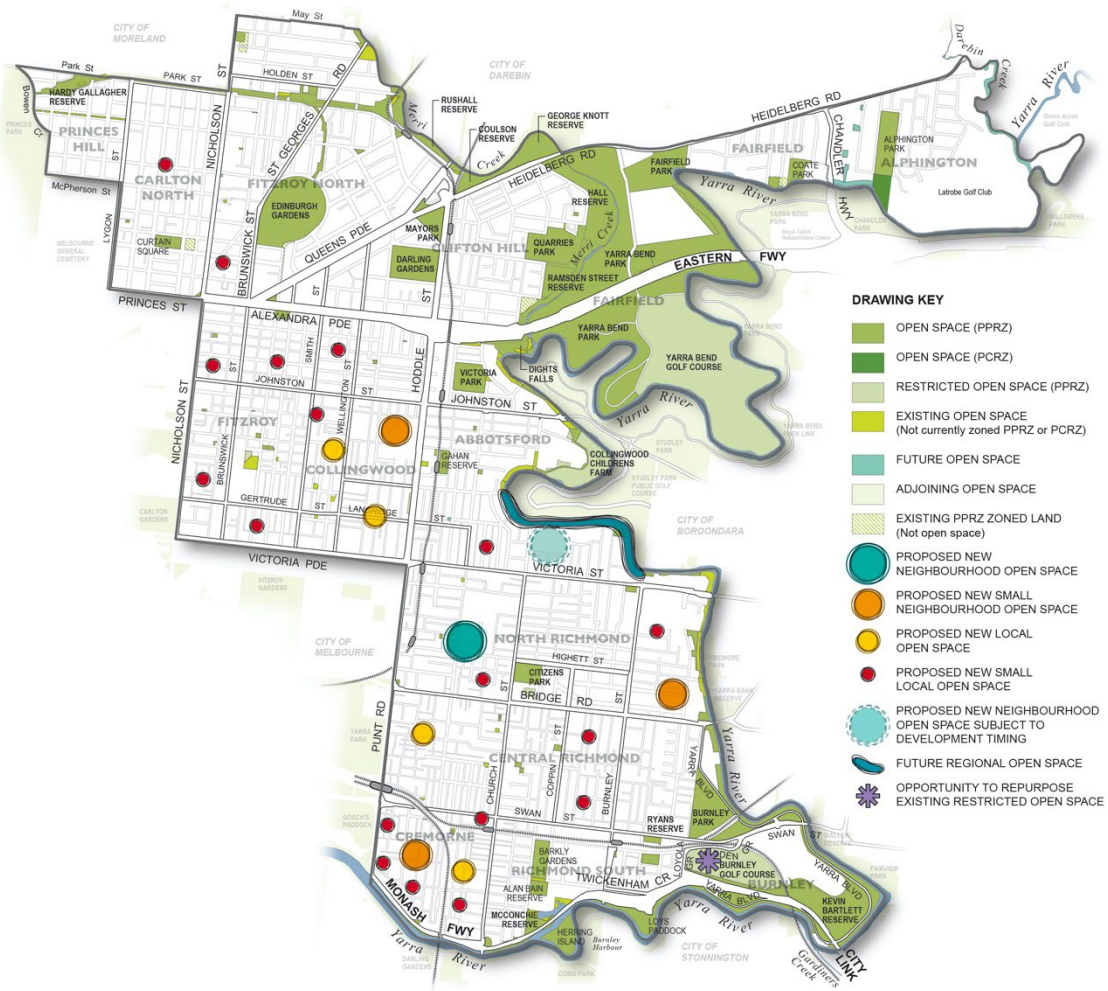


*Figure 1. Schematic plan illustrating the type and location of proposed new open space (Source Figure 5A, Yarra Open Space Strategy 2020 Technical Report)*

Figure 2 illustrates the open space sub-precincts, which are generally defined by major roads within the defined open space precincts. Major roads and other physical features can form barriers to safe and easy walking access to public open space, which is a key consideration in the open space needs analysis. The population forecast breakdown and the open space needs analysis were undertaken based on the open space sub-precincts.


*Figure 2. Open Space Planning Sub-Precincts used in the Yarra Open Space Strategy 2020*

# 2. Overall approach to setting the new public open space contribution rate

## 2.1 Definition of open space projects to be funded by the rate

The Strategy uses a definition of open space that distinguishes between public land generally and the land set aside for open space purposes, that is:

> *… all publicly owned land that is set aside primarily for outdoor recreation, passive outdoor enjoyment and nature conservation and is open to the sky. It includes public parks, gardens, reserves, waterways and squares…It is generally zoned for public park, recreation or conservation when held in public ownership.*

The 10.1 per cent public open space contribution rate only includes projects that meet this definition.

## 2.2 Funding open space for the forecast population

The public open space contribution rate is to fund a fair proportion of the open space projects contained in the Strategy that will meet the needs of the forecast population. The forecast population data used in the Strategy is shown in Tables 1 and 2.

**Table 1. Forecast resident population increase over 15 years.**

| Resident population 2016 | Forecast resident population 2031 | Forecast resident population increase 2016-2031 | % increase |
|---|---|---|---|
| 93,353 | 131,864 | 38,511 | 41% |

Source: Population and household forecasts, 2016 to 2041, prepared by .id the population experts, August 2018. Accessed 10 September 2018 (Council version)

**Table 2. Forecast worker population increase over 15 years.**

| Worker population 2016 | Forecast worker population 2031 | Forecast worker population increase 2016-2031 | % increase |
|---|---|---|---|
| 83,000 | 121,805 | 38,805 | 47% |

Source: Yarra Spatial Economic and Employment Strategy, Final Report, August 2018, prepared by SGS Economics & Planning.

The public open space rate calculation method also uses the forecast increase in dwelling numbers and the forecast increase in non-residential floor space for the same time period. These forecasts are shown in Tables 3 and 4.

**Table 3. Forecast dwelling increase over 15 years.**

| Dwellings 2016 | Forecast dwellings 2031 | Forecast dwelling increase 2016-2031 | % increase |
|---|---|---|---|
| 44,217 | 64,866 | 20,649 | 47% |

Source: Population and household forecasts, 2016 to 2041, prepared by .id the population experts, August 2018. Accessed 10 September 2018 (Council version)

**Table 4. Forecast non-residential floor space increase over 15 years.**

| Non-residential floor space 2016 | Forecast non-residential floor space 2031 | Forecast non-residential floor space increase 2016-2031 | % increase |
|---|---|---|---|
| 3,440,000 m2 | 3,859,000 m2 | 419,000 m2 | 12% |

Source: Yarra Spatial Economic and Employment Strategy, Final Report, August 2018, prepared by SGS Economics & Planning.

