Boral Cement Works and Former Quarry

130 Reservoir Rd, Waurn Ponds

Amendment C395

Expert Witness Statement of Brian Haratsis

October 2019

macroplan

Important Notice

MacroPlan staff responsible for this report:

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Expert witness details

1 Name and address of expert

Mr Brian Patrick Haratsis
Executive Chairman
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Melbourne Victoria 3000

2 Expert's qualifications and experience

- Master of Science, London School of Economics, London University;
- Bachelor of Town Planning and Regional Planning, University of Melbourne; and
- Bachelor of Commerce, University of Melbourne.

I have extensive experience in the field of economics and strategic planning gained over the past 35 years, having provided independent advice on hundreds of development projects and proposal throughput all parts of Australia, to a broad of clients. This experience includes extensive previous work undertaken in the field of tourism and hotels. My Curriculum Vitae is attached as Appendix 1.

3 Expert's area of expertise

My area of expertise covers economics and strategic planning. In particular, I have extensive experience in regard to economics, economics impact assessments, socio-economic analysis and net community benefit assessment.

4 Business relationships

I have no business relationship with the party for whom the report was prepared.

5 Details of other contributors

In preparing this expert witness statement, I was assisted by Estella Zhang. Estella assisted me in preparing the Economic Impact Assessment in association with Glenn Lamont. Their CVs are provided in Appendix 1.

6 Details that defined the scope of the report

I was instructed to prepare a strategic planning and an economic impact assessment and make commentary within my area of expertise on Amendment C395.

9 Sources

Settlement Strategy, City of Greater Geelong, 2018

Minutes City of Greater Geelong 26 March 2019

G21 Regional Growth Plan Background Report, 2012

G21 Regional Growth Plan, 2013

G21 Regional Growth Plan Implementation Plan, 2013

Submission to the Geelong Settlement Strategy, Macroplan, 2017

Transfer of Demand Study, Wyndham / Macroplan, 2018

Residential Land Supply and Demand Assessment, Macroplan, 2019

Geelong Settlement Strategy Residential Dwelling Stock Discussion Paper No 4, City of Greater Geelong (Spatial Economics), 2017

Geelong Settlement Strategy Residential Land Supply and Development Discussion Paper No 5, City of Greater Geelong (Spatial Economics), 2017

Geelong Settlement Strategy Land Supply and Housing Affordability Discussion Paper 6, City of Greater Geelong (Spatial Economics), 2017

Geelong Settlement Strategy Growth Scenarios Discussion Paper No 1, City of Greater Geelong (Spatial Economics), 2017

Geelong Settlement Strategy Background to Population Projections Discussion Paper No 2, City of Greater Geelong (Spatial Economics), 2017

RP Data

Victoria in Future, 2019

Plan Melbourne 2017-2025, DWELP, 2017

Greater Geelong Planning Scheme Amendment C138 Armstrong Creek Urban Growth Plan, Report of Panel (2008)

State of Discovery Mineral Resources Strategy 2018-2023, Victorian State Government (2018)

10 Signed declaration

I have made all the inquiries that I believe are desirable and appropriate and that no matters of significant which I regard as relevant have to my knowledge been withheld from the Panel.

Brian Haratsis

Executive Chairman

Macroplan

29 October 2019

Summary of opinions

1. Boral is seeking to repurpose its former quarrying operations in Waurn Ponds located at 130 Reservoir Road. The site is 1,020 hectares and approximately 50% has been quarried.

2. Boral is spending $130 million at the Port of Geelong on construction of a facility to import clinker.

3. The quarry operations ceased in 2012 and the cement works will cease once the Portside facility currently under construction is commissioned in 2020/21. Boral needs to know what the specifications are to efficiently rehabilitate the land.

4. The original proposal (2017) was for a short term rezoning of the northern side to facilitate rehabilitation, whilst leaving the southern side to the Settlement Strategy to determine timing. Boral commenced discussions with the Council about the future of the site in 2017.

5. It was envisaged both sites would be inside the indicative permanent growth boundary, because it can be serviced by heavy rail. Council advised us not to pursue the amendment and await the release of the draft settlement strategy.

6. The site is zoned Special Use 7 Zone and can be currently used with a permit for a range of uses including industry, warehouse, leisure and recreation, manufacturing sales and place of assembly. It is in effect an urban use.

7. The indicative permanent boundary should be amended to follow municipal boundary to include the proposed rail stabling yards, Deakin University, Epworth Hospital, the Geelong Future Economy Precinct and the Boral land. This is shown on Map 7, because a growth boundary should include employment, education and rural residential uses.

8. The Settlement Strategy also states it does not make recommendations about specific boundaries (page 15), but suggests an indicative boundary.

9. The Extractive Resources Strategy Summary (page 4) states that

   > *"Other initiatives to build community awareness and acceptance in the extractives sector, promote sustainability and environmental stewardship in the sector and promote innovation – including innovative end land use for quarries post-closure."*

10. If the G21 Background Report had been aware of the closure of the quarry it would most likely have nominated the southern site as having residential growth potential due to the preliminary nature of the work. The G21 Background Report was completed prior to the closure of the quarry and clinker operations in April 2013 and therefore considered the site based on an operational context (refer to G21 Background Report, page 72). The Boral site (post April 2013) ticks all of the key criteria used to identify the FIA's to support the long term growth of Geelong.

11. The subject site has fixed rail central to the site and connection with Geelong and Melbourne (Map 14), consistent with the G21 Key Objectives new regional growth areas.

12. Macroplan's work has taken the two scenarios (2.1% growth and 2.5% growth) and detailed how the growth areas have to perform to achieve these outcomes.

13. The analysis also shows that within 10-14 years Armstrong Creek land supply is likely to be exhausted. In 7-8 years Armstrong Creek will be exhausted in terms of major landholdings.

14. A transit oriented development (TOD on the northern site) should begin to be planned immediately (to ensure hotels, recreation and entertainment, and medium and high density) leveraging off the exposure of the northern site to the Geelong Freeway and leveraging off the Geelong Future Economy Precinct.

15. For these reasons I respectfully submit that:

    - the indicative permanent growth boundary in the subject location be amended to include the entire Boral site; and
    - the northern site be rezoned to facilitate purposeful rehabilitation, i.e. recreation, tourism and employment.

16. The Boral Land should be a preferred growth corridor because:

    - it can be developed as a transit oriented development
    - of access to employment
    - of access to key facilities (Deakin University, Waurn Ponds Activity Centre and the hospital)
    - a direct access to freeways and roads with 11,500 vehicles passing the site per day
    - it has an existing community of interest and access to recreational facilities and schools

    The northern side warrants immediate rezoning in order to shape its rehabilitation innovatively in line with State Government policy. It will take 2-3 years to rehabilitate. The southern site can be programmed in line with demand.

Section 1: Site and context

1.1 Boral is seeking to repurpose its cement works and former quarrying operations in Waurn Ponds located at 130 Reservoir Road. The site is 1,020 hectares and approximately 50% has been quarried (Map 1).

1.2 The site needs to be rehabilitated in conjunction with the Work Authority, however, there is opportunity to rehabilitate and reuse the site in line with the Extractive Resources Strategy, which is keen to see innovative end land use options.

1.3 Boral is spending $130 million at the Port of Geelong to import clinker.

1.4 The site is adjacent to the Armstrong Creek Urban Growth Area (ACUGA) and forms the western boundary. According to the Panel Hearing into the Armstrong Creek Urban Growth Plan (February 2008):

> *Armstrong Creek is an extension of the existing Geelong area, so that there is no issue about its north-western interface with urban Geelong.*
>
> *Armstrong Creek is the Blue Circle cement quarry, which prevents urban development west of Ghazeepore Road. To the north-east and east is the Barwon River flood plain which is a physical development constraint that can be used to define that boundary. Most of the argument about the Urban Growth Boundary was in relation to the southern boundary.*

1.5 The quarry operations, however, ceased in 2012.

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6 December 2012

Stephen Griffin
Chief Executive Officer
City of Greater Geelong
PO Box 104
GEELONG VIC 3220

Dear Mr Griffin

Boral's limestone quarry and cement works at Waurn Ponds has been operating since 1964, and it is in respect to this operation that I write to you today.

The site currently manufactures clinker, the key intermediate material that forms the basis of our cement products. The current high Australian dollar, low shipping costs, rising energy and other manufacturing expenses faced by our sector are all contributing to higher costs of domestic clinker production relative to imported clinker and cement.

A continued low level of demand associated with the downturn in Australian building and construction activity is also adversely impacting the profitability of Boral's cement business, where high fixed cost manufacturing assets continue to be underutilised.

Taking this context into account, Boral has conducted a review of its Australian cement operations to improve its future competitiveness.

As a result of the review, and subject to employee consultation processes, we intend to suspend indefinitely clinker manufacturing at our Waurn Ponds Cement Works from April 2013.

The site will continue to operate as a cement milling facility using imported clinker. The change will result in 25-30% of Boral's clinker requirement being imported, which is in line with the Australian industry average. Boral's fixed cost base will be reduced and flexibility to respond to changes in east coast market demand will be increased.

Regrettably, the planned suspension will impact the jobs of around 90 Boral employees at Waurn Ponds. We will be consulting with employees and their representatives over the coming weeks to explore all options including averting or mitigating job losses, as well as redundancies and redeployment within Boral where possible.

We intend to form a support service, which includes Boral resources, employment and government agencies, to assist employees in finding alternative placement opportunities.

Continuity and quality of cement through our extensive supply network will be maintained as part of any transition to more flexible cement and clinker supply arrangements. Furthermore, Victoria is an important market for the Boral Group and Boral will continue to maintain a presence and associated jobs in the state through our range of construction materials and building products operations.

1.6 The site is less than 2 km from Deakin University and bisected by the Waurn Ponds rail line and is a logical extension of ACUGA (Map 1).

1.7 The site comprises:

- Ingress and egress from the Geelong Ring Road.
- Bridge structures under the rail line and under the Freeway capable of accommodating B Double trucks
- All services are available

1.8 To the west of the site is the government's proposed rail stabling yard (Map 2).

1.9 The original proposal (2017) was for a short term rezoning of the northern side to facilitate rehabilitation, whilst leaving the southern side to the Settlement Strategy to determine timing (Map 2).

1.10 It was envisaged both sites would be inside the indicative permanent growth boundary.

1.11 I believe the northern side warrants rezoning immediately (the area not affected by the recent Surf Coast Distinctive Areas and Landscapes designation) because it is an opportunity to finish ACUGA.

1.12 The project would take up five years to rehabilitate and therefore would be perfectly timed for ACUGA.

1.13 The southern side is also a logical extension of the ACUGA. It includes an employment area around the rail stabling yards and residential area to the east and would logically be developed after the northern site.

1.14 The site was designated as employment precinct in the 2013 G21 RGP. Employment precincts should be inside the indicative urban growth boundary, but are not included nor are existing rural residential areas or Deakin University/Epworth Hospital.

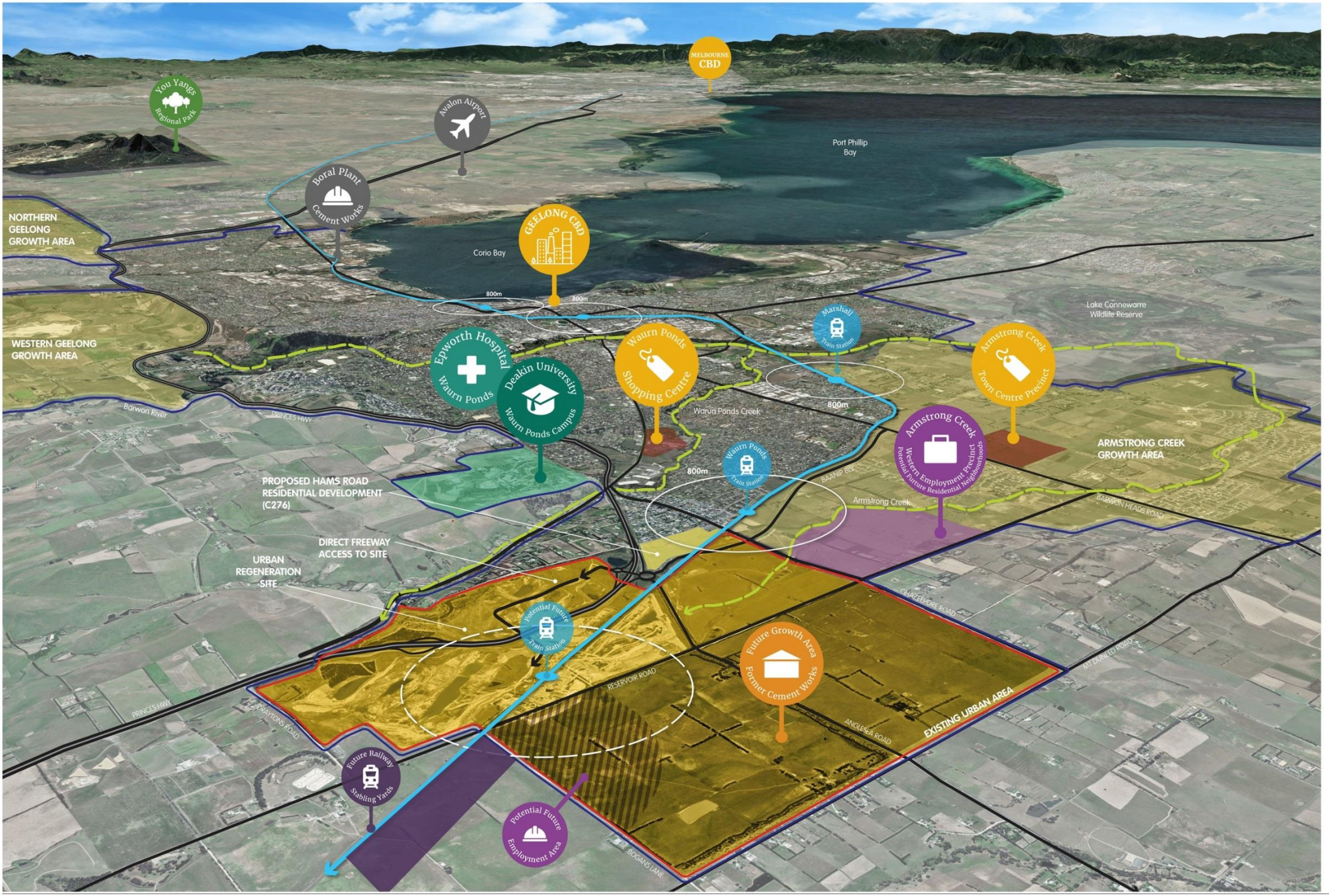
1.15 The site missed out on serious consideration because:

- The Background Report (G21 GRA) was prepared in August 2012 and found that it did not have proposal. Lovely Banks and Batesford both had proposals afoot. I will deal with later in my submission.
- It was an operating quarry at the time.
- The G21 Regional Growth Plan was completed in April 2013 based on the Background Report advice.
- The Northern and Western FIAs went into an Implementation Plan (December 2013) phase based on the advice of the Background Report and Regional Growth Plan.
- There was a view in the G21 Implementation Plan that only one of the FIAs was required.
- By the time of preparation of Draft Settlement Strategy despite submission made on behalf of Boral further consideration was given to the Boral Land (one officer had a half day tour) because all efforts had gone into the Northern FIA and Western FIA. The Council is implementing a strategy which is six years old and has not assessed the Boral site on its merits.

1.16 The site is zoned SUZ7 and can be currently used with a permit for a range of uses including industry, warehouse, leisure and recreation, manufacturing sales and place of assembly (Map 4).

Boral Site

Map 1



LOCAL CONTEXT PLAN | AXO VIEW

WAURN PONDS

City of Greater Geelong , VIC

REF NO **BRL WRP** DRAW NO **RD 3005** REV **G**

Map 2

REV	DESCRIPTION	YYMMDD	DRAWN	APP'D
G	Draft	191016	PC	MJ

WAURN PONDS

BORAL

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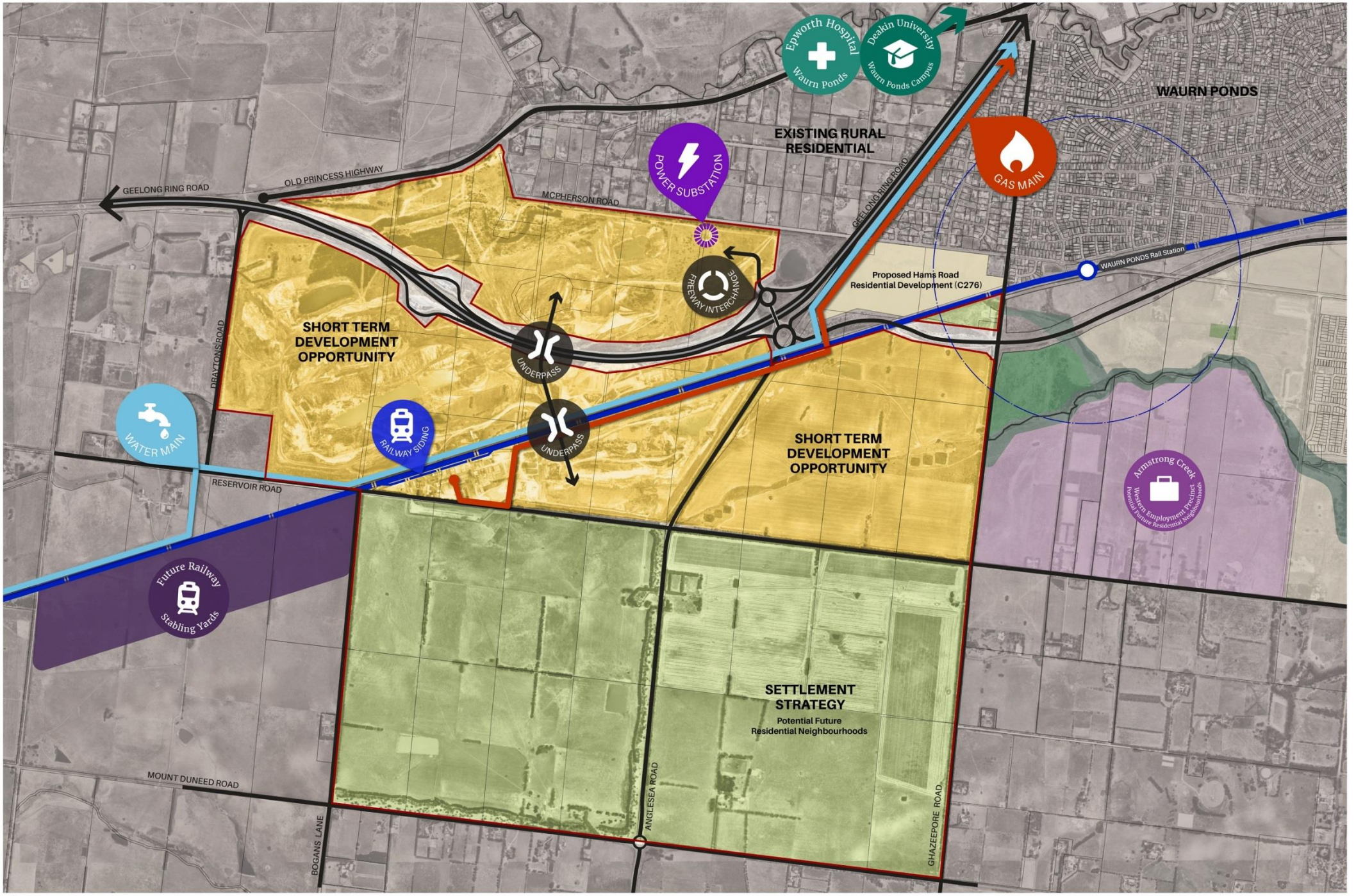