## 2.3 Considerations in setting the public open space contribution rate

Planning Practice Note 70: Open Space Strategies supports financial and resource planning and the use of public open space contributions as part of a strategy implementation plan. It does not provide specific guidance in terms of setting a contribution rate.

Planning Panels have confirmed that setting a rate in the schedule to Clause 53.01 should be fair and reasonable and have regard to the principles of need, nexus, accountability and equity.

The new public open space contribution rate is consistent with these principles in the following ways:

- The public open space contribution rate is linked to Council's strategic assessment and forward planning of its open space program.
- The Council is able to strategically plan its open space program over 15 years. The open space projects included in the contribution rate provide an implementation guide to the timely expansion and upgrade of the open space network.
- The rate is uniform across the municipality providing consistency, policy neutrality and perceived equity.
- There is financial accountability regarding the public open space levy to be paid for a particular piece of land.
- Contributions are collected, allocated and accounted for in the Council's budget process and Annual Report.

The single public open space contribution rate is considered to meet the equity principle because a uniform rate provides an even benchmark, with clarity and

simplicity about what the rate will be. All subdivisions are treated equally, the principles of need, nexus, accountability and equity having been established in the setting of the rate.

As the public open space contribution is determined as a percentage of the land or a percentage of the site value of such land, the actual land or cash contribution will vary, depending on the circumstances of the site.

## 2.4 Maintaining a relationship with the Strategy

The current 4.5 per cent public open space contribution rate was based on the projects included in the Yarra Open Space Strategy 2006. The community surveys undertaken at the time suggested that there was little use of open space by workers in the municipality, and the contribution rate was therefore only applied to residential subdivision.

The current contribution rate of 4.5 per cent rate raises in the order of $4 to $5 million annually. This level of contribution funding is inadequate to financially support the forecast population's share of Council's implementation of the 2020 Strategy and its 15 year open space program for the provision of new and improved open space for the forecast population. If the contribution rate is not raised, the level of contribution funds collected would no longer represent a fair and reasonable allocation of costs to the forecast population who will benefit from expansion and upgrades to the open space network.

The contribution rate is now also to be applied to all subdivision, including non-residential development, as the pattern of open space use by workers has changed since the early 2000s. The 2020 Strategy community surveys demonstrate that workers do value and use open space. Quality and accessible open space has become a valuable draw for workers and their employers. The open space needs assessment in the new Strategy considers workers as well as residents.

If the funding level is not increased with the proposed public open space contribution rate, then the Council is unlikely to be financially able to undertake the Strategy projects. The amount of open space per capita and quality of the open space network would decline as the population increases.

It is recognised that the public open space contributions cannot be levied to pay for historical open space deficiencies for people already living or working in the municipality, which is why the contribution rate allocates costs between the existing and forecast population.

The calculation of a new public open space contribution rate uses the forecast data that underpins the open space needs assessment. Change will occur in the forecasts over time and potentially the anticipated changes in the City of Yarra will be beyond what is presented in the Strategy. Flexibility in the timing of project delivery will allow Council to respond in locations where redevelopment is occurring. Development may spread into areas not currently identified for more intensive development. Council is still updating its strategic plans for activity

centres and will commence planning for areas of the municipality that are coming under redevelopment pressure. The single contribution rate of 10.1 per cent can provide Council with a robust funding stream for its open space improvements on behalf of the forecast population.

# 3. Public open space contribution rate calculation

## 3.1 Calculation method

The public open space contribution rate for the purposes of Clause 53.01 has been calculated using the following equation:

> **"Total value of the allocation of costs to the forecast population" divided by "Total site value of the estimated land area to be developed" to accommodate the forecast population**

The first part of the equation equates to the averaged opinion of costs (or equivalent value) of open space projects included in the Strategy that will be paid through public open space contributions on behalf of the forecast increase in residents and workers.

The second part of the equation assigns forecast dwellings and non-residential floor space to the estimated area of land that will be developed based on likely densities with respect to zones, overlays and market trends. The site value of this land is then determined and used in the equation.

In developing the data to populate the equation, both parts of the equation have used the same geographic area, population data and time period to ensure that there is a clear relationship between future plans for the open space network – referenced in the first part of the equation – and the rate to be levied on future subdivisions of land and buildings – referenced in the second part of the equation.

## 3.2 Determining the value of the open space projects to be funded by the forecast population

**Capital works in open space**

This report refers to the total cost of the Strategy projects as the 'Strategy POPC'. The term POPC (Preliminary Opinion of Probable Cost) is used by the landscape architectural profession to refer to costings prepared for open space projects without a Quantity Surveyor.

The value of the individual projects is based on Average Park POPCs prepared for each type or hierarchy of open space. The Average Park POPCs were developed with input from the City of Yarra Open Space Planning and Design Team so they are representative of the typical park design and construction cost undertaken in the municipality. There is an Average Park POPC for each open space hierarchy and they include typical facilities appropriate to the hierarchy. Each Average Park POPC for new park design and construction has a proportion of total costs assigned to it for undertaking either a major upgrade or minor upgrade to the existing open space.

These Average Park POPCs are applied to all the capital works projects in the Strategy for consistency.

**Land for new areas of open space**

The cost of the land for proposed new open spaces is based on the average land area size for the hierarchy of open space. For example, a new Local open space has a minimum land area of 0.1 hectares and a maximum of 0.5 hectares. The average land area for a new Local open space is 0.3 hectares. This average land area is multiplied by the average value for the sub-precinct in which the open space is proposed. Refer to Section 3.4 in this report for further information on the value used.

The total Strategy POPC for all projects including the value of land and capital works is **$569,388,045**.

**Proportional allocation of costs between the existing and forecast population**

A proportional allocation of cost for each project has been assigned between the existing and forecast population. The need for and benefit derived from each project was assessed and apportioned between the existing and forecast population and is expressed as a percentage. The factors that influence this include the type and character of the existing open space, the surrounding urban context, the forecast level of change and the open space community survey outcomes regarding existing patterns of use and level of satisfaction with open space provision.

The proportion assigned to the forecast population for each project is the dollar value to be raised by the open space contribution and the proportion assigned to the existing population is funded from Council income including external grants.

Totalling the proportional contributions for all projects results in the total amount apportioned to the forecast population in the Strategy POPC, which is **$382,535,769**. This is the total value of public open space contributions that Council seeks to raise with a revised schedule to Clause 53.01. The Council aims to levy an average of $25.5 million in public open space contributions each year over a 15 year period to financially support implementation of the Strategy.

The remaining project costs are apportioned to the existing population and this is funded from other Council income including external grants. Council will also convert land to open space where it is available and appropriate for the intended use. The total value of the Council's contributions from all sources including land conversion is **$186,852,276**.

Appendix A, Table A-1 includes the apportioned cost to the existing and forecast population by open space planning precinct.

## 3.3 Determining the value of the land estimated to redevelop to accommodate the forecast population

The resident and worker population forecasts and the dwelling and non-residential floor space forecasts were apportioned spatially to the open space planning precincts based on the City of Yarra's forecast data. This provided the starting point for determining how much land would be needed to accommodate the forecast increases. The value of land estimated to redevelop was determined using site values based on Council's property rate valuations, as the public open space contribution rate is applied to site value only.

The City of Yarra engaged the services of Dr Serryn Eagleson to undertake the determination of land area and site values as she has extensive experience in geospatial demography. Dr Eagleson's work is attached in Appendix B and her conclusions are shown in Appendix A, Table A-2 The resulting site value of the land estimated to redevelop was used in the public open space rate calculation. This value is **$3,789,238,620**.

## 3.4 Providing new land for open space within the public open space contribution rate

The cost of land acquisition has a major influence on the public open space contribution rate. In recent years, the experience of inner and middle ring suburbs is that councils have needed to purchase private land to meet the open space needs of their forecast population, given the limited number of redevelopment sites that are large enough for usable land contributions. Conversion of Council land to open space is possible, and this has occurred in the City of Yarra (for example, road closures), but it is difficult to obtain Council land that is appropriate in terms of the size and location of the land, assuming that it is available for open space.

In the City of Yarra, the main opportunities for land contributions will be on the remaining large strategic redevelopment sites where the Council may negotiate open space land contributions as part of development plans and rezonings. Where this opportunity does not exist and new open space is needed in a sub-precinct, purchase may be the only means available to establish the new open space. In these cases the Council will need to buy property at the market rate.

The City of Yarra is not proposing to use the Public Acquisition Overlay to purchase property but will instead take advantage of market opportunities, to either purchase a suitable property when it comes up for sale or by negotiation. Therefore, the public open space contribution rate calculation method cannot use an individual property valuation plus acquisition costs that would allow the Council to estimate the costs of acquisition for land included in such an overlay. An alternative approach to determining this value was required so that the cost to acquire new open space could be included as a project cost and a proportional value allocated to the forecast population.

To determine the cost of purchasing properties for new open space, the public open space contribution rate calculation method is based on an average Capital Improved Value for the sub-precinct where property will be purchased. Average

Capital Improved Values were provided by Dr Eagleson using Council's property data base, which is consistent with the use of the data to determine the site value for her work. An average Capital Improved Value was considered to be the best measure available that is consistent with market value when the exact location and timing of purchase is unknown. In addition to the purchase price of a property, which is represented by Capital Improved Value, Council's property officer advised that the real cost to the Council of property purchase also includes costs incurred for independent valuations, legal fees and other costs to the Council. An allowance has been included for these items to reflect the total cost to Council to purchase private property for public open space. The additional cost items are also apportioned to the existing and future population as part of the value of property purchase.

The cost of purchasing new land area for open space is the highest cost item within the public open space contribution rate calculation. Providing new open space is not only the highest cost, but it is also generally the most difficult type of project to implement. The need for new open space is determined as part of the open space needs assessment in the Strategy.

## 3.5 Public open space contribution rate calculation using the adopted method

Using the equation from Section 3.1, the data from Table A-1 (column 4) and the data from Table A-2 (column 3), the calculation of the 10.1 per cent public open space contribution is shown below, expressed as a percentage rate:

**$ 382,535,769 / $ 3,789,238,620 x 100 = 10.1 per cent**

# Appendix A

## Table A-1. Open space project cost allocation for the existing and forecast population.

| Col. [1] | Col. [2] | Col. [3] | Col. [4] |
|---|---|---|---|
| **Open space planning precinct** | **Total value of open space projects in the contribution rate** | **Total allocation of costs to the existing population** | **Total allocation of costs to the forecast population** |
| Abbotsford | $15,910,482 | $8,055,284 | $7,855,198 |
| Carlton North – Princes Hill | $10,461,318 | $9,938,252 | $523,066 |
| Central Richmond | $53,299,684 | $24,851,251 | $28,448,433 |
| Clifton Hill | $5,120,000 | $4,096,000 | $1,024,000 |
| Collingwood | $147,856,471 | $49,118,463 | $98,738,008 |
| Cremorne, Richmond South and Burnley | $157,614,101 | $40,369,225 | $117,244,876 |
| Fairfield – Alphington | $6,266,108 | $2,880,814 | $3,385,294 |
| Fitzroy | $78,681,285 | $29,640,209 | $49,041,076 |
| Fitzroy North | $17,926,385 | $6,802,405 | $11,123,980 |
| North Richmond | $76,252,211 | $11,100,373 | $65,151,838 |
| Municipal total | $569,388,045 | $186,852,276 | $382,535,769 |

Notes:

[1] The value of open space projects represents a 15 year implementation period.

[2] The allocation of costs to the forecast population is used in the public open space contribution rate calculation.

## Table A-2. Total estimated land area to be developed and its site value.

| Col. [1] | Col. [2] | Col. [3] |
|---|---|---|
| **Open space planning precinct** | **Total estimated land area to be developed** | **Total site value of the estimated land area to be developed** |
| Abbotsford | 58,972 m2 | $286,757,014 |
| Carlton North – Princes Hill | 7,308 m2 | $23,588,482 |
| Central Richmond | 92,366 m2 | $500,779,083 |
| Clifton Hill | 16,811 m2 | $68,930,172 |
| Collingwood | 165,313 m2 | $815,247,821 |
| Cremorne, Richmond South and Burnley | 108,935 m2 | $635,975,223 |
| Fairfield – Alphington | 9,430 m2 | $22,555,590 |
| Fitzroy | 130,761 m2 | $717,813,963 |
| Fitzroy North | 30,631 m2 | $158,903,603 |
| North Richmond | 134,064 m2 | $558,687,669 |
| Municipal total | 754,591 m2 | $3,789,238,620 |

Notes:
[1] Land areas and land values are explained in Appendix B.