EXISTING INFRASTRUCTURE PLAN
WAURN PONDS
City of Greater Geelong , VIC

REF NO **BRL WRP** DRAW NO **RD 3005** REV **H**

N SIZE A0 1:6,000

REV	DESCRIPTION	YYMMDD	DRAWN	APP'D
H	Draft	191016	PC	MJ

Map 3

WAURN PONDS

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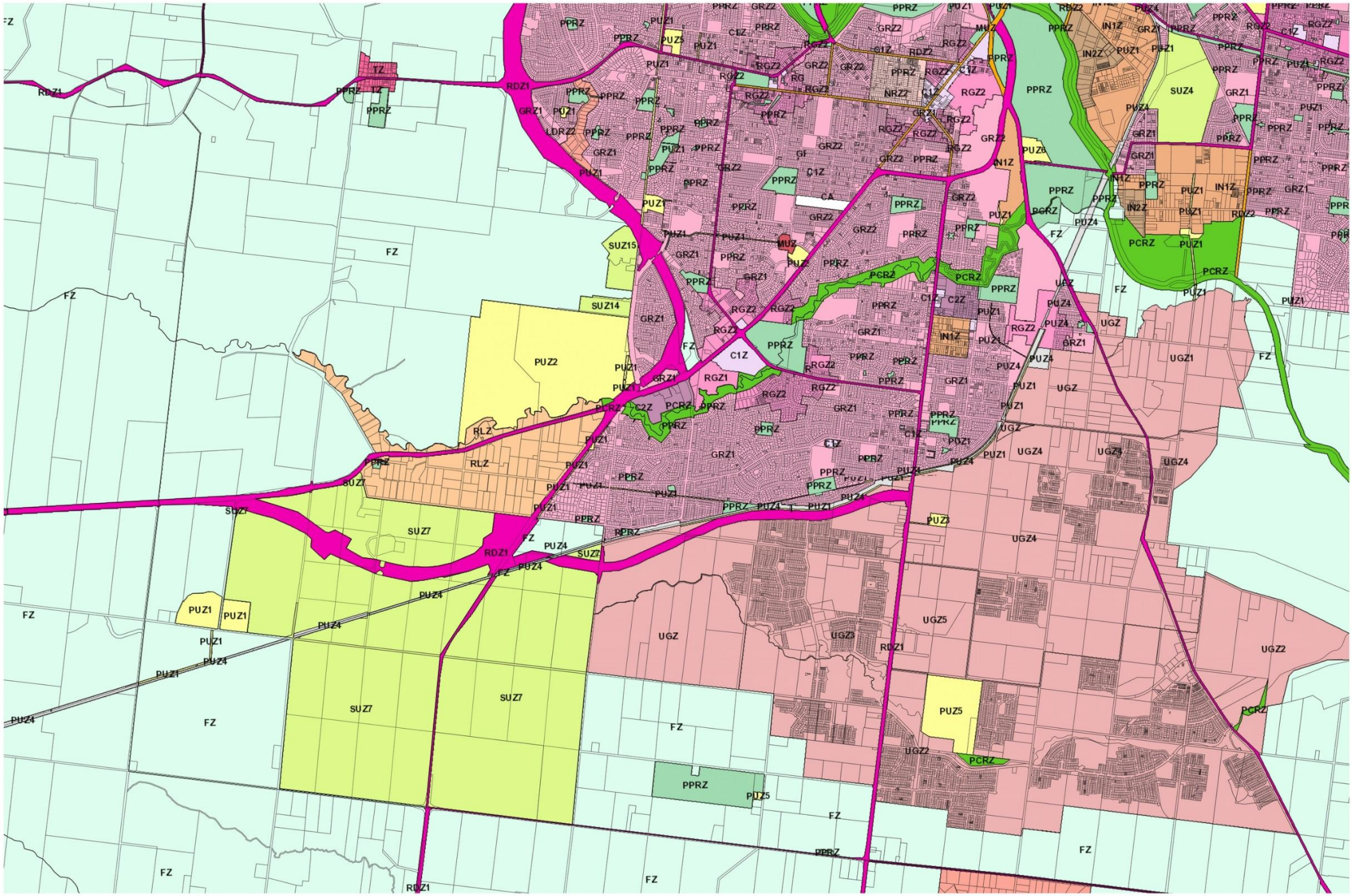

STURORY LAND USE PLAN

WAURN PONDS

City of Greater Geelong , VIC

REF NO	DRAW NO	REV
BRL WRP	**RD 3014**	**A**

N

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REV	DESCRIPTION	YYMMDD	DRAWN	APPR'D
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Map 4

WAURN PONDS

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Section 2: A Permanent Settlement Boundary

2.1 A permanent settlement boundary was canvassed in the 2013 in the G21 RGP (Figure 1).

Figure 1

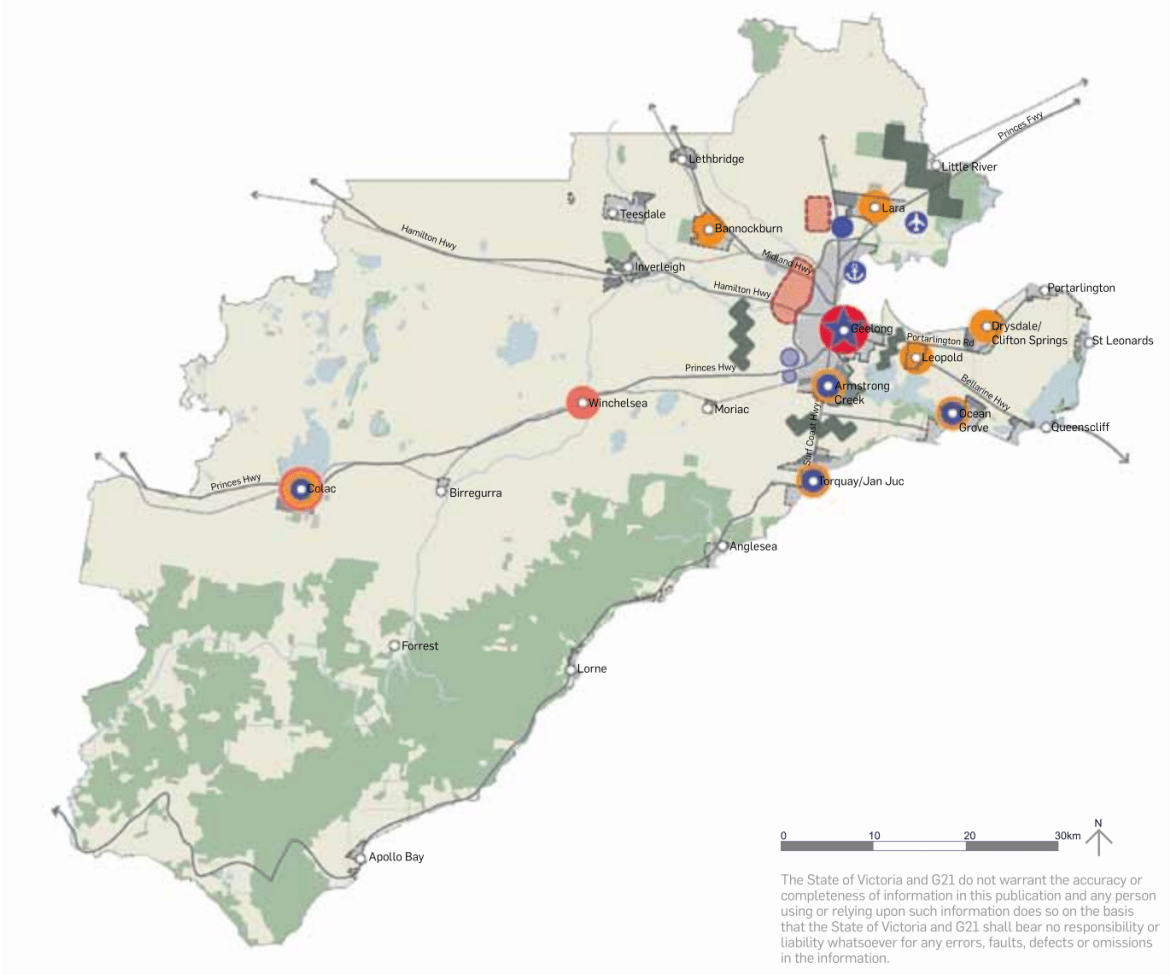
	SHORT TERM 'PLANNED GROWTH'		MEDIUM TERM	LONG TERM 'OUT OF PLAN' DEVELOPMENT
	Priority 1	Priority 2	Priority 3	Priority 4
DEVELOPMENT	**Development within existing Residential Zoned Land and zoned employment nodes:** ▸ Level 1: - Urban renewal and major infill areas - Armstrong Creek Urban Growth Area - Ocean Grove - Jetty Road, Clifton Springs - Bannockburn - Colac - Lara - Leopold - Torquay/Jan Juc ▸ Level 2: Other district towns & employment nodes ▸ Level 3: Winchelsea ▸ Level 4: Other sewered towns ▸ Level 5: Non sewered towns & areas	**Development in identified growth areas within scheme implemented settlement boundaries or identified employment nodes:** ▸ Level 1: District Towns and employment nodes (including Deakin Employment Node and identified major agricultural nodes i.e Lethbridge intensive agriculture & Thompson Valley irrigated agriculture areas) ▸ Level 2: Winchelsea ▸ Level 3: Other sewered towns ▸ Level 4: Non sewered towns & areas	**Growth Plan identified further growth centres:** ▸ New Colac and Winchelsea housing & employment growth areas ▸ Preferred Further Investigation growth area consistent with the ***Implementation Plan*** **Other areas identified through new council Structure Plans**	**Other Further Investigation Areas:** ▸ Other Further Investigation Areas identified through ***Implementation Plan*** or Growth Plan review ▸ Blue Circle, Waurn Ponds employment node
PLANNING	Preparation of an ***Implementation Plan*** and the identification of a preferred Further Investigation Area Promote and facilitate urban renewal and major infill sites in identified centres and precincts	Planning for identification of new growth areas for Colac and Winchelsea Initial planning for the identified Further Investigation Area	Precinct planning for identified growth area Initial planning for any other identified Further Investigation growth areas	Precinct planning for other identified Further Investigation growth area areas

Source: G21 Regional Growth Plan, April 2013, page 37

2.2 The Blue Circle Waurn Ponds (Boral) is an identified employment node but appears in 'out of plan' development (Map 5).

2.3 The G21 Regional Growth Plan is intended to be a living and adaptable plan, able to respond to new data and information as it arises, including information from State or regional strategies and programs. (G21 RGP, page 44).

Map 5 – Settlement and employment growth directions



Reinforcing the role of Central Geelong as a regional city and Victoria's second largest city
Major infill is proposed to support the revitalisation and strengthening of central Geelong.

Supporting the growth of Geelong with a focus on infill housing opportunities
A focus on infill housing opportunities at targeted activity centres and Key Development Areas as identified in the Greater Geelong Planning Scheme.

Supporting planned growth and reinforcing the role of district towns
Encourage growth of district towns or centres consistent with existing Structure Plans/Growth Plans. With Armstrong Creek, this will accommodate a further 125,000 people over the next 20 – 30 years. Development of underutilised sites and urban infill is actively recommended within these settlements to ensure a range of housing choice.

Introducing new targeted growth nodes
Grow Colac to a town of 20,000 and Winchelsea to a town of 10,000. Further strategic work will need to be undertaken for both towns to identify the most appropriate areas for growth and to identify major incentives to support growth. These areas are not anticipated to be required until at least 2030-2040.

Identification of two Further Investigation Areas in Geelong
Potential development of these areas, is not likely to be required ahead of identified planned growth. They will require further assessment of suitability and capacity for growth and the monitoring of land supply within the region to determine timing. The Lovely Banks area near Lara potentially has a higher priority, given greater connection to Melbourne and links with proposed national transport logistics employment areas.

Strengthening and protecting the identified existing and planned employment areas (shown on map)
As well as tourism precincts and district town activity centres (not shown on map).

Maintain productive agricultural areas
Consistent with existing Rural Land Use Strategies and includes opportunities for broadacre copping and livestock, intensive livestock and horticulture, irrigated agriculture, forestry and emerging agricultural activities.

Identifying new employment nodes
A new Education, Health and Research Hub at Deakin University, the long term potential employment hub at Waurn Ponds South, subject to further investigation, and the expansion of industrial employment areas in Colac and Winchelsea, subject to more detailed planning.

Identification of four key settlement breaks
Discussion provided in section 4.11.

Designation of settlement boundaries for all towns
The region's other rural and coastal settlements will continue to experience modest growth and play an important tourism and agricultural role to surrounding areas. Growth will be limited to identified structure plan settlement boundaries.

Maintain and enhance natural assets
Protect and build on our natural assets by maximising key opportunities to link and rehabilitate ecosystems and enable sustainable and planned productive uses. Sustain the health of our natural assets by considering future challenges in the management, planning and development of these assets.

G21 REGIONAL GROWTH PLAN 27

Source: Map 7, G21 Regional Growth Plan, April 2013, page 27

2.4 The Deakin Employment Node is identified but remains outside the settlement boundary.

2.5 There is no discussion about the boundaries in the document or if the proposed boundaries were sufficient. Many employment areas and rural residential areas are outside the boundary.

2.6 A key priority of the G21 RGP is an intra Geelong train service (upgrades and service) and stabling yard relocation.

2.7 The indicative permanent growth boundary is based on the G21 RGP with inclusions for the Western Growth Area and Northern Growth Area. It generally runs along the Geelong Freeway (Ring Road) south of the Western Growth Area and intersects with the Warrnambool to Geelong rail line (Map 6).

2.8 It excludes rural residential areas, industrial areas, Deakin University and Epworth Hospital, and is unlike the Melbourne Urban Growth Boundary (Map 6).

2.9 The indicative permanent boundary should be amended to follow municipal boundary to include the proposed rail stabling yards, Deakin University, Epworth Hospital, the Geelong Future Economy Precinct and the Boral land. This is shown on Map 7.

2.10 The stabling yard site is now proposed and every effort should be made to facilitate the intra Geelong rail service beyond Waurn Ponds station.

2.11 The proposed station is capable of being built in the short term.

2.12 The inter-urban break is known as the Thompson Valley. The G21 RGP stated that to ensure that a strong founded character between the urban areas of Armstrong Creek and Torquay encourage rural population and maintain existing town identities. The Boral site maintains the inter-urban break.

2.13 The DAL objectives are to recognise the importance of distinctive areas and landscapes.

2.14 There was no explanation for the Surf Coast Distinctive Area Landscape (DAL) declaration in Geelong. Surf Coast was the focus of the project and Boral were not consulted until the declaration was made.

2.15 The requirements of the area to be checked are outstanding environmental significance or national resources. It is not clear why the area was defined.

2.16 The Minister must be satisfied that an area is under threat of significant or irreversible land use change. The Boral land could have been quarried.

2.17 The Statement of Planning Policy (SPP) will set out the long term needs for the integration of decision making and planning for the declared area.

2.18 The SPP must set a vision for a period of at least 50 years including preferences for land uses.

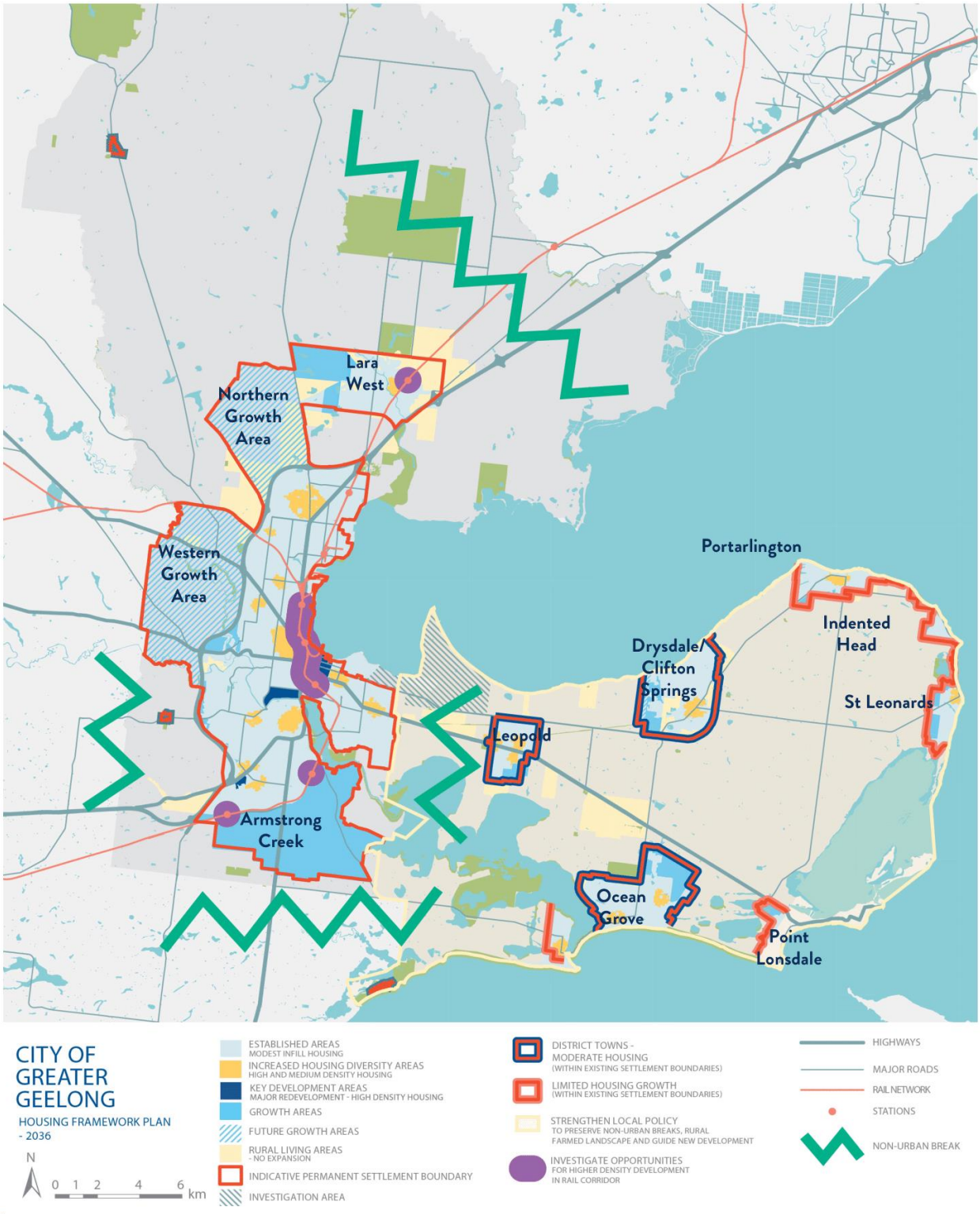
2.19 There are priorities from other policies (rehabilitation of quarries) that must come into play.