## Table A-3. Criteria for land acquisition for new public open space.

| Criteria | Description |
|---|---|
| Access | Physical access into the site including the inherent topography, location on natural ground (not an elevated part of a building) and ability to make the site safe and accessible for people of all abilities (Note - refer also to Transport, Visibility, Condition and Location in this list of Criteria for other access related issues). |
| Adjoining land use | The influence of adjoining land use on the recreational, ecological, social and cultural value of the open space. This includes consideration of existing and future planned land use, community facilities, urban context, personal safety (passive surveillance), built form and height. |
| Amenity | Visual and passive amenity values relates to the influence open space has on the liveability of the neighbourhood by providing:<br>• Visual relief from built form.<br>• A break from noise levels associated with traffic and other urban land use activities.<br>• At least some long distance views and vistas from within the open space so it is not entirely built out or overwhelmed by built form.<br>• Adequate levels of winter sunlight to meet the health and wellbeing needs of the community. Refer to Sunlight access for details. |
| Climate change mitigation | • Ability for the site to have long-lived broad spreading canopy trees planted, and space for the trees to fully establish without encroach-ment into their canopy.<br>• Ability for the site to incorporate sustainable water supply and reuse and maximise moisture retention to allow passive cooling of the local microclimate including areas for long-wave radiant cooling at night.<br>• Located within existing or future medium to high density precincts where it will be effective in mitigating urban heat island effect.<br>• Ability for the site to remain as useable and functional open space in the context of major storm events and sea level rise. |
| Condition | The existing physical condition of the land is suitable for use as public open space including that there are no inherent issues such as contamination and significant financial or safety implications for Council if the land becomes public open space. This includes the land being open to the sky. |
| Ecological | Includes the site's existing biodiversity values and the potential to contribute to the protection and enhancement of these values along with a site's contribution to existing or future ecological diversity. |
| Equity | The local community including residents and workers should have reasonable access to public open space. This includes physical access, visual access and economic equity of access. |
| Financial | The costs to the Council in obtaining and improving the land as open space, along with the costs associated with the ongoing maintenance and management of it. |
| Heritage values | Wurundjeri Woi Wurrung, Aboriginal and Torres Strait Islander community cultural heritage values and/or historical values to be enhanced, protected and interpreted in the open space. These values will influence the future use and design and management of the open space. |
| Hierarchy | That the site is capable of meeting the intended hierarchy. Refer to Table 3-1 of the Technical Report. |

| Criteria | Description |
|---|---|
| Landscape character | Its positive contribution to the urban context, character and attractiveness of the precinct. |
| Location/linkages | The site's contribution to the connectivity and accessibility of the open space network. This includes consideration of the other strategic planning projects including linear open space corridors, and local links to improve accessibility within the local street network and links and connections to improve accessibility into existing or proposed future open space. |
| Ongoing maintenance and management | The ability for the City of Yarra to rezone the land for open space purposes, and to effectively maintain and manage the land as public open space. |
| Ownership | • Where the land is already in public ownership, potential for conversion to open space should be considered, where it can successfully be rezoned for this purpose. This may include existing Council assets or land owned by other authorities.<br>• Where the land is privately owned, land can be acquired through open space contributions, generally at the time a site is redeveloped. Private land acquisition may be needed in some locations to create a functional open space of the size and configuration required for its intended role. |
| Recreation | The potential for the site to accommodate a range of structured sport, unstructured recreation and informal uses consistent with the intended hierarchy. This needs to include adequate space to meet best practice standards for the proposed uses to be undertaken safely in relation to risk management. These can include field sports, play, walking, jogging, cycling, exercising, informal ball games, socialising, picnicking, sitting and dog walking. |
| Safety | Urban context and layout is to maximise passive surveillance and access to open space in order to minimises risk to users of the open space. |
| Services/easements/ encumbrances | Extent of other services and easements that affects the development and use of the land as open space. This includes roadways, overhead structures, underground structures (e.g. underground car parking), water supply, power supply, flood mitigation and drainage. |
| Size | The minimum size for the site to meet its intended purpose, on its own or in combination with adjoining land. Refer to minimum size parcels for each type of open space as follows:<br>• Regional, unlimited.<br>• Municipal open space, generally a minimum of 3 ha is preferred, subject to the proposed municipal recreation facility located in it.<br>• Neighbourhood open space, minimum of 1 ha.<br>• Small Neighbourhood, minimum 0.5 ha (up to 0.99 ha).<br>• Local open space, minimum 0.1 ha (up to 0.5 ha).<br>• Small Local open space, minimum 0.03 ha (up to 0.1 ha), with a minimum width of 20 m in at least one direction. |
| State and local government policies | The land is not subject to other planning processes and policies that may be consistent or inconsistent with all or part of the site becoming public open space. |
| Sunlight access | • The site must have excellent sunlight access in winter for community health and wellbeing.<br>• The site will have no additional overshadowing beyond the 9 metre built form height between 10am and 3pm on 21 June. |

| Criteria | Description |
|---|---|
| Transport | There are a range of transport options for residents and workers to easily access the site. This includes proximity to public transport, linear shared trails, major roads and the street network, relevant to the size and anticipated catchment for the proposed open space. |
| Visibility | The site's visual prominence is to maximise its use, safety and contribution to the broader community. Land is preferred which has at least two access points, local access streets to at least two sides and is provided on natural ground (not elevated or roofed structures). |

Source: Yarra Open Space Strategy 2020, Table 5-2, pages 92-95. These criteria apply to public open space land contributions and land purchase.

# Appendix B

**Data for Residential and Non-residential Development to assist calculation of the Public Open Space Contribution Rate**

# Data for Residential and Non-residential Development to assist calculation of the Public Open Space Contribution Rate

Consultancy Services to support the
Yarra Open Space Strategy 2020


Project Report: 5/11/2020

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**Disclaimer**



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# 1 Introduction

Opportunities for new open space are important for those communities that have little or no open space relative to demand. The City of Yarra Open Space Strategy (YOSS) aims to provide an equitable and consistent basis for the financial and land contributions of developers and government to provide open space and make open space improvements. To support the YOSS, EdgRESEARCH Pty Ltd, were commissioned to compile data consistent with both the timeframe from 2016 to 2031 and precincts (Figure 1) used in the YOSS.

The purpose of this report is to provide the data sources and estimate of the land area and value of land required to accommodate the rate of growth (both residential and employment) forecast across the municipality. To support the YOSS the data has been distributed into the 33 precincts (Figure 1). Where necessary this data was further subdivided into planning zones, enabling the data to be reaggregated and different configurations of the rate calculated and tested.


**Figure 1: YOSS precincts**

The remainder of this report is set out as follows

- **Section 1** provides an overview of the data sources accessed and integrated into a spatial map. This process includes the integration of property data with macro level population and employment forecasts which are apportioned into the YOSS precincts This data provides an understanding of the current land use, development activity and is used in conjunction with dwelling and employment forecasts.
- **Section 2** describes the method used to calculate the Land Area required to accommodate the expected growth in the community (workers and residents) for 2016-2031 by YOSS precincts accompanied by the 'median' land value for the local area.
- **Section 3** provides summary results and concluding remarks.

# Section 1: Integrate data

To develop an accurate model, a number of datasets were integrated into an evidence base using a Geographical Information System (GIS). Each of these datasets were selected through collaboration between project stakeholders and spatially referenced to form a map of the land value, area currently under development and along with constraints to future development such as the age of the buildings, heritage overlay, strata titling and zoning. Table 1 outlines the data inputs as well as the source and format of the data.

This data included the land area, site value, planning zone, heritage overlay, capital improved value and land use classification. To provide a comprehensive understanding of development activity, the valuations data was combined with the Council planning permit application data. Where information such as the number of dwellings or employment floorspace was not recorded supplementary desktop and site analysis undertaken. Together this data provided a picture of development activity that was current as at January 2019. In addition to property level data, data aggregated to suburbs and precincts including dwelling and employment floorspace forecasts were also included as these existing forecasts provide the upper limit for development along with a guide to the timing of new dwelling and employment floorspace. To integrate the data, each dataset was formatted into an ESRI shapefile and descriptive text was analysed and attributed to a spatial layer. The spatial layer was then mapped. Central to this process was the City of Yarra Rates and Valuations Database received on the 25 January 2019 which provided the site and land valuation as at 1 January 2018.

It is important to recognise that the accuracy of the data varies according to the method of collection and that primary data such as the ABS Census has a higher degree of accuracy than data forecast into the future which has a high degree of variability. For this reason, only the City of Yarra approved and published forecasts have been used in this analysis. Figure 2 illustrates the key datasets and the temporal scale to which the key datasets apply.

**Figure 2 - Harmonise data inputs**

**Table 1: Data sources**

| Data | **Source** | **Format** | **Notes** |
|---|---|---|---|
| City of Yarra - Rates and Valuations Database | City of Yarra | Excel spreadsheet | This data was received on the 25 January 2019 which provided the site attributes including land valuation as at 1 January 2018, Capital Improved Value (CIV), planning zone, strata title, year of development, land area, heritage register and overlay.<br><br>This data provides an understanding of value and historic development (-completions prior to 2018). |
| City of Yarra - Office Permit Planning Application Data | City of Yarra | Excel spreadsheet | This data provided an understanding of current and future non-residential developments (2018 ~ 2021). Where attributes were incomplete (i.e. floorspace) this data was updated with desktop analysis of development status. |
| City of Yarra - Residential Monitoring Master Database | City of Yarra | Excel spreadsheet | This data provided an understanding of historic and future residential developments (2018 ~ 2021). When data relating to the number of developments was not available, desktop analysis and modelling was undertaken to understand the capacity of each development. |
| Population Forecasts | .id Consulting | Website: https://forecast.id.com.au/yarra and supplementary Power Point presentations August (2018). | The City of Yarra sourced population forecasts from demographers, Informed Decision Consulting (.id Consulting). These forecasts provide both the current and expected dwellings for each City of Yarra suburb between 2016-2041.<br><br>To accompany the forecasts .id Consulting, provided a breakdown of the dwelling forecasts according to YOSS precincts, as of November 2018. |
| Floor space and square metres per job | SGS Economics & Planning | Table of figures | The Yarra Spatial Economic and Employment Strategy (2018) available online: https://www.yarracity.vic.gov.au/the-area/planning-for-yarras-future/adopted-strategies-and-plans/spatial-economic-and-employment-strategy provides a breakdown of the employment floorspace forecasts. |

## 1.1 Forecasts

To understand the future land supply at the 'macro level', forecasts on the future demand for dwelling and non-residential/employment floorspace has been supplied.

### 1.1.1 Dwelling Forecasts

To meet the need of the current and forecast demand, the City of Yarra provided the 2018 population forecasts from demographers, Informed Decision Consulting (id. Consulting). id. Consulting is a leading population forecasting company which currently provides population forecasts for over 130 councils in Australia and New Zealand. For this reason, id. Consulting has a wide range of expertise and knowledge about population and residential development in Australia, Victoria and Melbourne Metropolitan area.

The forecast demand for residential dwellings in the City of Yarra between 2016 and 2031 is for a net increase of 20,649 residential dwellings across the municipality. To assist the YOSS .id Consulting apportioned the City of Yarra suburb forecasts into the YOSS precincts (Table 2).

**Table 2: Dwelling Forecasts by YOSS Precinct**

| SUB-PRECINCT | 2016 | 2021 | 2026 | 2031 | Difference 2016-2031 |
|---|---|---|---|---|---|
| ABBOTSFORD A | 748 | 908 | 965 | 1,183 | 435 |
| ABBOTSFORD B | 1,021 | 1,244 | 1,285 | 1,334 | 313 |
| ABBOTSFORD C | 994 | 1,073 | 1,175 | 1,335 | 341 |
| ABBOTSFORD D | 1,643 | 2,568 | 2,603 | 2,655 | 1,012 |
| ALPHINGTON* | 494 | 787 | 2,121 | 3,042 | 2,548 |
| BURNLEY A | 414 | 431 | 683 | 769 | 355 |
| BURNLEY B | 0 | 0 | 0 | 0 | 0 |
| CARLTON NORTH | 3,082 | 3,120 | 3,185 | 3,239 | 157 |
| CENTRAL RICHMOND A | 2,348 | 2,502 | 2,822 | 3,057 | 709 |
| CENTRAL RICHMOND B | 2,774 | 3,071 | 3,238 | 3,398 | 624 |
| CENTRAL RICHMOND C | 1,782 | 2,026 | 2,088 | 2,465 | 683 |
| CLIFTON HILL A | 722 | 767 | 817 | 877 | 155 |
| CLIFTON HILL B | 2,206 | 2,333 | 2,367 | 2,405 | 199 |
| COLLINGWOOD A | 1,195 | 1,502 | 1,683 | 2,016 | 821 |
| COLLINGWOOD B | 1,689 | 2,373 | 2,973 | 3,378 | 1,689 |
| COLLINGWOOD C | 1,167 | 1,214 | 1,268 | 1,378 | 211 |
| COLLINGWOOD D | 630 | 711 | 739 | 927 | 297 |
| CREMORNE | 1,032 | 1,099 | 1,676 | 2,961 | 1,929 |
| FAIRFIELD | 654 | 665 | 688 | 702 | 48 |
| FITZROY A | 605 | 646 | 825 | 979 | 374 |
| FITZROY B | 1,157 | 1,195 | 1,287 | 1,442 | 285 |
| FITZROY C | 1,084 | 1,350 | 1,527 | 1,734 | 650 |
| FITZROY D | 2,385 | 2,707 | 3,059 | 3,355 | 970 |