2.20 The Distinctive Area Landscape Act partly affects the southern area of Geelong and the Boral site.

2.21 The SPP may specify settlement boundaries in the declared area or designate specific settlement boundaries in the declared area as protected settlement boundaries. The DAL is intended to consolidate planning outcomes/processes (having overlap between the Settlement Boundary and DAL SPP boundaries potentially does not achieve this).

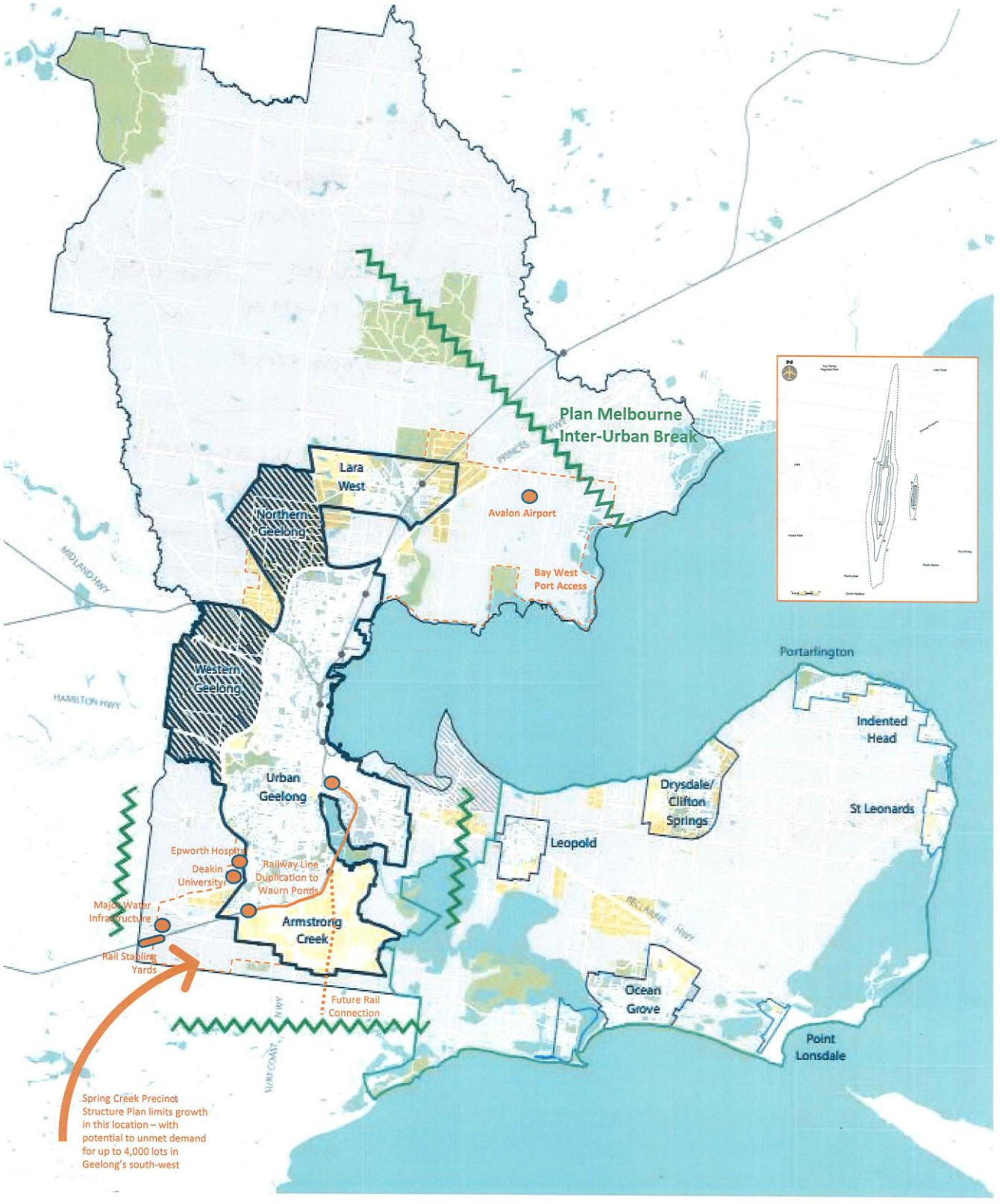
FIGURE 1: GREATER GEELONG HOUSING FRAMEWORK PLAN – 2036

Map 6



12

Source: Figure 1, The City of Greater Geelong Settlement Strategy, October 2018, page 12



DRAWING KEY

- GREATER GEELONG LGA — LOCAL GOVERNMENT AREA
- ESTABLISHED URBAN AREAS — HIGH AND MEDIUM DENSITY HOUSING / MAJOR REDEVELOPMENT - HIGH DENSITY HOUSING
- GROWTH AREAS
- FUTURE GROWTH AREAS
- Urban Settlement Boundary Inclusions
- INVESTIGATION AREA
- RURAL LIVING AREAS — NO EXPANSION
- BOUNDARY — INDICATIVE PERMANENT SETTLEMENT BOUNDARY
- DISTRICT TOWNS — MODERATE HOUSING WITHIN EXISTING SETTLEMENT BOUNDARIES
- LIMITED HOUSING GROWTH — WITHIN EXISTING SETTLEMENT BOUNDARIES
- Future Rail Duplication to Waurn Ponds
- STRENGTHEN LOCAL POLICY — TO PRESERVE NON-URBAN BREAKS, RURAL LIVING FARMED LANDSCAPE AND GUIDE NEW DEVELOPMENT
- NON-URBAN BREAK
- RAIL NETWORK
- RAIL STATIONS
- Proposed Railway Connection to Torquay
- HIGHWAYS
- MAJOR ROADS

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Map 7

2.22 The DAL is an integrative mechanism and should be viewed in the light of the Geelong settlement boundaries. The northern part of the site is outside both sets of boundaries but should be inside the Geelong Settlement Boundary to meet the requirements of innovative reuse (as distinct from stabilise and walk away) and because it has the ability to be a transit oriented development.

2.23 The southern site which is included in the DAL should be included in the settlement boundary. The resource remaining in this portion of the site is no longer economically viable and therefore not worthy of protection.

2.24 A letter to Boral, dated 7 October 2019 from the Department of Environment, Land, Water and Planning (DELWP), states

> *The declaration of the Surf Coast does not have any statutory implications for landowners and does not change the current planning scheme or your property rights at this stage. Declaring the area as a distinctive area and landscape triggers the preparation of a Statement of Planning Policy (the Statement). The Statement will set out a long-term vision for the region and guide future use and development of land. It will be developed with the Surf Coast Shire Council, the City of Greater Geelong, Traditional Owners, the community and other key stakeholder groups. The Statement will form part of the planning scheme and effect future land use planning decisions.*

Section 3: Geelong Settlement Strategy

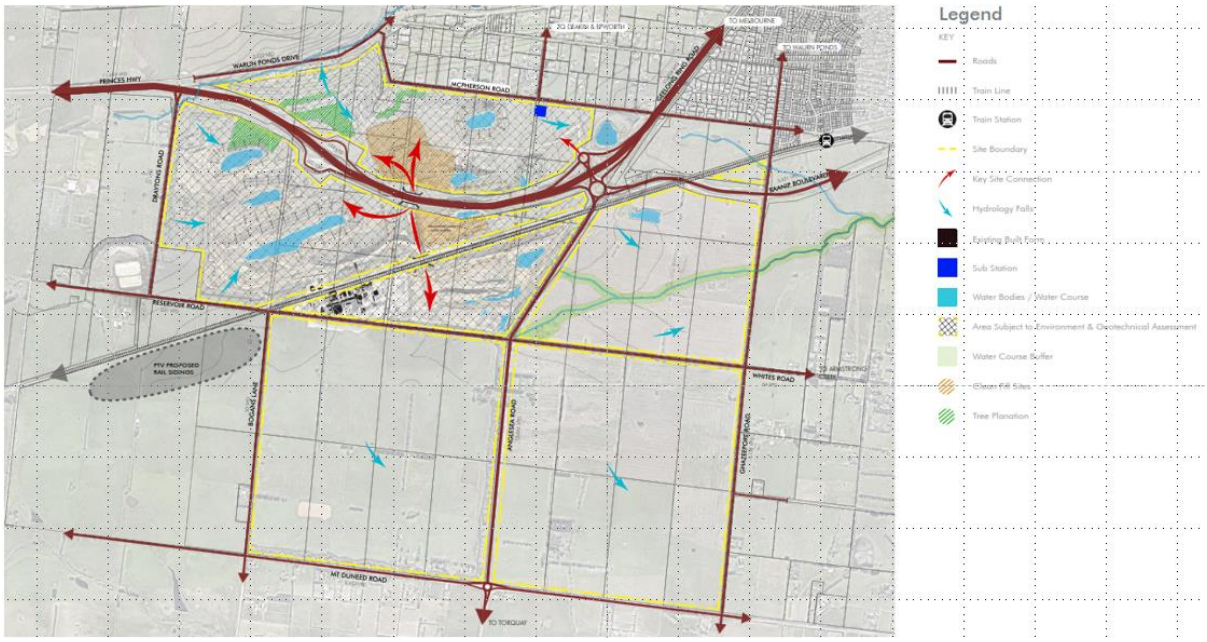
Land Release Strategy Not a Settlement Strategy

3.1 The Settlement Strategy should have included economic analysis for the purposes of determining employment analysis and infrastructure analysis. A transport plan is a fundamental building block, as use recreation planning and tourism planning for a settlement strategy.

3.2 The Settlement Strategy has recognised infrastructure deficiencies

- Rail infrastructure is extraordinary sparse. The confirmed duplication to Waurn Ponds highlights this fact, and the rail line should be further utilised. This is a key objective underpinning the G21 background report for the selection of the FIAs to support the growth of Geelong.
- Road infrastructure. Armstrong Creek is served by excellent primary arterial roads and secondary arterial roads. There are already entry and exit points from the Boral Land. It would be remiss to not use this capacity (Map 8).

Map 8



- Power, water and sewerage treatment plants can be made available.

3.3 A Settlement Strategy must include an analysis of employment because it is a fundamental building block. Future industry, tourism and recreation as well as a view on professional services including ICT, media, technical services is essential in order to estimate the rate of infill. Infill is more expensive and requires proximity to employment to become alternative.

3.4 Future industry was canvassed in only a general manner in the G21 Regional Growth Strategy.

3.5 The Settlement Strategy states that it does not address other land use types such as farming, industrial, commercial or public uses, except in cases where these uses may impact upon housing supply policies (page 15 Settlement Strategy 2018).

3.6 The Settlement Strategy also states it does not make recommendations about specific boundaries (page 15).

Little recognition of the impacts of Plan Melbourne

3.7 The G21 Regional Growth Plan (2013) pre-dates Plan Melbourne.

3.8 Plan Melbourne 2017-2050 is based on the proposition that there will be no expansion of the Urban Growth Boundary (as was Plan Melbourne 2014).

3.9 Melbourne is already hitting the boundary in the west. Manor Lakes, Harpley and other PSPs nestle against the UGB.

3.10 Geelong is the 'second' city and should plan accordingly to take growth from Melbourne. The proposed new fast rail and growth of Avalon signal a new era for Geelong.

3.11 For example according to Plan Melbourne Bay West will be the next for Melbourne not the Port of Hastings. The Western Intermodal Freight Terminal, Inland Rail and Outer Metropolitan Ring Road were all established in Plan Melbourne and will lead to accelerated growth in Geelong.

3.12 There are only three sentences devoted to Plan Melbourne 2017-2050 yet this document sets the context within which Geelong will grow.

3.13 The rail connection to the Sunshine Super Hub by fast rail will transform Geelong. Avalon will take 15 minutes longer by fast rail than Melbourne Airport from the Sunshine Super Hub.

3.14 Plan Melbourne allows for major infrastructure upgrades in the west of Melbourne (Map 9).

3.15 Infrastructure including the fast rail, Western Intermodal Freight Terminal, Bay West and the Outer Metropolitan Ring Road and West Gate Tunnel will increase the rate of development by transferring demand from the west of Melbourne to Geelong due to the lower land princes (Lara) and more amenity (Armstrong Creek / location in relation to Torquay). This is taken up later in my evidence.

No recognition of the Extractive Resources Strategy

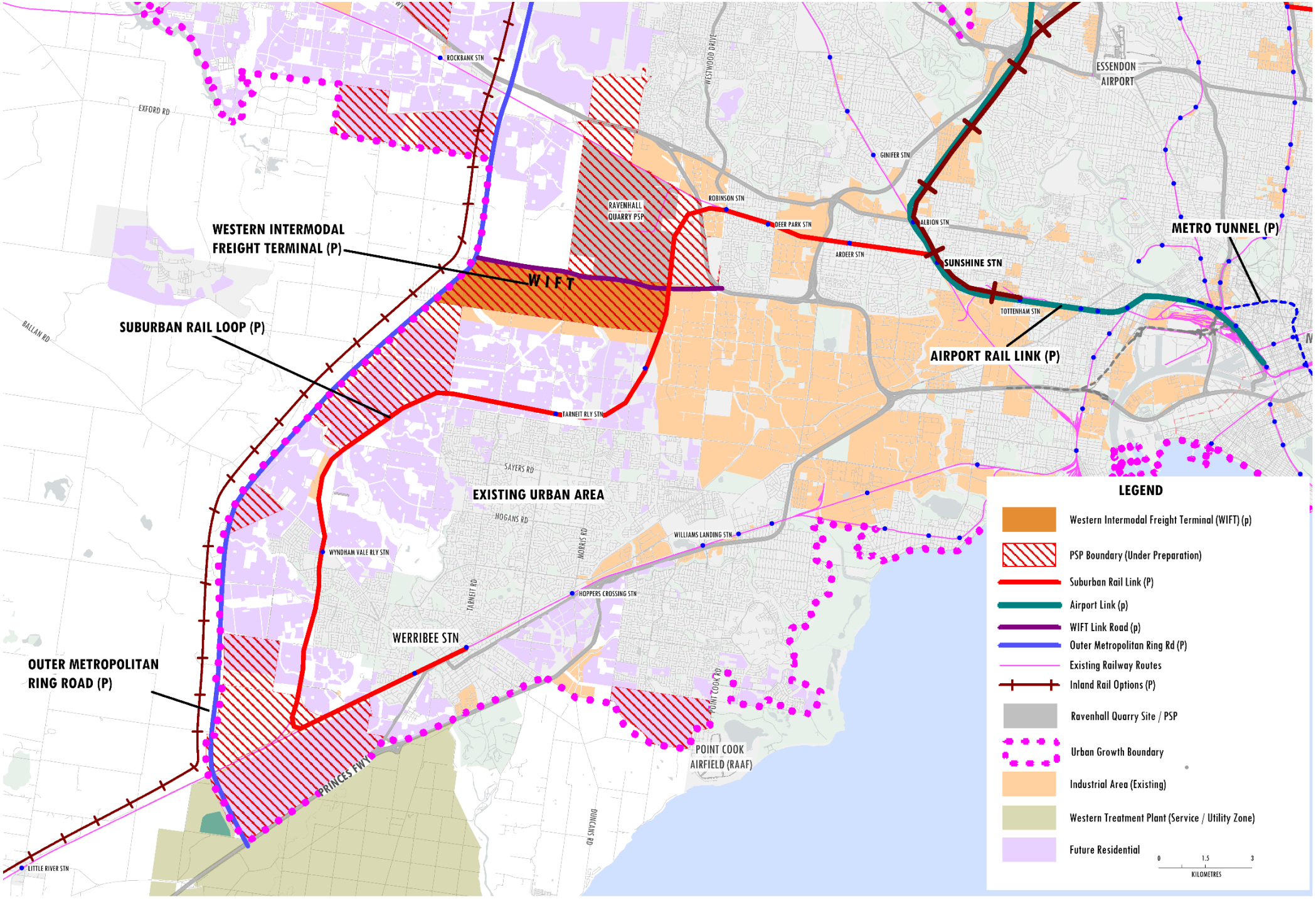
3.16 The Extractive Resources Strategy (2018) states on page 36:

> ***Innovative end-land use opportunities for quarries***
> *Innovation also has a central role in planning, design and implementing safe, stable and beneficial postquarrying land forms and land uses. Post-quarrying land uses can enhance amenity and lifestyle for local communities, and also help to provide habitat for threatened species.*
>
> *Quarries can make a valuable contribution towards enhancing networks of open space for use by local communities. This can be encouraged through long term open space planning coupled with quarry approvals that consider innovative end land use options.*
>
> *This has been achieved already in significant cases both in Australia and overseas. For example, in New South Wales in the 1980s, the Government embarked upon an ambitious plan to transition old quarry sites in Penrith into major water-based recreational parklands. This delivered public and social benefits, including through the hosting of the 2000 Sydney Olympic Games rowing events.*

We will support industry to plan for and implement innovative end land uses that are beneficial for the local community.

Boral is like part owner of the Penrith Lakes project and are still delivering projects.