| | | | | | |
|---|---|---|---|---|---|
| NORTH FITZROY A | 1,524 | 1,571 | 1,621 | 1,718 | 194 |
| NORTH FITZROY B | 1,578 | 1,779 | 1,888 | 1,935 | 357 |
| NORTH FITZROY C | 1,339 | 1,463 | 1,708 | 1,822 | 483 |
| NORTH FITZROY D | 1,297 | 1,335 | 1,661 | 1,702 | 405 |
| NORTH FITZROY E | 19 | 19 | 20 | 20 | 1 |
| NORTH RICHMOND A | 3,422 | 3,964 | 4,274 | 4,744 | 1,322 |
| NORTH RICHMOND B | 2,724 | 3,328 | 3,549 | 3,683 | 959 |
| NORTH RICHMOND C | 735 | 1,206 | 2,203 | 2,601 | 1,866 |
| PRINCES HILL | 1,026 | 1,036 | 1,047 | 1,058 | 32 |
| RICHMOND SOUTH | 727 | 878 | 909 | 952 | 225 |
| **CITY OF YARRA** | **44,217** | **50,871** | **57,954** | **64,866** | **20,649** |

Source: .id Consulting, 2018

* Please note that for this analysis the Redevelopment of the Alphington Paper Mill (16.5ha site) has been deducted from the forecast data for the Alphington Sub-precinct. This is because the City of Yarra have previously approved a Development Plan for the Alphington Paper Mill site. The approval allows for 2,500 dwellings, and 11,500 commercial floor space and 13,500 retail floor space and includes 4.5% open space, providing 1,700 square metres of community facilities and 5 percent affordable housing. As the public open space contribution for this significant redevelopment site has already been agreed, the land is not included in the contribution rate calculation. Therefore the total growth in dwellings in the time period is 18,149 (20,649 minus 2,500).

With the Alphington Paper Mill site removed from the analysis, the YOSS precincts identified with the greatest forecast growth include Cremorne, Richmond (C and A) and Collingwood B. The growth in dwellings between 2016 and 2031 provided a constraint (assumed upper limit) for the land area model outlined in stage 2 of the method.

### 1.1.2 Employment Floorspace Forecasts

In 2018, SGS Economics & Planning undertook an employment capacity and assessment of floorspace demand within Activity Centres across the City of Yarra. It is important to note that these were not forecasts but site capacity analysis given the size of sites with the potential to be redeveloped. The analysis did however provide an estimate of the floorspace required to meet future demand. Table 3 provides the results for the City of Yarra, results for the individual employment and retail precincts are available from the Yarra Spatial Economic and Employment Strategy (2018).

**Table 3: Estimated floor space demand and job/floor space ratios in Activity Centres: 2016 to 2031**

| | 2016 | | 2021 | | 2026 | | 2031 | | Change 2016-31 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Floor space (sqm) | Sqm per job | Floor space (sqm) | Sqm per job | Floor space (sqm) | Sqm per job | Floor space (sqm) | Sqm per job | Floor space (sqm) | Sqm per job |
| Commercial | 1,060,000 | 30 | 1,255,000 | 28 | 1,372,000 | 26 | 1,449,000 | 24 | 389,000 | -6 |
| Retail | 913,000 | 36 | 983,000 | 34 | 993,000 | 32 | 1,003,000 | 30 | 89,000 | -6 |
| Institutional | 456,000 | 19 | 510,000 | 18 | 579,000 | 17 | 662,000 | 16 | 206,000 | -3 |
| Industrial | 1,011,000 | 70 | 860,000 | 66 | 807,000 | 62 | 745,000 | 58 | -267,000 | -12 |
| Total | 3,440,000 | | 3,608,000 | | 3,751,000 | | 3,859,000 | | 417,000 | |

(Source: SGS Economics & Planning: 2018)

Using the dwelling and floorspace forecasts provide constraints (assumed upper limit) for future floorspace demand at fiveyear intervals. From these broader municipalscale projections, SGS Economics & Planning further allocated employment and floor space demand to Yarra's larger employment precincts providing constraints (assumed upper limit) within specific locations. This precinct specific alignment was then reallocated to align with the YOSS precincts.

## 1.2 Development Activity

At the individual property level, analysis of the current planning databases (residential and employment) provides a quantification of the land area known to be undergoing or identified for redevelopment between 2016 and 2031. The City of Yarra collects this information within their planning permit data and residential monitoring master databases (supplied on 24 January 2019). Where available the data included the type of development activity (e.g. office/retail and/or residential/mixed use), the Address, Land Area, Gross Floor Area (GFA) and number of dwellings to be contained within developments along with the timing of the development. When data was missing the sites were cross referenced with media reports, real estate agent listings and the established urban development website

https://www.urban.com.au/ to assess the yield and floorspace for each development along with the delivery timeframe.

Where sites comprised mixed use, the land area was apportioned according to the percentage of Gross Floor Area (GFA). For example, if a site area is 1000m$^2$ and the building consists of 20% commercial and 80% residential use then the land area has been divided into 200m$^2$ for commercial use and 800m$^2$ for residential use.

Figure 2 provides the spatial distribution of current or planned development activity across the City of Yarra. Table 4 provides the employment and residential land area required to accommodate these current development proposals, for each of the precincts where the floorspace is currently under construction, and/or planned for construction within approximately 5 years (2016-2021).