3.17 Successful re-purposing leads to further investment in the resources sector. This is important for sustained infrastructure growth. It is important that Boral know what standard the quarry should be rehabilitated to.

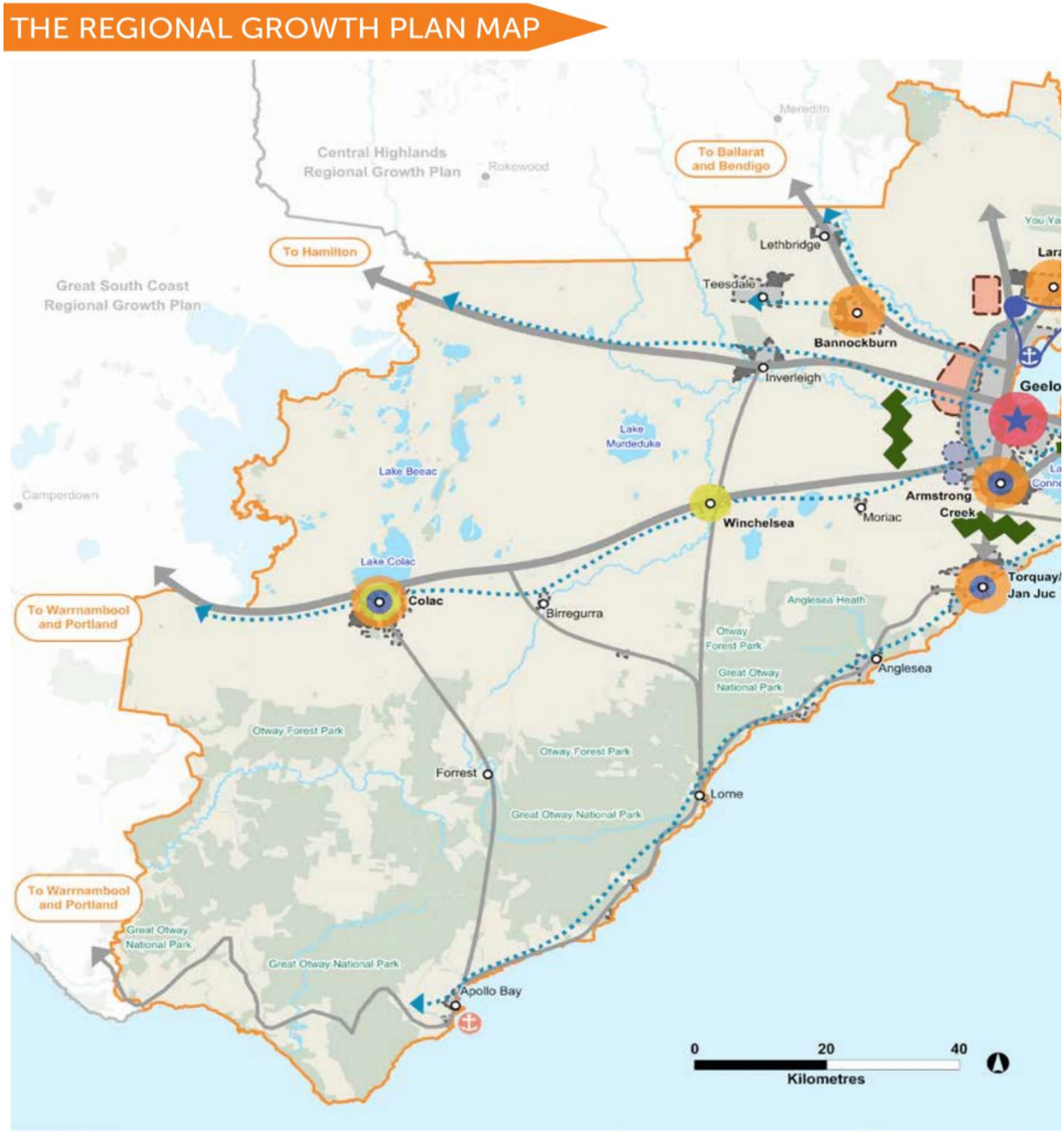


Map 9: Existing and Future Infrastructure

G21 Regional Growth Plan Background Report

3.18 The G21 Regional Growth Plan contemplated the subject site as urban and designated it as an employment node (Map 10).

Map 10



Source: G21 Regional Growth Plan Summary, page 7

3.19 The G21 RGP contemplated the subject site as a potential further investigation node.

3.20 In Table 4.3 of the Background Report (Figure 2), the potential future sites were compared. The Boral Land (Blue Circle Cement Quarry Land) was strangely noted as low-moderate with an opportunity to use the rail line.

3.21 It scored highly in all respects and the G21 notes that 'after the development of Armstrong Creek' it would have scored more highly because of services and facilities. In fact all services were on site.

Figure 2

TABLE 4.3 – ANALYSIS OF POTENTIAL FURTHER INVESTIGATION AREAS

Considerations	1 - Lovely Banks	2 - Bell Post Hill	3 - Batesford South
Adjacent to existing major urban area with the ability to integrate and add value to existing communities	Close to Corio and Lara but separated by existing rural residential node and Ring Road. Lara West would be developed first, creating a closer connection between Lara and Lovely Banks	Proximity to Bell Post Hill Separated by major road	Proximity to Fyansford, Batesford and Dog Rocks rural residential node. Separated by major road
Extent of existing, or access to, infrastructure including major transport routes and reticulated services	Good road connections. Other services and infrastructure limited	Good road connections. WH Myers Reserve and private school facilities	Good road connections. Limited infrastructure and services
Ability to integrate and connect efficiently to existing services	Moderate. Major water and sewerage infrastructure required. Difficult to provide public transport link other than bus	Moderate. Water and sewerage infrastructure required. Difficult to provide public transport link other than bus	Moderate. Major water and sewerage infrastructure required. Difficult to provide public transport link other than bus
Proximity to major employment and activity nodes and capacity to provide employment opportunities	GREP Avalon	Limited. Activity node would be required	Activity node would be required
Capacity by owner/developer to deliver planned communities	High. Lovely Banks Management P/L group preliminary planning investigations undertaken	Medium. Land ownership fragmentation	High. Adelaide Brighton/McCann group preliminary planning investigations undertaken
Land use conflicts	Potential conflicts with adjacent rural residential node. Potential impact on GREP buffer and adjacent agricultural activities	Potential conflicts with adjacent rural areas and rural residential activity	Potential conflicts with adjacent rural residential activity and agricultural activity
Extent of significant environmental, cultural and landscape values	Environmentally significant grassland (ESO4). Some preliminary site investigations undertaken which identify limited impact if managed	Limited impact. No assessment undertaken	Potential for native vegetation and habitat values. Some preliminary site investigations undertaken which identify limited impact if managed. Extensive site disturbance through farming and quarry activities. Potential for some contamination. Potential impacts on river environment. Attractive landscape values. Potential for sites of cultural heritage

TABLE 4.3 – CONTINUED

4 - Ceres	5 - Marcus Oldham/Deakin	6 - Waurn Ponds Creek Valley	7 - Blue Circle Quarry North
Proximity at western edge to Highton. Separated by major road. Established small town of Ceres	Adjacent to Waurn Ponds and Highton	Adjacent to Waurn Ponds. Separated by major road	Close to Armstrong Creek Growth Area and Waurn Ponds. Separated by major road. Adjacent to Rural Residential Area
Limited road connections. Good access to Ring Road. Limited community facilities and infrastructure. Unsewered town	Good road connections. Close to Waurn Ponds shopping centre (bus & footpath connections). Education facilities within node	Good road connections. Other services and infrastructure limited to tennis facilities. Close to Waurn Ponds and Deakin University	Good road connections. Other services and infrastructure limited until development of Armstrong Creek
Low. Significant water and sewerage infrastructure required. Difficult to provide public transport link other than bus	High. Can utilise existing water and sewerage infrastructure. Difficult to provide public transport link other than bus	Low - Moderate. Major water and sewerage infrastructure required. Difficult to provide public transport link other than bus	Low – Moderate. Opportunity to use rail line. Major water and sewerage infrastructure required
Limited	University, health research, Armstrong Creek West employment and industrial precinct	University, health research, Armstrong Creek West employment and industrial precinct	Armstrong Creek West employment and industrial precinct
Low. Land ownership fragmentation	High. Marcus Oldham and Deakin University major land holders. Focus likely to be around education, health and research and some accommodation options	Low - high land fragmentation. Interest from landowners in low density housing outcomes potentially doubling existing lot numbers but insufficient support for a planned community outcome. Limited policy support for Low Density Residential rezoning	High . One owner
Potential conflicts with adjacent rural activity	Impacts on residential areas to east if traffic activity not managed. Potential impacts on rural areas to west	Node includes a number of small wineries and other activities. More intensive urban activity may impact on buffers to quarry or its future use	Inappropriate future use may compromise Armstrong Creek Growth Area development. Potential impacts on adjoining rural residential area or rural activities to the west
Potential for native vegetation and habitat values - no assessment undertaken Potential for sites of cultural heritage significance Significant scenic and landscape values. Barrabool Hills classified landscape (National Trust) Ceres township heritage listed sites	Potential for native vegetation and habitat values - no assessment undertaken. Potential impacts of development on waterways and on landscape values associated with Waurn Ponds Creek Valley and Barrabool Hills. Potential for sites of cultural heritage near waterways	Potential for some native vegetation and habitat values - no assessment undertaken. Potential impacts of development on landscape values associated with Waurn Ponds Creek Valley	Site highly degraded. Rehabilitation required. Potential for some native vegetation and habitat values - no assessment undertaken

Source: Table 4.3, G21 Regional Growth Plan Background Report, August 2012, pages 74-75

3.22 The Background Report (page 72) states:

The following considerations were used in identifying potential sites:

- *Proximity to existing major urban area – ability to integrate and add value to existing communities*
- *Extent of existing, or access to, infrastructure including major transport routes and reticulated services*
- *Ability to integrate and connect efficiently to existing services, including public transport and communities*
- *Proximity to major employment and activity nodes and capacity to provide employment opportunities*
- *Capacity by owner/developer to deliver planned communities (for example, land tenure and fragmentation), housing diversity and provide for housing affordability*
- *Minimal conflict with adjacent land uses*
- *Potentially land with limited significant environmental, cultural and landscape values.*

3.23 Further, the Background Report (page 72) states (Map 11)

Based on the preliminary desk top assessment, it is considered that the following nodes have potential for residential growth subject to further investigation:

- *Lovely Banks*
- *Bell Post Hill*
- *Batesford South*

Based on the preliminary desk top assessment, it is considered that the following nodes lend themselves to employment growth opportunities subject to further investigation:

- *Marcus Oldham/Deakin University*
- *Blue Circle Quarry North*

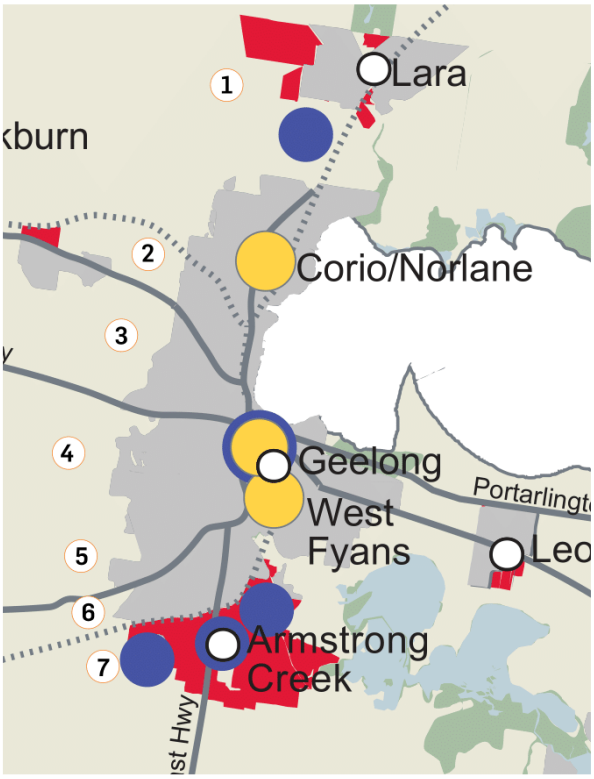
3.24 The Background Report (page 72) also states

The boundaries of these areas are notional only. Subsequent detail (sic) examination of these areas should consider the potential of adjoining lands where better outcomes can be achieved.

3.25 If the G21 Background Report had been aware of the closure at the quarry it would most likely have nominated the southern site as having residential growth potential due to the preliminary nature of the work.

Map 11 – Developing the growth plan

FIGURE 4.11 – POTENTIAL FURTHER INVESTIGATION NODES



1. Lovely Banks – an area generally bound by Bacchus Marsh Road, Staceys Road, Evans Road, Plantation Road
2. Bell Post Hill – an area generally bound by Cowies Creek, the Ring Road, Midland Highway and the Geelong-Ballan Road
3. Batesford South - an area generally bound by Midland Highway, Ring Road, Friend In Hand/Dog Rocks Road, Hamilton Highway – Barwon River and including Batesford Quarry site
4. Ceres - an area generally bound by Barwon River, the Ring Road, municipal boundary and approx 1km south of Barrabool Road
5. Marcus Oldham/Deakin University – an area generally bound by the Ring Road, municipal boundary, Waurn Ponds Creek and approx 1km south of Barrabool Road
6. Waurn Ponds Creek Valley - an area generally bound by the Princes Highway, Anglesea Road and Hams Road, predominantly a rural residential node
7. Blue Circle Quarry North - an area generally bound by the Princes Highway, Hams and Anglesea Road and Reservoir Road, Waurn Ponds, including the northern portion of the Blue Circle Southern cement Quarry

Source: Figure 4.11, G21 Regional Growth Plan – Background Report, August 2012, page 73

3.26 The Blue Circle south land was not considered presumably because it was thought to be an operational quarry.

3.27 The picture changed dramatically with the completion of the Geelong Ring Road brought forward by the Global Financial Crisis (GFC) and the subsequent fast development of Armstrong Creek.

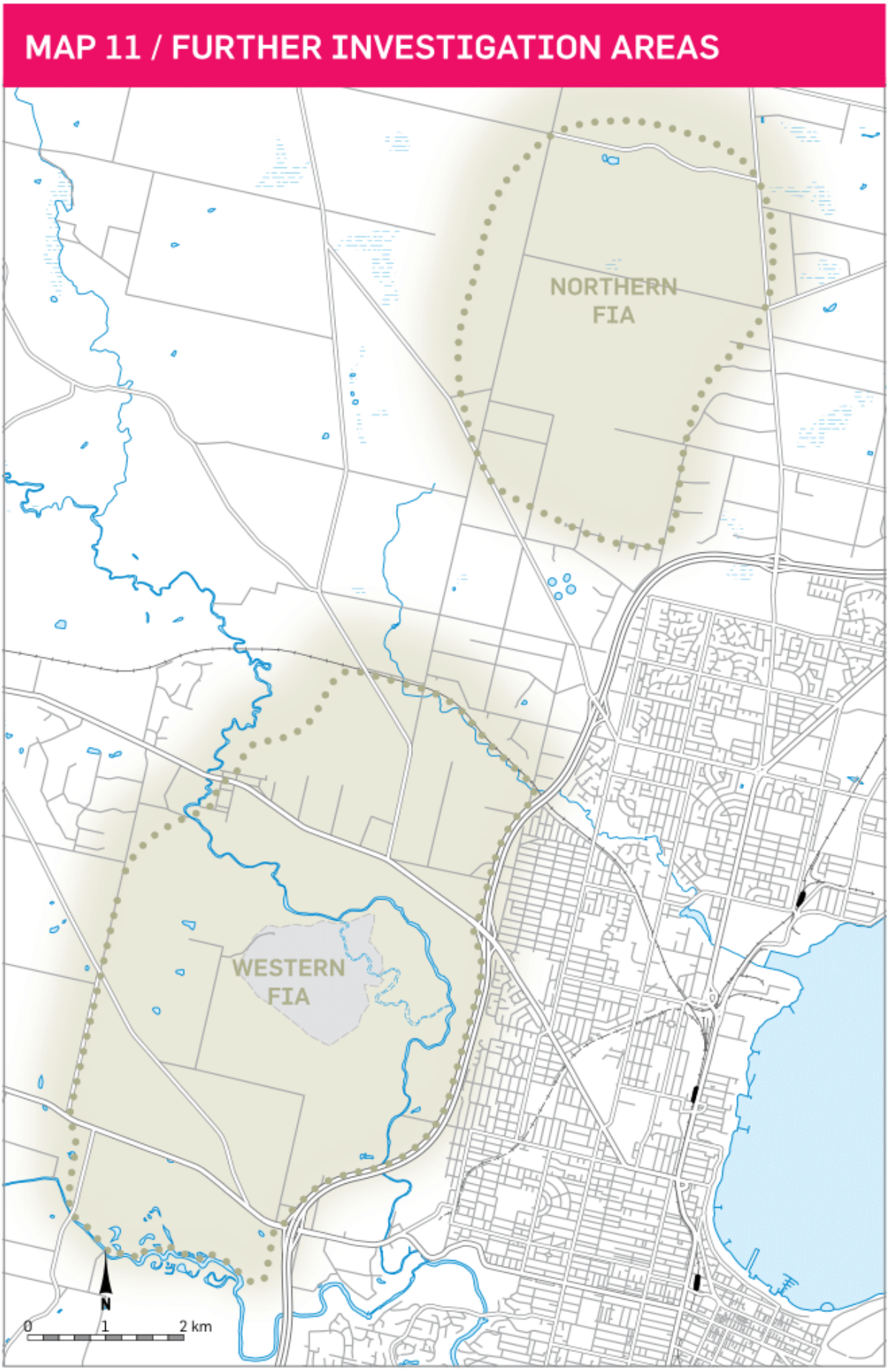
3.28 This included ingress and egress from the Geelong Ring Road and all utilities being made available to the subject land.

3.29 The City of Greater Geelong (CoGG) failed to assess the northern site and the southern site because preliminary planning had already begun in Lovely Banks and Batesford South in the Implementation Plan.

3.30 G21 Regional Growth Plan Implementation Plan November 2013 immediately jumped to assess the Northern FIA and the Western FIA (Map 12).