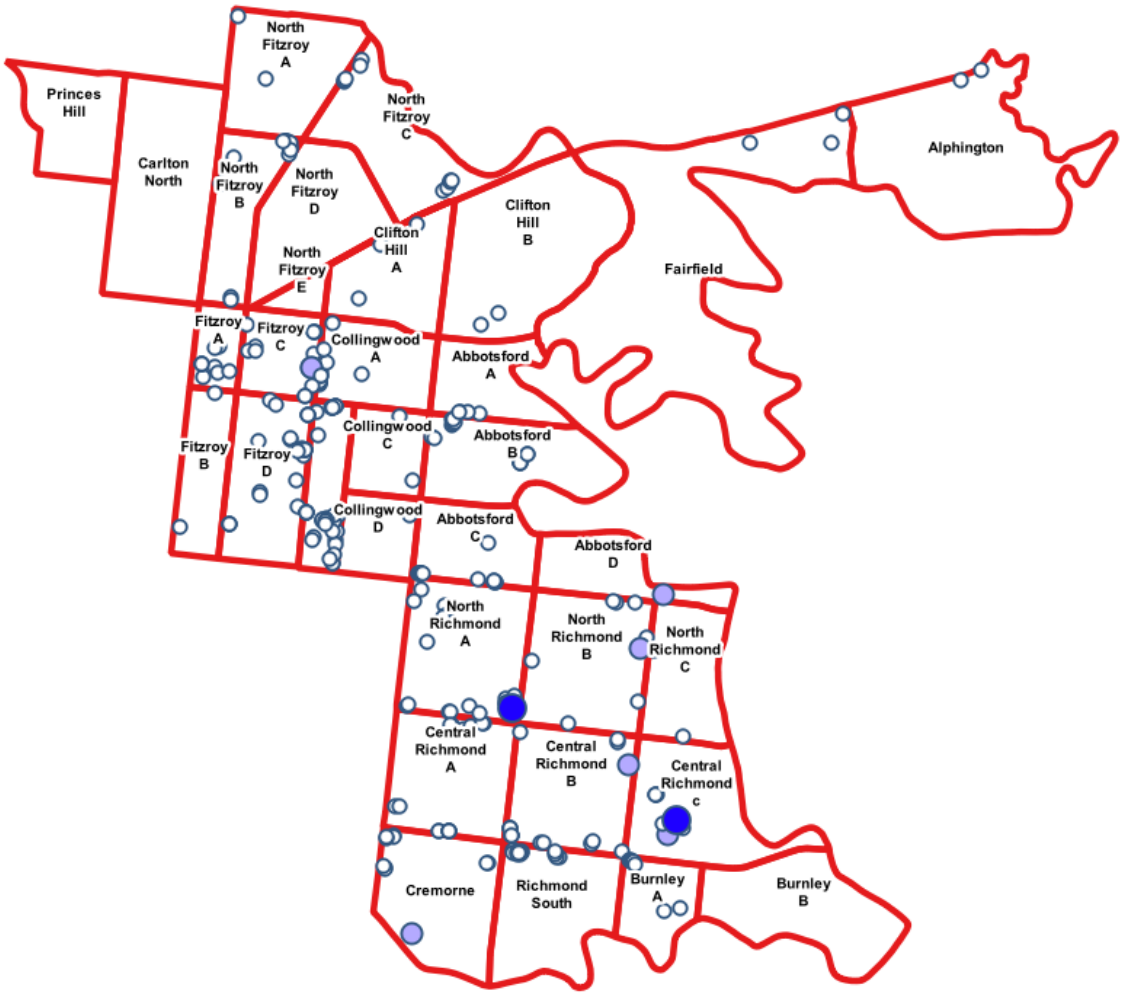


**Figure 2. Development Activity in the City of Yarra**

**Table 4: Land area, dwellings and employment floorspace identified for development.**

| Precinct | Residential Land Area to develop | Employment Land Area to develop | Total Land Area Required for Development Activity data |
|---|---|---|---|
| Abbotsford A | 1,437 | 577 | 2,014 |
| Abbotsford B | 2,794 | 2,252 | 5,046 |
| Abbotsford C | 3,527 | 1,308 | 4,835 |
| Abbotsford D | 4,674 | | 4,674 |
| Alphington[1] | 2213 | 369 | 2,582 |
| Burnley A | 5,050 | 3,578 | 8,628 |
| Burnley B | | | |
| Carlton North | 491 | | 491 |
| Central Richmond A | 5,485 | 3,645 | 9,130 |
| Central Richmond B | 4,453 | 2,648 | 7,101 |
| Central Richmond C | 8,191 | 916 | 9,107 |
| Clifton Hill A | 1,054 | 1,034 | 2,088 |
| Clifton Hill B | 1,702 | 136 | 1,838 |
| Collingwood A | 3,070 | 413 | 3,483 |
| Collingwood B | 9,138 | 26,894 | 36,032 |
| Collingwood C | 403 | 513 | 916 |
| Collingwood D | 1,645 | 17,304 | 18,949 |
| Cremorne | 9,965 | 5,416 | 15,381 |
| Fairfield | 3,129 | | 3,129 |
| Fitzroy A | 316 | | 316 |
| Fitzroy B | 1,287 | 133 | 1,420 |
| Fitzroy C | 226 | 5 | 231 |
| Fitzroy D | 4,072 | 2,350 | 6,422 |
| North Fitzroy A | 525 | | 525 |
| North Fitzroy B | 6,724 | | 6,724 |
| North Fitzroy C[2] | 3,700 | | 3,700 |
| North Fitzroy D | | | - |
| North Fitzroy E | | | - |
| **Total** | **85,271** | **69,491** | **154,762** |

1. Alphington Paper Mill site in Alphington (16.5 hectare) redevelopment site has been excluded from this analysis.
2. Retirement village (2.4Ha) associated with the redevelopment within the existing retirement village in Fitzroy have not been included within this analysis.

In summary, there is a residential land area of 85,271 of known development which has either been built, under construction or have an approved planning permit (Table 4). This land has the potential to accommodate approximately 7,500 dwellings. The next step in the process

was to identify sites capable of accommodating a further 10,649 dwellings, calculated based on the total growth 18,149 minus 7,500.

Based on the known information from the Development Activity, for employment floorspace, there is 110,000 square metres of employment floorspace either under construction or being planned on a land area of 69,491 square meters. Therefore, there is a need to identify sites capable of accommodating a further 307,000 square metres of employment floorspace.

This stage of the project provided information about the land use mix, density and recent development activity trends in the City of Yarra. It also provided forecasting data based on local conditions and accepted by the Council each of which form key elements for modelling the land area required to accommodate forecast residential and employment growth explained further in Section 2.

# 2 Section 2: Land value and area modelling.

### 2.1 Assigning remaining forecast to land

Once the developments and the land area with certainty are known (section 1 above), the next step is to prioritise the selection of land for future development (i.e. employment floorspace of 307,000 and residential floorspace for 10,649 dwellings). An overview of the method is provided below:

- The forecast floorspace (minus the development activity) for both employment and residential development (upper limit) is assigned to each YOSS precinct.
- Convert the 10,649 dwellings into gross residential floorspace assuming an average of 70m2 per dwelling and 90% building efficiency (City of Yarra 2018).
- For each of the YOSS precincts a filtering process is applied to remove sites that are unlikely to be developed. This process involved:
    - § Removing sites with strata title on them (as identified in the rates and valuations database).
    - § Removing sites with recent developments, within the past 30 years (as it assumed these sites would not be redeveloped in the short-term).
    - § Removing sites with a frontage less than 6m as these sites are likely to be developed as replacement and not yield an increase in the number of dwellings.
    - § Removing sites listed on the heritage register and/or zoned as Public Use Zone.
- For each of the remaining sites, calculate the **Redevelopment Potential Index (RPI**) Where the RPI is the ratio of the land value (numerator) to capital improved value (land value plus value of the built assets on that site—the denominator), a RPI approaching 1.0 indicates that the value of the property is represented almost entirely by the land component and as such is more economically viable for redevelopment compared to properties with RPIs of 0.5 or less. In this stage the RPI was used to rank the potential of the land for development within the YOSS precinct.

- For each site allocate the residential and employment **floorspace capacity.** The floorspace capacity is calculated assuming the height of the building will be like surrounding buildings and the space use mix will be aligned with the zone i.e. residential/commercial/retail, for mixed use sites the use is assigned based on similar approved applications in the area. Consistent with the City of Yarra Housing Strategy (2018) it is assumed that residential buildings will occupy 85% of the site and non-residential 90% of the site.
- Finally, select sites based on the priority ranking established above until the accumulation of floorspace meets the forecast requirement. Based on the sites selected the land area is summed. In cases of mixed-use development, the land area is apportioned between either employment or residential uses. For example, if a site area is 1000m$^2$ and the building consists of 20% commercial and 80% residential use then the land area has been divided to into 200m$^2$ for commercial use and 800m$^2$ for residential use. Table 5 provides the results for the estimated land area to redevelop (2016-2031).

### 2.2 Identifying median site value for land

To qualify the value of land area likely to be developed according to the YOSS precincts. Land parcels within each YOSS precinct with a RPI greater than 0.8 were considered likely targets for redevelopment. The hypothesis is that properties with a high RPI that come on to the market are redeveloped at a more rapid rate than those with a low RPI. This hypothesis was tested and confirmed by Newton et al., (2011). Once the parcels with a RPI greater 0.8 were selected the median land value per square meter was calculated as the estimated value of the land and multiplied by the land area to form the estimated value of the land to redevelop (Table 5).

**Table 5: Results for the estimated land area to redevelop (2016-2031) along with the estimated value of this land.**

| [1] | [2] | [3] | [4] |
|---|---|---|---|
| | | | |
| | Estimated land area to redevelop | Estimated land area to redevelop | Estimated value of the land to redevelop |
| Precinct | m2 | ha | $ |
| Abbotsford A | 10,758 | 1.08 | $ 50,676,875 |
| Abbotsford B | 17,741 | 1.77 | $ 81,842,617 |
| Abbotsford C | 13,475 | 1.35 | $ 58,978,808 |
| Abbotsford D | 16,998 | 1.70 | $ 95,258,715 |
| Burnley A | 9,790 | 0.98 | $ 41,595,073 |
| Burnley B | 12,769 | 1.28 | $ 41,039,733 |
| Central Richmond A | 28,656 | 2.87 | $ 200,911,326 |
| Central Richmond B | 28,845 | 2.88 | $ 144,267,773 |
| Central Richmond C | 34,865 | 3.49 | $ 155,599,984 |
| Collingwood A | 23,052 | 2.31 | $ 104,912,523 |
| Collingwood B | 45,893 | 4.59 | $ 296,738,338 |
| Collingwood C | 35,246 | 3.52 | $ 161,373,837 |
| Collingwood D | 61,122 | 6.11 | $ 252,223,123 |
| Cremorne | 74,581 | 7.46 | $ 492,857,195 |
| Fitzroy A | 24,112 | 2.41 | $ 131,500,871 |
| Fitzroy B | 31,921 | 3.19 | $ 171,360,456 |
| Fitzroy C | 43,223 | 4.32 | $ 222,666,859 |
| Fitzroy D | 31,505 | 3.15 | $ 192,285,778 |
| North Richmond A | 38,024 | 3.80 | $ 204,326,218 |
| North Richmond B | 29,362 | 2.94 | $ 106,938,342 |
| North Richmond C | 66,678 | 6.67 | $ 247,423,109 |
| Richmond South | 11,795 | 1.18 | $ 60,483,222 |
| Alphington | 2,582 | 0.26 | $ 6,020,393 |
| Carlton North | 3,301 | 0.33 | $ 10,168,824 |
| Clifton Hill A | 10,140 | 1.01 | $ 38,318,699 |
| Clifton Hill B | 6,671 | 0.67 | $ 30,611,474 |
| Fairfield | 6,848 | 0.68 | $ 16,535,197 |
| Fitzroy North A | 4,602 | 0.46 | $ 16,676,677 |
| Fitzroy North B | 7,956 | 0.80 | $ 40,717,601 |
| Fitzroy North C | 6,318 | 0.63 | $ 41,878,713 |
| Fitzroy North D | 11,443 | 1.14 | $ 58,775,128 |
| Fitzroy North E | 312 | 0.03 | $ 855,483.87 |
| Princes Hill | 4,007 | 0.40 | $ 13,419,658 |
| City of Yarra | **754,591** | **75.46** | **$ 3,789,238,620** |

# 3 Section 3: Conclusion

The open space contribution rate is based on the principles of equity and cost apportionment based on the demand for land and its associated value. This report outlines the data inputs and associated process for calculating the median value of land for redevelopment and required land area expected to supply the forecast employment and residential dwelling growth.

Forecasting the land area required to meet the forecast dwelling and employment trends over time presents many challenges. Providing data for a small areas/precincts can magnify the uncertainty surrounding the use and scale of development of individual parcels of land. With this uncertainty in mind, a range of checks including individual site analysis have been conducted to validate the method.

This report is based on the data available made at the time of compilation and assumes that the dwelling and employment forecasts will be met. We also understand that the timing may be extended due to Covid19 and therefore development may occur beyond the initial timeframe. Likewise, development may occur at a faster rate over the forecast period.

# 4 References

City of Yarra (2018) Yarra Housing Strategy Adopted 4 September 2018

.id Consulting, (2018) id_smallArea. Excel Spreadsheet containing the This analysis employs a forecast apportioning method which utilises the City of Yarra's existing forecast.id results by small area and uses year-on-year splits to calculate how much of a small area's growth will occur in each of the 33 YOSS precincts.

Newton, P., Murray, S., Wakefield, R., Murphy, C., Khor, L and Morgan, T., (2011) Towards a new development model for housing regeneration in greyfield residential precincts, AHURI Final Report No.171. Melbourne: Australian Housing and Urban Research Institute. Available Online: https://www.ahuri.edu.au/__data/assets/pdf_file/0011/2018/AHURI_Final_Report_No171_Towards_a_new_development_model_for_housing_regeneration_in_greyfield_residential_precincts.pdf (Date of access 30/03/2019)

SGS Economics and Planning (2018) Yarra Spatial Economic and Employment Strategy. Final Report. Available online https://www.yarracity.vic.gov.au/the-area/planning-for-yarras-future/adopted-strategies-and-plans/spatial-economic-and-employment-strategy (Date of access 1/11/2020)