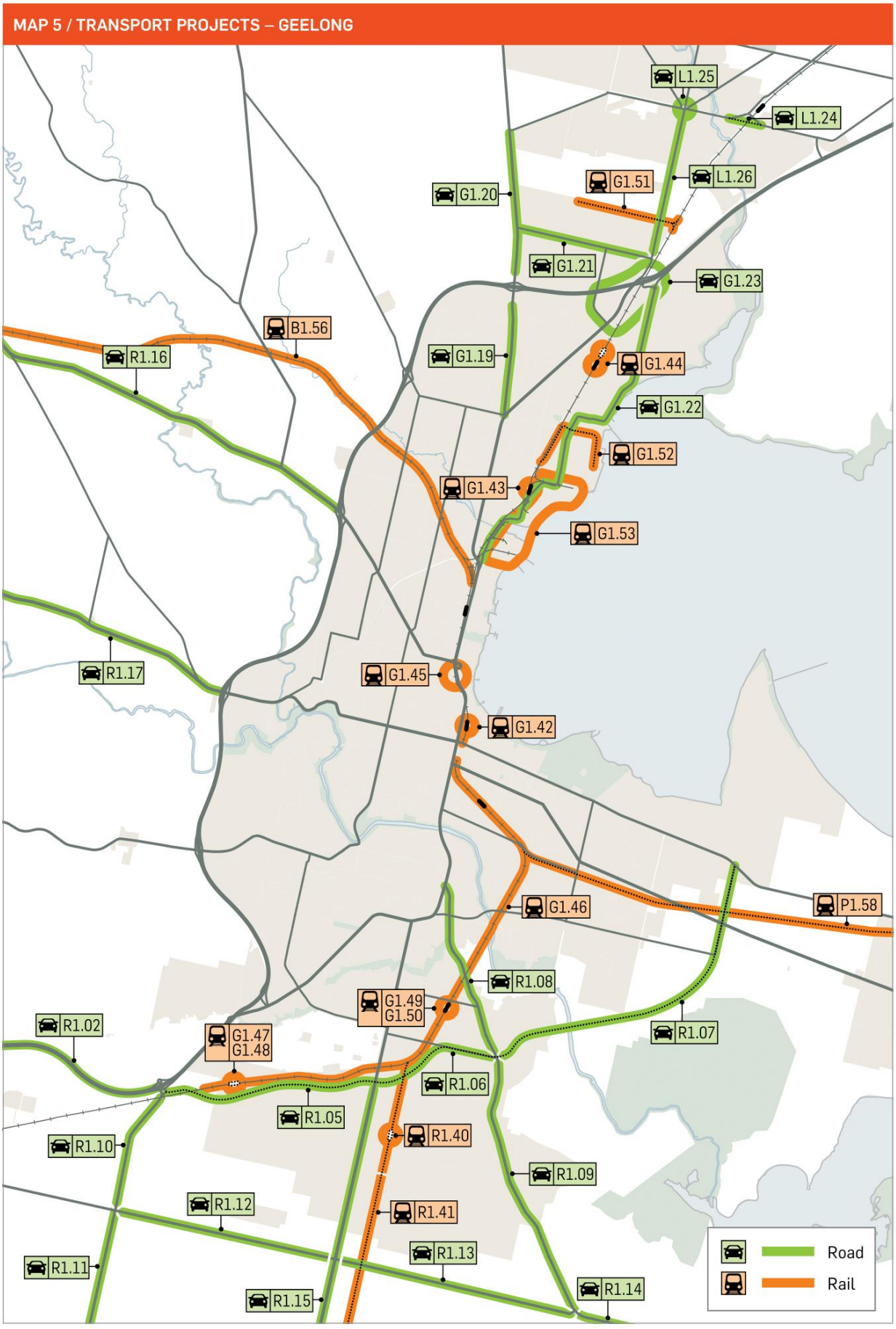
3.31 Despite this the Waurn Ponds station was proposed and the plan shows a westerly rail extension (Map 13).

Map 12



Source: Map 11, G21 RGP Implementation Plan, November 2013, page 85

Map 13



Source: Map 5, G21 RGP Implementation Plan, November 2013, page 25

Section 4: Public transport is vital

4.1 The Settlement Strategy (2018) is not based on fixed rail connections. There is only one new station on the Geelong to Ballarat line and that is placed at the northern extremity of the Western FIA. This strategic direction was fixed in 2012.

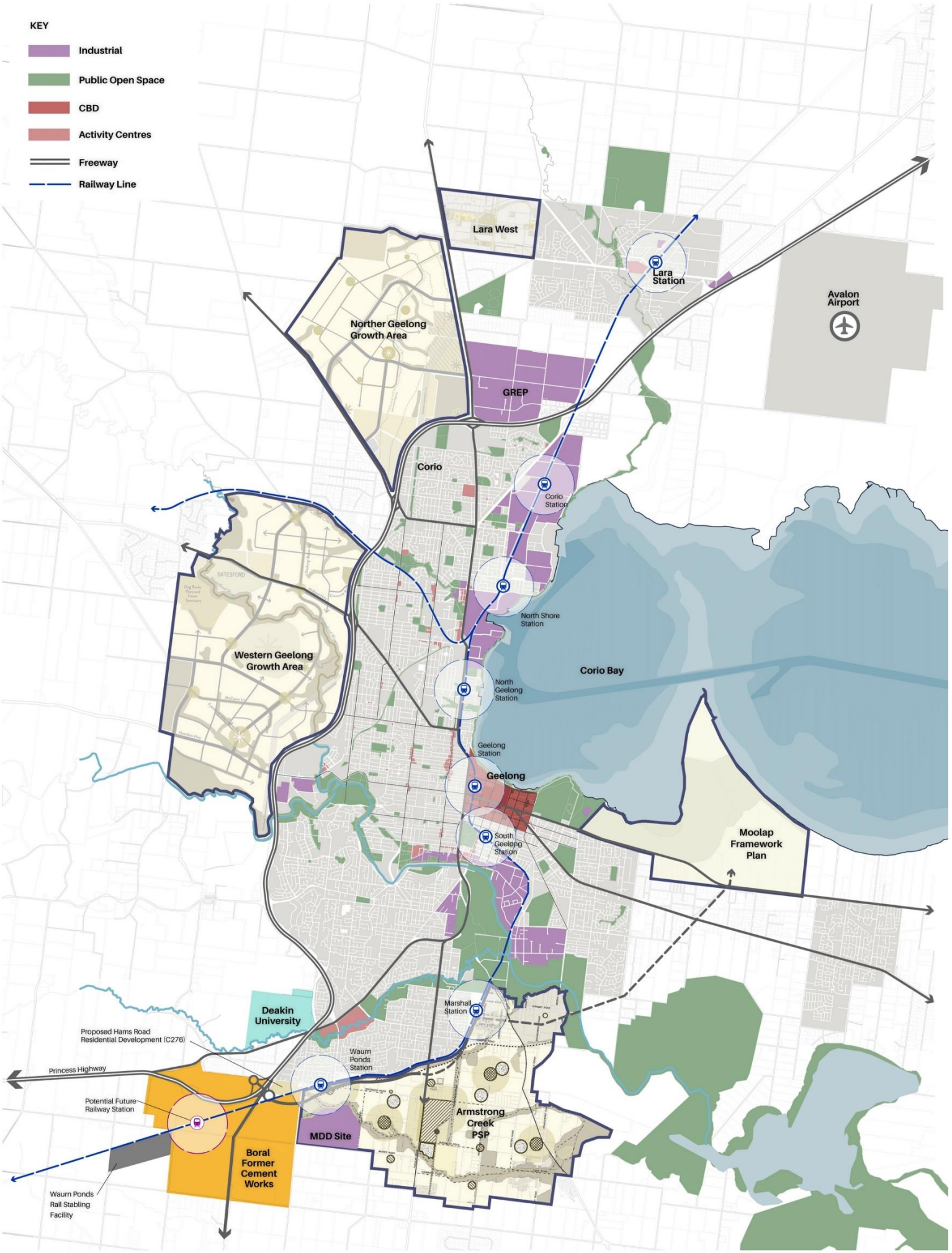
4.2 The subject site has fixed rail central to the site and connection with Geelong and Melbourne (Map 14).

4.3 The time taken from Waurn Ponds to Melbourne (1 hour and 25 minutes) is similar time as Frankston (1 hour and 8 minutes) in peak hours.

4.4 The Geelong fast rail project is anticipated to cut at least 25 minutes from this journey.

4.5 The G21 Regional Growth Strategy first principle is to optimise infrastructure.

Source: G21 Regional Growth Plan, April 2013, page 20



GEELONG CONTEXT

Waurn Ponds
City of Greater Geelong

Map 14

REF NO	DRAW NO	REV
BRL WRP	RD 3013	C

REV	DESCRIPTION	YYMMDD	DRAWN	APPRD
C	Draft	191016	PC	MJ

SCALE 1: 30,000 SIZE A0 N

RobertsDay planning·design·place
robertsday
level 5
411 collins street,
melbourne
vic australia 3000
t+61 3 9620 5421
robertsday.com.au

4.6 At that time no thought was given to Transit Oriented Development.

4.7 It is essential to link to the Geelong CBD by fixed rail support the 50,000 jobs proposed (page 30, G21 Regional Growth Plan).

4.8 Urban consolidation will not occur without TOD style development at the end of the rail to facilitate two way commuting.

4.9 The train stabling yards are the outboard (western) of the subject site.

4.10 Waurn Ponds is getting a duplicated track.

4.11 The Lara station is at capacity in the peak and will require significant new parking.

4.12 The rail 'opportunity' should not have been overlooked in the G21 Regional Growth Plan Background Report (page 75).

4.13 There is no foreseeable alternative major rail expansion in the G21 work or the Settlement Strategy.

4.14 A 'Transit Oriented Development' should be developed on the subject site taking advantage of the links with Deakin University and Epworth Hospital.

4.15 The G21 Regional Growth Plan notes (page 47) that optimising existing assets will strengthen Central Geelong, support infill housing and result in more equitable and efficient public transport (Figure 3).

Figure 3

OPTIMISING EXISTING ASSETS & INFRASTRUCTURE WILL:	HOW:
▸ Provide opportunities to enhance and build on existing infrastructure and natural assets to create a broader range of services and improved access	▸ Strengthening Central Geelong ▸ Supporting the growth of Geelong with a focus on infill housing opportunities ▸ Developing an efficient and equitable public transport, road and freight network leveraged off existing infrastructure and committed ▸ Providing infrastructure for new growth areas and infill development ▸ Developing a national transport and logistics precinct ▸ Rolling out of the NBN ▸ Providing land and infrastructure for regional city and district town employment nodes ▸ Building on the region's capability in education, knowledge and research ▸ Maintaining and improving green infrastructure Other supporting activities - Portarlington Safe Harbour, Transport Links to Melbourne and Regional Trails Network
Addresses: Challenges ❶ ❸ ❺ and Principles ❶ ❺ ❻ ❼	Illustrated on: Maps ❽

Source: G21 Regional Growth Plan, April 2013, page 47

Section 5: Insufficient consideration of the growth potential in Armstrong Creek

5.1 The G21 GRP supports the growth of Armstrong Creek.

5.2 At the time of the original Panel Hearing (2008) the Blue Circle Cement Works and Quarry were operating.

5.3 There is nothing magical about the boundaries. It was always anticipated that post-quarrying the land was ripe for urban development.

5.4 Boral flagged in 2012 that it was uneconomic to pursue quarrying.

5.5 It is logical to grow Armstrong Creek out to the boundaries of Geelong because

- It avoids a significant infrastructure spend
    - Primary arterial roads are in place and secondary arterial roads are minimal
    - Water, gas and electricity can be made available
    - Community facilities and sports grounds are all adjacent to the site
    - Heavy rail runs through the site and the proposed rail stabling yards are on the outboard ride (to the west).
- It builds on the existing community of interest
- The quarrying operation is finished and the land needs to be rehabilitated with a purpose
- The topography of the site lends itself to urban development

5.6 Armstrong Creek has been highly successful thus far and every attempt should be made to consolidate this precinct and to make sure the Major Activity Centre works well.

5.7 A TOD will complement the Geelong Future Economic Precinct at Deakin University. This precinct already has created 2,000 knowledge jobs and includes firms such as IISRI, Carbon Nexus and Carbon Revolution.

5.8 The TOD is envisaged to comprise medium and high density development of residential, office, technology and retail to maintain amenity levels, to leverage off the technology park which is planned to become an 'epicentre' of world leading research and innovation in the areas of advanced manufacturing, materials, energy, sustainability, technology, health and high-value agricultural initiatives. The young professionals at the technology park will demand housing relevant to their needs in the form of units and apartments.

5.9 The clustering of uses and activities is vital for knowledge based jobs.

Source: https://www.deakin.edu.au/locations/geelong-waurn-ponds-campus/building-projects/geelong-future-economy-precinct

Land supply and demand

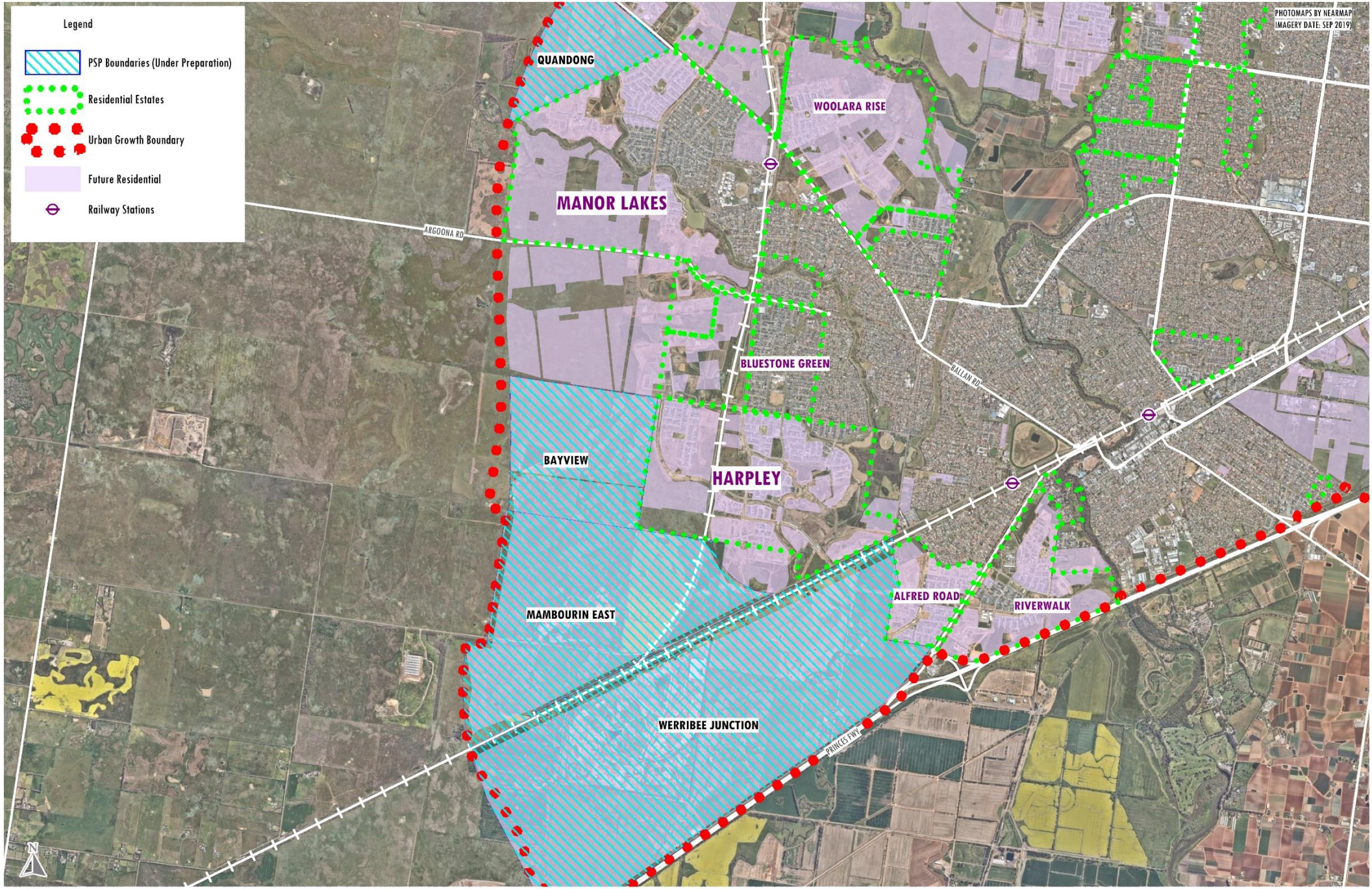
5.10 Macroplan has prepared detailed forecasts of land supply and demand. These are based on work prepared as background papers for the Settlement Strategy by Spatial Economics but contains more detail.

5.11 Macroplan's work has taken the two scenarios (2.1% growth and 2.5% growth) and detailed how the growth areas have to perform to achieve these outcomes.

5.12 The scenarios may well be conservative. Several estates including Manor Lakes and Harpley already hit the UGB western boundary (Map 15).

5.13 It is anticipated at 2027/28 these estates will become expensive transferring demand to the north (Melton) and west (Geelong).

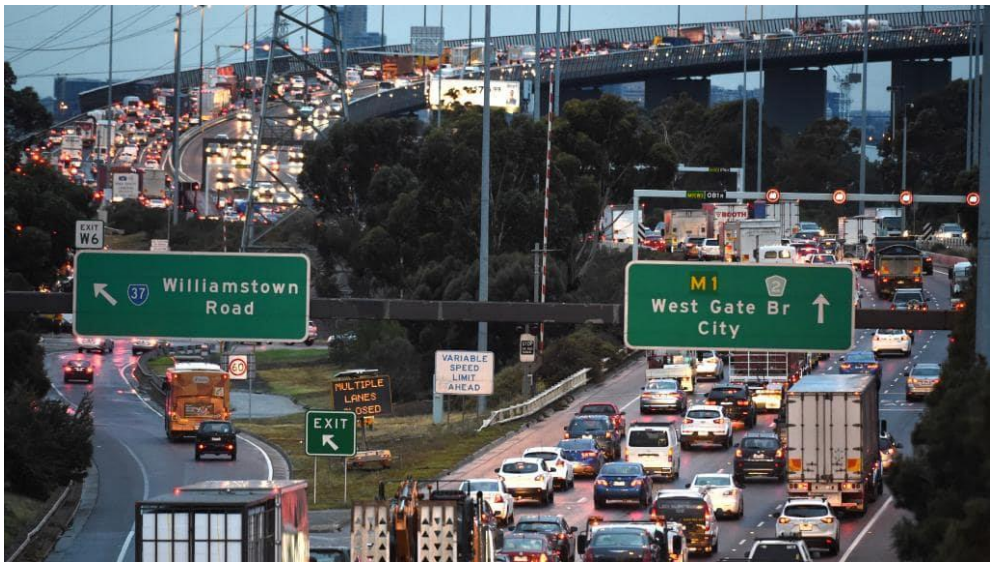
- The West Gate Tunnel is completed in 2022.
- The OMR will commence in 2030.
- The Western Intermodal Freight Terminal (WIFT) is to be constructed as part of the Inland Rail project (2025).
- The Geelong Fast Rail project is likely to be committed by 2022 and the time between Geelong and Sunshine will be halved.
- Hotels and office towers are currently being built in Geelong.
- Bay West is likely to be developed in the mid 2030s.



Map 15: Extent of Development 2019

5.14 The west is set to become infrastructure rich in the next 10 years.

5.15 These factors call up a short to medium term growth story as the residential land markets adjust. Commuting will focus on rail as the only viable alternative due to traffic congestion or work close to home. The subject site fits these alternative futures.



5.16 80% of the future greenfield growth is to the north and west of Melbourne.

5.17 As the residential land market tightens, prices will increase inside the UGB.

5.18 The Macroplan case indicates that 28.6% price arbitrage was incentive enough for 15% of immigrants to move to Wyndham. This resulted in an average 15-minute longer commute to the CBD in 2016 (Appendix 2 MacroPlan Demand Transfer Case Study).

5.19 This is likely to transfer to Geelong in particularly if/when the fast rail project is announced and prices increase in Wyndham.

5.20 The number of new dwellings is much larger in Wyndham. This market accounts for 4,000 new dwellings per annum and Melton is forecast to account for 4,000 new dwellings per annum.

5.21 The analysis prepared show that Geelong is about to undergo a sustained development boom.

5.22 Armstrong Creek will work in tandem with the Northern and Western Growth Areas to sustain growth.

5.23 The analysis shows that within eight years all the major landholdings are developed leaving only fragmented land.

5.24 The analysis also shows that within 10-14 years Armstrong Creek land supply is likely to be exhausted even accounting for growth in the Northern and Western FIAs.

5.25 The TOD (the northern site) should begin to be developed prior to 2027/28 (to ensure hotels, recreation and entertainment, and medium and high density) leveraging off the exposure of the northern site to the Geelong Freeway and leveraging off the Geelong Future Economy Precinct.

5.26 Major assumptions continued in the report appended (Appendix 3)

- The study area is **Greater Geelong LGA**, with a main focus on a number of **sub-regions** consistent with the definitions in the Discussion Papers (Spatial Economics, June 2017, refer to Annexure A1 Maps), including:

Bellarine Peninsula: Barwon Heads, Drysdale / Clifton Springs, Indented Head, Leopold, Ocean Grove, Point Lonsdale, Portarlington and St Leonards;

Geelong: ACUGA, Northern Growth Front (i.e. Lara), Northern FIA, Urban Geelong and Western FIA;

Balance of the LGA.

- The study period is **2016-36**, consistent with VIF's forecast period and aligning to the latest residential land supply data available.
- Residential land supply is based on information provided in the Discussion Papers, including zoned and unzoned residential land supply as at 2016.
- With a key focus on broad hectare residential land, the assessment adopts the Discussion Papers' assumption that **74%** of Greater Geelong's dwelling requirements are met from broad hectare or major infill residential supply sources, with the balance coming from dispersed infill and urban renewal sites.
- Historic residential land and house sales within each sub-region (refer to Annexure A2 Data / Tables) have been used to up proximate possible future residential land consumption rates.

Residential development in Northern and Western FIAs is assumed to commence **post 2025**.

A large share of future dwelling requirements under both scenarios is assumed to be met by broad hectare development particularly in the ACUGA and Northern and Western FIAs, which means land consumption rates in the **ACUGA** and **Northern and Western FIAs** are the key variables in modelling future land supply / demand balance whilst land consumption remains on trend in the other sub-regions.

Forecast Scenario 1 – VIF 2019 (Table 1)

5.27 VIF 2019 presents revised population projections for a number of areas including Greater Geelong, compared to the previous release. VIF 2019 indicates the following forecast headline indicators:

- Total population to reach over **360,000 persons** by 2036, indicating a growth of around **120,000 persons** or **2.1% p.a.** from 2016;
- Total households to reach over 150,000 by 2036 based on projected household sizes, or a growth of **2,655 households p.a.** during 2016-36;
- Total private dwellings required at approximately 165,000 by 2036, or an additional requirement for **2,927 dwellings p.a.** during 2016-36.

TABLE 1

Scenario 1 – VIF 2019, Greater Geelong (C), 2016-36

Greater Geelong (C)	2016	2021	2026	2031	2036	*2016-36 Change*	*2016-36 Change p.a.*	*2016-36 AAGR*
Population	**239,529**	**271,254**	**301,563**	**330,720**	**360,245**	*120,716*	*6,036*	*2.1%*
Persons in Occupied Private Dwellings	*97.7%*	*97.7%*	*97.7%*	*97.6%*				
Households / Occupied Private Dwellings	**97,663**	**110,938**	**123,945**	**136,930**	**150,766**	*53,103*	*2,655*	*2.2%*
Average Household Size	*2.40*	*2.39*	*2.38*	*2.36*	*2.33*			
Total Private Dwellings	**106,478**	**121,161**	**135,538**	**149,876**	**165,021**	*58,543*	*2,927*	*2.2%*
Occupancy Rate	*91.7%*	*91.6%*	*91.4%*	*91.4%*	*91.4%*			

Source: ABS Stats, VIF (2019)

Scenario 2 – G21 (Table 2)

5.28 The G21 Regional Growth Plan sets an aspirational population growth target of 2.5% per annum for Greater Geelong LGA, higher than VIF 2019's projected growth rate of 2.1%. Based on a higher growth rate, it is forecast:

- Total population to reach up to **392,500 persons** by 2036, or a growth of over **152,900 persons** or **2.5% p.a.** from 2016;
- Total households to reach over 164,000 by 2036, or a growth of **3,330 households p.a.** during 2016-36;
- Total private dwellings required up to 179,800 by 2036, or an additional requirement for **3,666 dwellings p.a.** during 2016-36.

TABLE 2

Scenario 2 – G21, Greater Geelong (C), 2016-36

Greater Geelong (C)	2016	2021	2026	2031	2036	*2016-36 Change*	*2016-36 Change p.a.*	*2016-36 AAGR*
Population	**239,529**	**272,994**	**309,622**	**349,455**	**392,491**	*152,962*	*7,648*	*2.5%*
Persons in Occupied Private Dwellings	*97.7%*	*97.7%*	*97.7%*	*97.6%*				
Households / Occupied Private Dwellings	**97,663**	**111,649**	**127,257**	**144,687**	**164,261**	*66,599*	*3,330*	*2.6%*
Average Household Size	*2.40*	*2.39*	*2.38*	*2.36*	*2.33*			
Total Private Dwellings	**106,478**	**121,938**	**139,160**	**158,366**	**179,793**	*73,314*	*3,666*	*2.7%*
Occupancy Rate	*91.7%*	*91.6%*	*91.4%*	*91.4%*	*91.4%*			

Source: ABS Stats, G21 Regional Growth Plan (2013), VIF (2019)

Sensitivity analysis (Tables 3 and 4)

5.29 Under the G21 scenario, a sensitivity analysis is undertaken to test possible impacts on the total land supply / demand balance resulting from a range of factors, including:

- **Sensitivity 1: Constraints for residential development in ACUGA.** The *Armstrong Creek – Western Industrial Precinct Economic Analysis* prepared by Ethos Urban (October 2019) indicates around 260 ha of land identified for residential development (or approximately 4,500 dwellings and 20% of total dwellings in the ACUGA) is considered constrained due to lack of infrastructure, lack of access and because of ownership fragmentation, and is likely to represent a longer-term development proposition. This sensitivity analysis considers this land constraint during the forecast period of 2016-36 and assumes these lots will not be ready for development until post 2036 when infrastructure and access in place and ownership fragmentation consolidated. This assumption will lead to a reduction in developable residential land supply by 20% in the ACUGA during the forecast period of 2016-36.

- **Sensitivity 2: potential demand transfer from Spring Creek.** The Spring Creek PSP has estimated a total yield of 1,781 lots that may accommodate approximately 4,524 residents. However, with the planning protection from overdevelopment for small towns, Armstrong Creek and other areas north of the inter-urban break will be the only logical alternative option for prospective buyers who are unable to get into Spring Creek or Surf Coast areas. This assumption will result in an increase in residential land consumption in Geelong particularly the ACUGA.

- **Sensitivity 1+2**: a combined impact from both of the above shocks (Table 5).

5.30 The scenario which should be preferred is number two or 2.5% growth, the G21 aspirational target. This is due to the price arbitrage and the infrastructure rich nature in future of the west of Melbourne, the drive in demand to live in Torquay which is beyond the reach of most people and being transferred due to the reduction in size (4,000 lots) of the Spring Creek PSP. This will result in 10-14 years supply most likely at the lower end as demand transfer from Melbourne also occurs.

TABLE 3

Supply / Demand Balance, Scenario 1 – VIF 2019, Greater Geelong Sub-regions, 2020-36

Sub-Regions	Residential Broad Hectare Supply			Est. Annual Consumption (lots)*	Years of Supply (from 2019)^		
	Zoned (lots)	Unzoned (lots)	**Total (lots)**		Zoned (years)	Unzoned (years)	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
ACUGA	18,211	1,450	**19,661**	700-800	17+	-	**17+**
Northern Growth Front	5,297	715	**6,012**	248	17+	-	**17+**
Northern FIA	12,000	4,000	**16,000**	100-600	17+	-	**17+**
Urban Geelong	4,671	411	**5,082**	164	17+	-	**17+**
Western FIA	0	18,000	**18,000**	100-600	0.0	17+	**17+**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**		**17+**	**17+**	**17+**

***Note:** * Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
^ Year of supply is calculated from 2019, i.e. year 0 = 2019 and year 1 = 2020, land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.
***Source:** Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

TABLE 4

Supply / Demand Balance, Scenario 2 – G21, Greater Geelong Sub-regions, 2020-36

Sub-Regions	Residential Broad Hectare Supply			Est. Annual Consumption (lots)*	Years of Supply (from 2019)^		
	Zoned (lots)	Unzoned (lots)	**Total (lots)**		Zoned (years)	Unzoned (years)	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
ACUGA	18,211	1,450	**19,661**	700-1,500	13.7	1.0	**14.7**
Northern Growth Front	5,297	715	**6,012**	248	17+	-	**17+**
Northern FIA	12,000	4,000	**16,000**	100-1,100	17+	-	**17+**
Urban Geelong	4,671	411	**5,082**	164	17+	-	**17+**
Western FIA	0	18,000	**18,000**	100-1,100	0.0	17+	**17+**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**		**17+**	**17+**	**17+**

***Note:** * Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
^ Year of supply is calculated from 2019, i.e. year 0 = 2019 and year 1 = 2020; land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.
***Source:** Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

TABLE 5

Supply / Demand Balance Sensitivities, Scenario 2 – G21, ACUGA, 2020-36

ACUGA	Residential Broad Hectare Supply			Est. Annual Consumption (lots)*	Years of Supply (from 2019)^		
	Zoned (lots)	Unzoned (lots)	**Total (lots)**		Zoned (years)	Unzoned (years)	**Total (years)**
Sensitivity 1	14,569	1,160	**15,729**	700-1,500	11.3	0.8	**12.1**
Sensitivity 2	18,211	1,450	**19,661**	800-1,700	12.4-13.0	1.0	**13.3-14.0**
Sensitivity 1+2	14,569	1,160	**15,729**	800-1,700	10.1-10.6	0.7-0.8	**10.8-11.4**

***Note:** * Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
^ Year of supply is calculated from 2019, i.e. year 0 = 2019 and year 1 = 2020; land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.
***Source:** Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

5.31 This study demonstrates that there is more than enough room for all three growth areas to operate simultaneously (Table 6).

TABLE 6

Scenario 2 – G21, Estimated Annual Consumption Rates, Growth Areas, 2017-36

Geelong	Total Lots	Avg Consumption p.a.	Historic Consumption^			Estimated Consumption*																
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
ACUGA	**19,661**	*983*	939	817	304	678	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,500	1,500	1,500	1,500	1,023	0	0
Northern FIA	**6,913**	*346*	52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
Western FIA	**6,928**	*346*	82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100

Note: *^ Historic land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.*
** Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
Source: *Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

5.32 As a mature suburb in 2028/29 ACUGA needs the full suite of lifestyle opportunities to ensure people can stay in the area and be employed in the area. The TOD will be an ideal location to realise this opportunity.

Conclusion

5.33 The Boral Land should be a preferred growth corridor because:

- it can be developed as a transit oriented development
- of access to employment
- of access to key facilities (Deakin University, Waurn Ponds Activity Centre and the hospital)
- a direct access to freeways and roads with 11,500 vehicles passing the site per day
- it has an existing community of interest and access to recreational facilities and schools

The northern side warrants immediate rezoning in order to shape its rehabilitation innovatively in line with State Government policy. It will take 2-3 years to rehabilitate. The southern site can be programmed in line with demand.

I note that

- Pursuant to Clause 11.02.15 Supply of Urban Land, the plan is to accommodate projected population growth over at least 15 period
- This proposal does not detract from growth in the Northern and Western growth areas.

With residential land supply in ACUGA exhausting in the next **10 years**, this indicates there is likely further requirements for additional residential land in Geelong's southern growth corridor.

5.34 For these reasons I respectfully submit that:

- the indicative permanent growth boundary in the subject location be amended to include the entire Boral site; and
- the northern site be rezoned to facilitate purposeful rehabilitation.

Appendix 1: Curricula Vitarum

Brian Haratsis | Executive Chairman

Brian established MacroPlan in 1985 after gaining experience in local Government, State Government and private consultancy.

Key experience and credentials

- Brian is an economist, strategist and advisor and currently provides services to a range of major corporate and government clients throughout Australia.

Recent major projects

Victoria

- **Avalon Airport**: 2019 – Masterplan update
- **Boral Waurn Ponds**: 2019 – Strategic advisory and settlement planning
- **North East Link Expert Evidence**: 2019 – Represented Manningham Council in their economic case
- **Lesso Homes**: 2019 – Joint re-zoning 300,000sqm trade services facility and planning application
- **Plan Melbourne**: 2014 + 2017 Ministerial Advisory Committee - Economist Committee Member
- **Pakenham Racing Club**: Racecourse Redevelopment Rezoning and Feasibility & New Racecourse Rezoning (~$50m)
- **Cardinia Shire/Parklea Pty Ltd**: Cardinia Road Employment Precinct Structure Plan, Market Research and Town Centre Masterplan (~$100m)
- **Coles P/L**: Coburg NAC Economic + Impact Analysis, Armstrong Creek Strategic Town Centre Advice
- **Regional Cities Victoria**: City Growth Model and Strategic Audit
- **Places Victoria**: Fishermans Bend Urban Renewal Precinct (Economic and Strategic Planning)
- **Riverlee Australia**: World Trade Centre Market Assessment (200,000sqm CBD mixed use Development Strategy) ($2bn)
- **Doncaster Hill**: Urban Village Market Research/Masterplan/Cost Benefit
- **South East Melbourne Airport** Market Assessment (Cardinia Shire Council)
- **Wodonga**: Road/Rail By-pass/Central Area Masterplan ($300m)
- **Murray Links Golf Course**, Residential Market Assessment

New South Wales

- **Mercedes Benz (Rushcutters Bay) Vs Daimler Benz**: Economic Evidence to support Sales + Network Strategy for Compensation (2015-2017)
- **Dan Murphys vs NorthConnex**: Demand + Revenue Analysis for resumption compensation
- **Sydney Metro West**: Cost Benefit Analysis, Department of Planning
- **Sydney Metropolitan Retail Strategy**: Research and Analysis, Department of Planning
- **West Wilton**: Residential + Commercial Land Demand Assessment (4,000 lots / 30ha commercial)
- **South Campbelltown**: Residential + Commercial land Demand Assessment (12,000 lots, three retail centres)
- **Sydney CC**: Light Rail Economic Impact Study
- **Lloyds of London**: Portfolio Review, Risk Assessment and Project Advice
- **Newcastle Metropolitan** Economic Analysis and Strategy

Major Projects Constructed

- **Queen Victoria (QV)**: Concept Development, Retail / Residential and Mixed Use Product Mix Analysis (VIC) ($600m)
- **RACV Club Redevelopment**: Market Research /Concept Development and Product Mix (VIC) ($100m+)
- **Barangaroo (Sydney)**: Project sizing and economic assessment
- **Eureka Towers (Melbourne)**: Residential and Mixed Use Market Research (VIC) ($200m+)
- **Maryborough Town Centre**: Revitalisation ($5m)
- **Castlemaine Town Centre**: Revitalisation ($7m)
- **Monash (Caulfield Campus)**: Expansion ($20m)
- **West Coast Business Park Project**: (VIC) ($75m)
- **Top Ryde Retail and Mixed Use Development**: Market Assessment (NSW) ($400m)
- **Varsity Transit Oriented Development**: Market Assessment and Feasibility (QLD) ($100m+)

Qualifications

- Master of Science, London School of Economics, London University 1983
- Bachelor of Town and Regional Planning, University of Melbourne 1978
- Bachelor of Commerce, University of Melbourne 1977

Professional Memberships

- Fellow, Planning Institute Australia
- Fellow, Victorian Planning and Environmental Law Association

Books

- Autropolis: The Diverse Mobility Revolution (2017)
- Destructive Cities (2016)
- Beyond the Fringe (2013)
- Follow the Money – Made in Australia (2012)
- Australia 2050: Big Australia? (2011)
- Enterprise: The new business of Local Government (1998)
- Local Government Rates (1978)

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Glenn Lamont | Principal
Advisory Services

Glenn Lamont leads Macroplan's Property Advisory practice and is a senior urban economist with extensive economic modelling, planning and commercial advisory experience.

With qualifications in economics and finance, Glenn has 23 years professional experience. He has held various senior positions previously with the Australian Bureau of Statistics, Victorian Department of Treasury and Finance and KPMG's Real Estate Advisory Services.

Glenn's extensive background in economics, social and environmental policy and commercial advisory makes him a unique and influential advisor nationally.

His clients have included Federal, State and local governments nationally, many of Australia's prominent landowners, leading developers, listed and unlisted property trusts/funds and policy makers.

Recent projects

Commercial Transactions Advisory, Feasibility Analysis and Negotiation

- Maribyrnong Defence Site Transactions Advice (Private)
- Boral Waurn Ponds Redevelopment / Planning Advice (Boral)
- Fishermans Bend DCP Financial Modelling Update (DELWP)
- Melbourne University Campus 2 (UoM)
- Arden Precinct Financial Modelling (Private)
- La Trobe University Bundoora Master Plan Feasibility & Implementation
- Cohealth Collingwood Campus Redevelopment
- VicTrack Land Use Financial Modelling

Property Portfolio Optimisation and Strategy

- University of Tasmania Sandy Bay Campus Development Strategy
- Moonee Valley Racing Club Redevelopment / Commercial Advisory
- Avalon Airport Redevelopment / Commercial Advisory
- Goodman Clayton Business Park Redevelopment, Goodman
- Adelaide Central Markets Redevelopment
- Portland Industrial Land Strategy, Glenelg Shire Council
- Moreland City Council Community Infrastructure Framework
- ACT Public Housing Portfolio Strategy
- Renewal SA Portfolio Analysis
- Bentley Curtin University Master plan

Social & Affordable Housing

- ACT Community Housing Stock Transfer Scenario, ACT Government
- Alphington Mill Redevelopment Public Housing Strategy (Alpha Partners)
- Housing Moreland Activity Centre & Housing Strategy (Moreland City Council)
- City of Port Phillip Housing & Property Strategy, City of Port Phillip

Land Use Economics / Planning

- Rural Land Use Strategy, Glenelg Shire Council
- Jobs for Portland, Glenelg Shire Council
- Yarrawonga Futures Land Use Strategy, Moira Shire Council
- Northern Maribyrnong Defence Land Economic & Transport Land Use Options (VPA)
- Melbourne Industrial Land Demand Forecasting, DELWP

Qualifications

- B.Com (Hons) University of Melbourne 1996
- Certificate Monash ORANI, Monash University, 2001
- Certificate Murphy Model, Australian National University, 2002

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Estella Zhang | Manager

Advisory Services

Estella joined MacroPlan in August 2012, following four years working in property consulting and economic planning in China.

After completing her Master's degree in Development and Planning, Estella has worked as an assistant manager at Savills Property Services and then an economist at AECOM in Shanghai, China.

Estella has a diverse project experience including mixed-use development, transit oriented development, urban regeneration, tourism / leisure planning, property market due diligence and design consultancy (working with architects, planners and designers), etc. She specialised in property market research, supply and demand analysis, modelling and forecasting, feasibility studies and financial analysis.

Work history

Economics and Advisory

- Bulleen Industrial Precinct Economic & Social Opportunity Analysis (Harwood Andrews)
- Northern Maribyrnong Transport and Land Use Scenarios (VPA)
- Southern Regional Industrial Land Assessment (DELWP)
- ACT Public Housing Portfolio Strategy (ACT Community Services Directorate)
- City Growth Model & Strategic Audit (Regional Cities Victoria)
- Bentley-Curtin Activity Centre Economic, Retail & Employment Strategy (Department of Planning WA)

Mixed-use Development

- University of Tasmania Sandy Bay Campus Highest & Best Use Assessment (University of Tasmania)
- La Trobe University Melbourne Campus Development Plan (La Trobe University)
- La Trobe University Medical Centre Asset Strategy (La Trobe University)
- La Trobe University Sport Park Business Case (La Trobe University)
- Manuka Oval Precinct Land Economics and Built Form Analysis (ACT Land Development Agency)
- Riverbank Precinct Masterplan (Renewal SA)

Market Assessment

- Sunshine North Residential Market Assessment (Development Victoria)
- Victoria Park Station Highest and Best Use Assessment (VicTrack)
- Epping Social & Affordable Housing and Housing Diversity Assessment (Riverlee)
- Fishermans Bend Urban Renewal Area Real Estate Market Assessment (PlacesVic)

Feasibility Analysis

- Fishermans Bend Financial Modelling Peer Review (DELWP)
- Project Violet GMH Site Feasibility Assessment (Development Victoria)
- Melbourne University Procurement Options Analysis for Fishermans Bend (University of Melbourne)
- Adelaide Central Market Redevelopment Feasibility Analysis (Hames Sharley)
- Fishermans Bend Urban Renewal Area Feasibility Analysis (Places Victoria)
- Cairns Student Accommodation (Riverlee)
- Stirling City Centre (WAPC)
- St Kilda Triangle Feasibility Study (City of Port Phillip)

Economic Impact Assessment

- Colac-Otway Tourism Economic Impact Assessment (Colac-Otway Shire)
- West Gate Tunnel Spoil Haulage & Disposal Impact Assessment (Boral)
- Northbank Goods Shed Economic Impact Assessment (Riverlee)
- Cardinia Health Precinct Economic Impact Assessment (Guildfords)
- Employment Hub Latrobe Valley Economic Impact Assessment (Development Victoria)

Qualifications

- Master of Development and Planning (Building and Urban Design in Development), University College London 2007
- Bachelor of Resources Environment and Urban/ Rural Management, Wuhan University, 2006

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Appendix 2:

Macroplan Demand Transfer Case Study

Demand Transfer Case Study
Wyndham

2018

MacroPlanDimasi

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Demand Transfer – Wyndham

1. Established Patterns of In-migration

- Wyndham LGA's location as growth suburb means much of its population growth relies on migration. Table 1 identifies the 20 locations in Victoria that contributed the most to Wyndham's population growth between 2006 and 2011.
- In all but one location (Melton), Wyndham was a more affordable suburb and in all but three locations Wyndham was further away from Melbourne CBD than the households original residence. This demonstrates peoples willingness to live in an outboard location due to greater affordability

Table 1: Wyndham Inward Migration- Place of Residence 5 years ago (VIC) *

LGA	Migration to Wyndham (Persons)*	LGA Median House Price	Wyndham Median House Price	Price Arbitrage	Supply Elasticity (2001-06)	Supply Elasticity (2006-11)	Minutes to CBD	Minutes lost due to Migration
Wyndham	91,172	$359,000	$359,000	$0	0.61	0.64	36	0
Hobsons Bay	3,911	$535,000	$359,000	$176,000	0.10	0.08	20	-16
Brimbank	2,088	$399,000	$359,000	$40,000	0.22	0.19	31	-5
Maribyrnong	1,342	$568,000	$359,000	$209,000	0.22	0.26	19	-17
Greater Geelong	823	$360,000	$359,000	$1,000	0.14	0.26	51	15
Melton	812	$355,000	$359,000	-$4,000	0.72	0.53	35	-1
Moreland	678	$567,000	$359,000	$208,000	0.15	0.18	24	-12
Hume	572	$360,000	$359,000	$1,000	0.35	0.32	28	-8
Darebin	481	$625,000	$359,000	$266,000	0.14	0.13	27	-9
Melbourne	474	$700,000	$359,000	$341,000	0.87	0.88	0	-36
Monash	388	$675,000	$359,000	$316,000	0.11	0.10	27	-9
Whittlesea	378	$409,000	$359,000	$50,000	0.35	0.55	41	5
Glen Eira	358	$852,250	$359,000	$493,250	0.09	0.10	26	-10
Port Phillip	324	$910,000	$359,000	$551,000	0.33	0.21	15	-21
Boroondara	312	$1,250,000	$359,000	$891,000	0.04	0.07	26	-10
Greater Dandenong	289	$420,000	$359,000	$61,000	0.08	0.13	36	1
Casey	287	$375,000	$359,000	$16,000	0.43	0.37	51	15
Whitehorse	254	$670,000	$359,000	$311,000	0.05	0.08	33	-3
Stonnington	242	$1,172,500	$359,000	$813,500	0.06	0.15	20	-16

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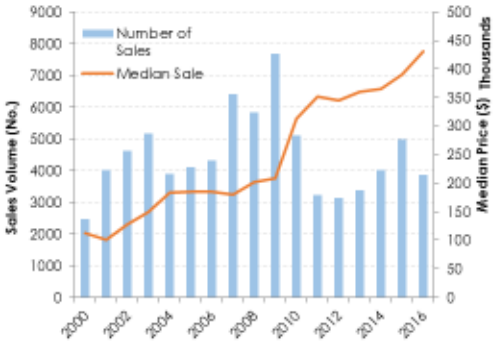
Demand Transfer – Price Elasticity

- In order to approximate the real number effect of a change in prices on demand, we have accepted the assumption of Abelson and Joyeux (2007) that price elasticity of demand for housing is circa 1:1, which is based on Rosen (1985) and O'Sullivan (2003)
- The demand elasticity of 1:1 (prices increase by 50%, sales fall by 50%).
- A key determinant is the relative difference in prices between potential migrants place of origin and their potential destination. This relative difference is called price arbitrage which in combination with supply and demand elasticity can be used to calculate the impact on the price of land release and population growth.
- This trend is being observed in Wyndham with the number of sales for the most part decreasing after peaking in 2009 with prices continuing to grow.

Graph 1. Wyndham Residential Market (2000 – 2016) – Price Elasticity



Source: CoreLogic, 2016

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Demand Transfer – Wyndham

2. Impacts of Price Arbitrage

- One of the key drivers of demand transfer is affordability. Table 2 identifies the percentage difference the median house price is in the top 20 migrant locations.
- All locations (excluding Melton) were more expensive than Wyndham in 2011.
- Table 2 shows the change in price arbitrage between 2011 and 2016 based upon 2016 house prices. All but three locations experienced a significant increase in arbitrage. Of the three locations two are also growth suburbs hence prices fell due to increased land release (including smaller lots) and Greater Geelong has seen house prices fall below that of Wyndham due to a relative lack of price growth i.e. metropolitan population growth has not yet influenced prices
- The average price arbitrage between Wyndham and the major in-migration LGA's increased from 28.6% to 35.6%. Based on the observed price elasticity of 1, this translates into 24.3% additional metropolitan migration which we expected would have translated into a demand for an additional 479 lots per annum in Wyndham which aligns with observed sales figures.
- This in turn affects housing affordability. For example this increase in demand results in home buyers paying 16.5% more per lot (annual $64,000 in 2017) severely impacting housing affordability.

Table 2 Change in Price Arbitrage (2011 – 2016) – Top 20 Migrant Locations

LGA	2011	2016	% Growth
Hobsons Bay	32.9%	40.7%	7.8%
Brimbank	10.0%	16.0%	6.0%
Maribyrnong	36.8%	50.6%	13.8%
Greater Geelong	0.3%	-4.9%	-5.2%
Melton	-1.1%	-11.7%	-10.6%
Moreland	36.7%	41.5%	4.8%
Hume	0.3%	3.4%	3.1%
Darebin	42.6%	48.8%	6.2%
Melbourne	48.7%	55.9%	7.2%
Monash	46.8%	60.0%	13.2%
Whittlesea	12.2%	10.8%	-1.4%
Glen Eira	57.9%	67.0%	9.1%
Port Phillip	60.5%	69.7%	9.1%
Boroondara	71.3%	76.6%	5.3%
Greater Dandenong	14.5%	31.3%	16.8%
Casey	4.3%	8.9%	4.6%
Whitehorse	46.4%	59.4%	13.0%
Stonnington	69.4%	75.1%	5.7%

Source: ABS 2011, MacroPlan

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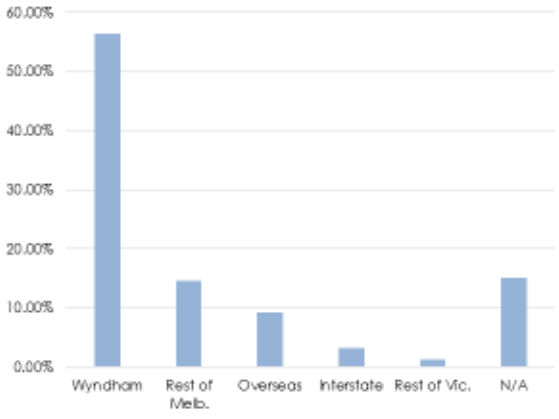
Demand Transfer – Wyndham

- Just under 15% of Wyndham's population growth between 2006 and 2011 was as a result of migration from other regions in metropolitan Melbourne (incl. Greater Geelong due to proximity).
- On average in 2011 there was price arbitrage of 28.6% between Wyndham house prices and the rest of metropolitan Melbourne.
- This means that a 28.6% price arbitrage was incentive enough for 15% of in-migration to move from their current LGA to Wyndham.
- A further 13.5% of Wyndham's population growth was as a result of migrants from overseas, interstate and the rest of Victoria.
- This translates in total to 28.5% of Wyndham's population growth as a result of in-migration based on demand transfer.
- The relative price ratio or arbitrage has increased from 28.6% to 35.6%. That is Wyndham has become relatively less expensive (although prices continued to increase in Wyndham)
- This change in arbitrage translate into a 24.3% increase in Melbourne metropolitan migration to Wyndham.

Graph 2 Wyndham Migrants - Place of Residence 5 Years Ago (2006 – 2011)



Source: ABS, 2011

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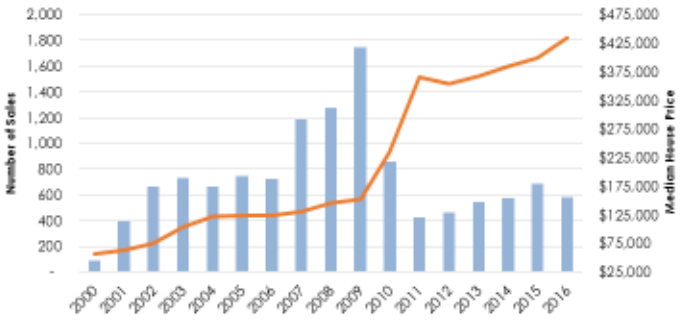
Corridor Patterns: Western Corridor

- At 2011 the Western Corridor was still in early stages of growth relative to other growth corridors. Map 1 shows trends of migration between 2006-2011 Tarneit, one of the fastest growing suburbs in the region.
- As seen in the graph below during the identified in-migration period Tarneit was very affordable particularly between 2006 and 2010. However prices in 2011 experienced rapid growth and sales halved.
- This represents the beginning of supply inelasticity and a re-direction of demand due to falling affordability in the region. This in-migration is transferring to other suburbs in the corridor (Lara/Geelong/Armstrong Creek).

Graph 3. Tarneit Residential Market (2000 – 2016) – Price Elasticity



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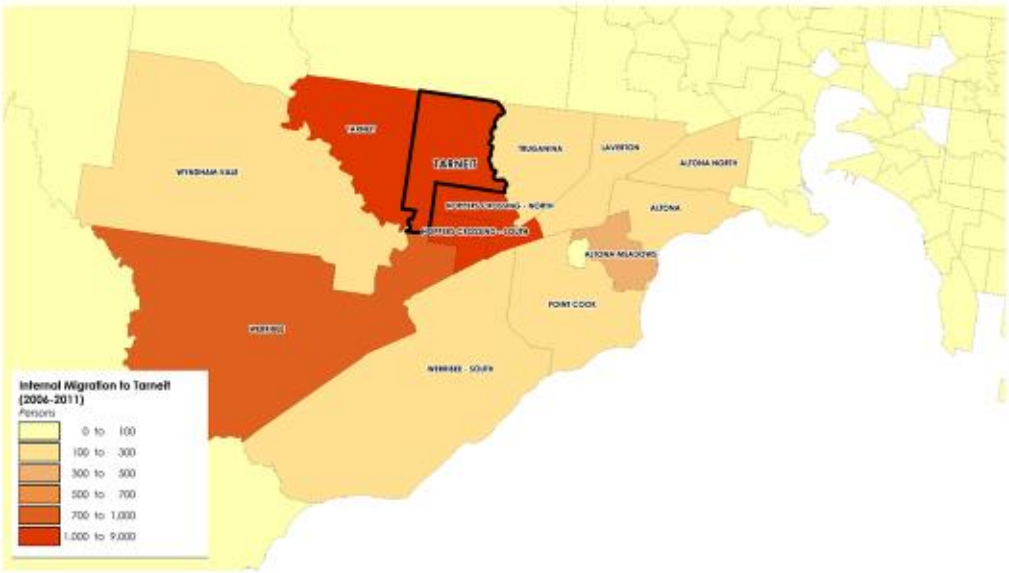
Corridor Patterns: Western Corridor

Map 1: Tarneit Population – Place of Residence 5 years ago by SA2 (2006 - 2011)



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Corridor Patterns: Western Corridor

Map 2: Western Corridor (2001)

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Corridor Patterns: Western Corridor

Map 3: Western Corridor (2006)

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Corridor Patterns: Western Corridor

Map 4: Western Corridor (2011)

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Corridor Patterns: Western Corridor

Map 5: Western Corridor (2016)

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Impact of Wyndham's Diminishing Supply Increasing Land and Dwelling Prices

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Impact of Wyndham's Diminishing Supply & Increasing Land and Dwelling Prices

- As demonstrated in the Wyndham Case Study, transfer of demand to the region has already begun (i.e. supply has turned inelastic) and this will continue resulting in increased pressure on land supply hence land prices.
- As evidenced when land prices reach a trigger point in a suburb, households tend migrate to locations in the same corridor but further from the CBD.
- In Wyndham's case this would initially be Lara where the median land price is currently $50,000 lower than Wyndham.
- However Lara is also an affordable alternative residents of Geelong look to migrate.
- This poses significant issues for housing affordability for both residents of Greater Geelong and western Melbourne.
- For Geelong residents , Wyndham is now becoming unaffordable hence historic in-migration from Geelong to Wyndham will also reduce. Again based on an elasticity of one this means there was a loss of 13,580 potential in-migrants from Geelong to Wyndham between 2011 and 2016.
- Over a 5 year period this is equivalent to 1,132 households per annum staying in Geelong as opposed to migrating to Wyndham.

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Appendix 3:

Residential Land Supply & Demand Assessment

Greater Geelong

Residential Land Supply & Demand Assessment

FINAL

Prepared by **macroplan**
For **Boral**

29 October 2019

macroplan

Important Notice

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Executive Summary

There are circumstances in which residential land in the Armstrong Creek Urban Growth Area (ACUGA) may be exhausted within the next 11-15 years. Land owned by Boral located to the west of the ACUGA is considered the only logical expansion opportunity to meet projected population growth in Geelong's southern sub-market. An appropriate planning pathway will be required in order to achieve land use and planning outcomes for Boral's land in the next 5-10 years.

Study Context

This report is prepared by Macroplan (the author) for Boral Limited (Boral). The report presents an assessment for the current and future residential land supply / demand in Greater Geelong with a focus on broad hectare residential land in a number of Geelong's growth areas, and the likely implications for Boral's 1,020-ha land holding in Waurn Ponds.

This report has reviewed the *City of Greater Geelong Settlement Strategy* (2018) and the *Geelong Settlement Strategy Growth Scenarios Discussion Papers* (Spatial Economics, 2017), assessed historic and current residential land supply and demand, and prepared supply / demand modelling for the sub-regions and townships within Greater Geelong.

The modelling draws on various assumptions based on key findings indicated in the *Discussion Papers* and historic statistics and evidence such as population, household and dwelling growth, residential land and house sales. Two forecast scenarios have been defined to assess the likely future land supply / demand balance based on the latest State Government's population projections Victoria in Future (VIF) 2019 and G21's aspirational population growth rate target. For analysis purposes, a sensitivity assessment have been undertaken to test possible impacts on the future land supply / demand balance resulting from land constraints in Armstrong Creek Urban Growth Area (ACUGA) and potential demand transfer from Spring Creek PSP area. The sensitivity analysis is applied to Scenario 2 – G21 scenario.

Further details regarding to descriptions of scenarios, assumptions and sensitivity analysis are presented in this report.

Key Findings

Forecast Scenario 1 – VIF 2019

In order to accommodate the projected population growth of **2.1% p.a.** during the forecast period of 2016-36 within Greater Geelong, it is estimated that:

- Land consumption in ACUGA will need to remain around **700-800 lot p.a.** during the forecast period, which is largely consistent with the historic level;
- Land consumption in the Northern and Western FIAs will need to ramp up progressively from around **100 lot p.a. to 600 lot p.a.** after commencement in 2025 to the end of forecast period at 2036;
- Land consumption in the other sub-regions remains on historic trend.

At the estimated land consumption rates, it is projected that the current supply (both zoned and unzoned) in the ACUGA and Northern and Western FIAs may not exhaust theoretically during the forecast period.

Forecast Scenario 2 – G21

In order to accommodate the target population growth of **2.5% p.a.** during the forecast period of 2016-36 within Greater Geelong, it is estimated that:

- Land consumption in ACUGA will need to achieve around **700 lot p.a.** to up to **1,500 lot p.a.** during the forecast period;
- Land consumption in the Northern and Western FIAs will need to ramp up rapidly from around **100 lot p.a. to 1,100 lot p.a.** after commencement in 2025 to the end of forecast period at 2036;
- Land consumption in the other sub-regions remains on historic trend.

At the estimated land consumption rates, it is projected that the current supply (both zoned and unzoned) in the ACUGA may exhaust during the next **15 years** from now theoretically, and the current supply in the Northern and Western FIAs may not exhaust during the forecast period.

Sensitivity Analysis Applied to the G21 Scenario

Shock 1 – Constraints in ACUGA

The sensitivity analysis assumes up to 20% of residential land in the ACUGA may not be ready for development until post 2036 due to lack of infrastructure, lack of access and ownership fragmentation as indicated in the *Armstrong Creek – Western Industrial Precinct Economic Analysis* (Ethos Urban, 2019). It is projected that the current developable supply (both zoned and unzoned) in the ACUGA may exhaust during the next **12 years** theoretically. With the land constraint assumed, the G21 population growth target may not be achieved during the forecast period, indicating potential requirements for additional residential land during this period.

Shock 2 – Demand Transfer from Spring Creek

Assuming approximately half of the potential demand for Spring Creek PSP to transfer to the ACUGA during the next 5-10 years due to planning protection, which is roughly **100-200 lots p.a.**, it is projected that the current supply (both zoned and unzoned) in the ACUGA may exhaust around the next **13-14 years** theoretically.

Shock 1+2

Assuming both shocks, the sensitivity analysis indicates the current developable supply (both zoned and unzoned) in the ACUGA may exhaust as soon as the next **11 years** from now theoretically.

Conclusions

In 7-8 years Armstrong Creek will be exhausted in terms of major land holdings. Planning for the Transit Oriented Developments should begin immediately to ensure tourism, recreation and entertainment uses, medium to high density living and employment can be accommodated. The modelling indicates the residential land supply in ACUGA may be exhausted in the next **11-15 years** under some circumstances in order to accommodate the target population growth of 2.5% p.a. during the forecast period of 2016-36. Boral's land is adjacent to the west of the ACUGA and is considered the only logical expansion opportunity to meet projected population growth in Geelong's southern sub-market. An appropriate planning pathway will be required in order to achieve land use and planning outcomes for Boral's land in the next 5-10 years.

1_Introduction

1.1_Purpose & Scope

This report was prepared by Macroplan for Boral Limited (Boral).

This report presents an assessment for the current and future residential land supply / demand in Greater Geelong with a focus on broad hectare residential land in a number of Geelong's growth areas, and the likely implications for Boral's 1,120-ha land holding in Waurn Ponds.

The scope of this report involves the following elements:

- Reviewing policy and planning context, including the *City of Greater Geelong Settlement Strategy* (2018) and the *Geelong Settlement Strategy Growth Scenarios Discussion Papers* (Spatial Economics, 2017);
- Understanding the regional and local contexts, including the Greater Geelong, various growth areas and Further Investigation Areas (FIAs), Boral's land, and potential impacts from the Spring Creek Precinct Structure Plan (PSP);
- Preparing a high-level assessment on the current state of residential land supply and demand within Greater Geelong;
- Assessing the potential future residential land supply / demand balance within key sub-regions, growth areas and townships within Greater Geelong under a number of scenarios and considering several sensitivity tests.
- Interpretation of the implications and planning pathway for Boral's land.

1.2_Methodology

The *Settlement Strategy Growth Scenarios Discussion Papers* prepared by Spatial Economics in 2017 (Discussion Papers) have been reviewed in detail in preparing this report. In particular, *Discussion Paper No. 1* identified four population growth scenarios for Greater Geelong, including long term historic growth (1.3% p.a.), current / official projections (1.6% p.a.), strong growth (2.0% p.a.) and G21 aspirational growth (2.5% p.a.). *Discussion Paper No. 5* assessed residential land supply, development activity and adequacy of major residential land stocks under the four population growth scenarios. This Discussion Paper defined a number of sub-regions, growth areas and townships within Greater Geelong and assessed residential land supply and development activities within these areas. However, the estimated years of residential land supply was assessed for the wider Greater Geelong area.

This report draws on the information and data provided in the above Discussion Papers and presents an updated assessment of the current residential land supply and demand situation. Whilst the assessment on future land supply / demand balance is at the Greater Geelong level in the Discussion Papers, the assessment presented in this report involves a bottom-up approach to supply / demand balance modelling at the **sub-region / growth area / township** level.

The modelling presented in this report has adopted the geography definition of the sub-regions / growth areas / townships and a number of key findings and assumptions indicated in the *Discussion Papers,* as well as other historic statistics and evidence such as population, household and dwelling growth, residential land and house sales. Two forecast scenarios have been defined to address the balance of the likely future broad hectare and major residential land supply / demand and land development sequencing in the growth areas required to achieve these growth outcomes, including:

- **Forecast Scenario 1**: the latest State Government's population projections **VIF 2019** (**2.1% p.a.**); and
- **Forecast Scenario 2**: **G21**'s aspirational population growth (**2.5% p.a.**).

For analysis purposes, a sensitivity assessment has been applied to Forecast Scenario 2, including:

- **Sensitivity 1: Constraints for residential development in ACUGA** – assuming up to 20% of residential land in the ACUGA may not be ready for development until post 2036 due to lack of infrastructure, lack of access and ownership fragmentation as indicated in the *Armstrong Creek – Western Industrial Precinct Economic Analysis* (Ethos Urban, 2019) with this assumption reducing developable residential land by 20% in the ACUGA during the forecast period of 2016-36.
- **Sensitivity 2: potential demand transfer from Spring Creek** – assuming a portion of unmet demand from Spring Creek PSP to transfer to the ACUGA during the next 5-10 years due to planning protection with this assumption increasing residential land demand and consumption in the ACUGA by approximately 100-200 lots p.a.
- **Sensitivity 1+2**: a combined impact from both of the above shocks.

The modelling of both scenarios and sensitivity analysis presents the following outputs:

- Estimated **annual consumption rates** of broad hectare residential land in Geelong's growth areas in order to achieve population growth targets under both scenarios;
- Likely **years of available land supply** at the estimated annual consumption rates in achieving population growth targets within the sub-regions / growth areas / townships under both scenarios; and
- Possible supply / demand impacts from a number of sensitivities.

Further details regarding to descriptions of scenarios, assumptions and sensitivity analysis are presented in this report.

1.3_References & Data Sources

The following literature and data have been referred to in preparing this report.

- ABS Census 2001, 2006, 2011 and 2016
- ABS Stats
- ABS 8731
- Armstrong Creek – Western Industrial Precinct Economic Analysis, Ethos Urban, October 2019
- City of Greater Geelong Settlement Strategy, October 2018
- CoreLogic RP Data
- Department of Environment, Land, Water and Planning (DELWP)
- Geelong Settlement Strategy Growth Scenarios Discussion Papers No. 1, 2, 3, 4, 5 and 6, Spatial Economics, June 2017
- G21 Regional Growth Plan, 2013
- Residential Land Supply Monitoring Project – G21 Region (Geelong), Spatial Economics, June 2015
- Spring Creek Precinct Structure Plan, Surf Coast Shire, 2015
- Valuer-General Victoria, 2019
- Victoria in Future (VIF), 2019

1.4_Important Notes

The following points of importance are made in relation to the modelling presented in this report.

- The most recent residential land supply data is as at December 2016, as indicated in the *Discussion Paper No. 5*. In the absence of available land supply data up to date, the modelling has assumed the forecast period is from 2016 which is also consistent with VIF's forecast period. Land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.
- Historic residential land and house sales within each sub-region have been used to proximate possible future residential land consumption rates. It is noted that in some instances there may be multiple sales records for the same properties, which may distort historic consumption rates.
- The modelling focuses on broad hectare and major residential land and adopts the *Discussion Papers*' assumption that 74% of Greater Geelong's dwelling requirements are met from broad hectare or major infill residential supply sources, with the balance coming from dispersed infill and urban renewal sites. Whilst this share is based on historic trends and assumed to remain unchanged in our modelling, it is likely that the share of dwelling yield from dispersed infill and urban renewal sites may grow overtime with increased dwelling densities and diversities across infill and renewal sites.
- In order to test the impact of the land constraint in ACUGA this assessment has assumed 20% of residential land in the ACUGA may not be ready for development until post 2036 for analysis purposes. This is based on the *Armstrong Creek – Western Industrial Precinct Economic Analysis* (Ethos Urban, 2019), noting the Ethos Urban report indicated 'at least 5 years' in terms of timing. It is also noted there appears to be some inconsistency regarding this land constraints in the Ethos Urban report – 20% or 4,500 dwellings and 27% or 6,000 lots are both noted and considered to be constraints. The total land supply indicated in the Ethos Urban report (approximately 22,000 lots) is also broadly inconsistent with the *Discussion Paper No. 5* (19,661 lots).

2_Study Context

This section discusses the existing context of Greater Geelong, Boral's site and surrounds, including:

- Policy and planning context including the Geelong Settlement Strategy
- The context of Greater Geelong area including the Bellarine Peninsula, Armstrong Creek Urban Growth Area (ACUGA), Northern and Western Further Investigation Areas
- Boral's land at Waurn Ponds
- Surf Coast / Spring Creek PSP

2.1_Policy & Planning Context

Amendment C395

Amendment C395 proposes a number of changes to the Greater Geelong Planning Scheme (the Scheme). The amendment will introduce, amend and replace clauses within the Scheme, rezone land and introduce two background documents. One of the proposed background documents informing the amendment is the *City of Greater Geelong Settlement Strategy*, 2018.

City of Greater Geelong Settlement Strategy, 2018

The *City of Greater Geelong Settlement Strategy*, 2018 was adopted by Council on 09 October 2018. The purpose of the Settlement Strategy is as follows:

- To analyse future housing needs and trends;
- To develop a clear policy framework that will guide planning and decision-making; and
- To help us meet Greater Geelong's future housing needs.

The aim of the strategy is to provide guidance to Council and facilitate the housing needs for the municipality until 2036.

The strategy focuses on the following areas:

1. Spatial distribution of growth and land supply;
2. Housing diversity;
3. Managing future growth;
4. Bellarine Peninsula;
5. Permanent Settlement Boundaries;
6. Urban consolidation; and
7. Monitoring and review.

The introduction of a proposed indicative permanent settlement boundary is discussed within the strategy and outlines the following two principles and directions:

Principle

Contain growth within identified locations across the municipality.

Directions

a. Pursue options to implement permanent settlement boundaries for Greater Geelong.

b. Implement permanent boundaries based generally on existing urban areas and areas already identified in policy.

c. Establish a consultation process to review the appropriateness of this boundary and deal with any significant anomalies or logical inclusions.

d. Place structure plan reviews on hold until the permanent boundary is known.

e. Work with the state government and neighbouring councils to consider a regional approach to housing and settlement boundaries.

Principle

Maintain the unique identity of Greater Geelong and its townships.

Directions

a. Maintain the non-urban breaks between Geelong and Melbourne (Wyndham), Geelong and the Surf Coast, urban Geelong and the Bellarine Peninsula, and the townships on the Bellarine Peninsula.

b. Assess areas with special local environmental or landscape values and consider options to help preserve and manage these breaks into the future.

c. Investigate utilising the Distinctive Areas and Landscapes Bill 2017 to declare the Bellarine Peninsula and You Yangs precinct as areas with unique features that need protection for future generations.

Boral's land is positioned outside of the proposed permanent settlement boundary. This will impact on the potential to rezone land the land in future as Council has identified within that the strategy, that there is enough land to meet housing demand until 2036.

As part of the proposed permanent settlement boundary, the logical inclusion process will be utilised to identify sites which can be included within the boundary. This process has previously been undertaken when assessing sites around Melbourne's Urban Growth Boundary.

Logical Inclusion Process

The logical inclusion process was set up by the Growth Area and Logical Inclusion Advisory Committee that was established by the Former Minister for Planning in 2011. This process set out the three standards and decision criteria.

In order for the land to be considered as a logical inclusion, at minimum, the following standards are required to be met:

- Be located within a growth area municipality;
- Be adjacent to or on the existing Urban Growth Boundary – land located away from the Urban Growth Boundary cannot be incorporated unless intervening land is also included; and
- Be proposed for residential or employment development – a critical Government objective is to encourage new housing developments as well as land supply for local employment opportunities.

The following decision criteria is outlined:

- The State Planning Policy Framework (now known as Planning Policy Framework (PPF)) and any Ministerial Directions;
- An analysis of the following categories of opportunities:
    - Local connectivity to existing areas;
    - Sustainable neighbourhoods;
    - Transport; and
    - Trunk services (including water services, sewerage, electricity, gas and telecommunications).

A logical inclusion process is necessary for the subject site because it is already nominated for an employment use in the G21 Regional Growth Strategy. The Settlement Strategy noted (page 22) that the strategy dos not make recommendations about specific boundaries.

2.2_Study Area Context

Greater Geelong

Geelong is experiencing an economic transition resulting from a decline in 'core' regional industrial sectors such as manufacturing, which has long been a regional strength and specialisation of Geelong. As the surrounding regions (such as the G21 Region) has continued to experience population growth, Geelong has increasingly evolved to produce services to the surrounding regions – with the regional city evolving as a hub for higher order services, jobs and amenity.

Key economic themes and trends of relevance to the Greater Geelong regional economy are summarised below:

- Geelong is Victoria's largest regional city with approximately 252,217 residents (ABS ERP 2018). From 2001 to 2018, Geelong grew by over 60,000 residents. From 2016 to 2036, Greater Geelong is forecast to grow by an additional 108,000 people – suggesting that the rate and intensity of residential development in Geelong is set to increase in coming years.
- The national decline of the manufacturing sector is a particular Geelong's largest sector, producing $6.7b as at 2017-18. This sector has been impacted by globalisation coupled with limited support to assist the transition for workers and local businesses.
- Unemployment fluctuates significantly at a local level within the region, but generally speaking, unemployment rates are improving across Greater Geelong with the short-term effects of recent layoffs and redundancies working through the economy. The unemployment rate of Greater Geelong has declined by 0.3% since December 2010 to 6.9% in March 2019. It is suggested that while some workers are redeploying in alternative jobs, others may simply be exiting the labour force due to a lack of alignment between available local jobs and established skills or qualifications – a factor likely to be more profound in a well-established industrial precincts such as Northern Geelong.
- Geelong has a relatively established "people-serving" service sector, with a strong asset base in the Health Care & Social Assistance and Education & Training sectors. Health Care & Social Assistance is Greater Geelong's largest individual employing sector representing approximately 16,428 jobs or 17.3% of all workers. Epworth Hospital (Waurn Ponds), University Hospital (Geelong) and St John of God Hospital (Geelong, private) comprise the primary health care assets within the region and provide a foundation for future growth in this sector. Similarly, the presence of established tertiary education providers such as Deakin University (Waterfront and Waurn Ponds) and the Gordon Institute of TAFE provides a foundation for future growth in the Education & Training sector, which accounts for 10.8% of regional jobs or 10,302 jobs. These two sectors will be vital in supporting the economic transition of Geelong.
- Geelong has significant capacity to continue to develop "white-collar" knowledge-intensive jobs that provide services to the surrounding region, exemplified in the development of the new ABS office in Geelong that will create 300 jobs predominantly within the Professional, Scientific and Technical Services sector. Catalyst projects of this type are likely to align well with Geelong's existing role as a regional hub for government services, already witnessed through the presence of facilities such as the Geelong Regional Justice Office and WorkSafe development.
- The diversification of Geelong's economy and labour force is not contained to knowledge-intensive, white-collar jobs. There is a significant proportion of the labour force and resident population of Geelong that is not equipped with the experience or qualifications to transition into knowledge-intensive sectors. It is important therefore to promote alternative employment opportunities to cater to a diverse labour force.

Geelong's Growth Areas

The *G21 Regional Growth Plan* has identified a number of key areas that will support future residential growth including the Armstrong Creek Urban Growth Area (ACUGA) and two Further Investigation Areas (FIAs) – the Northern FIA and Western FIA.

Context of Geelong's growth areas is illustrated on the map overleaf.

Armstrong Creek Urban Growth Area (ACUGA)

The ACUGA, located to the east of Boral's land, is expected to accommodate approximately 54,000 people and provide over 22,000 jobs in the future over its 2,600 ha land.

Development of ACUGA is progressing with recent sales rates of up to 600-700 lots p.a. exceeding forecasts – this means residential land in the corridor may be exhausted faster than anticipated, resulting in a need for more residential land and infrastructure in this area. This has the potential to create future infrastructure funding pressures for Council.

Northern FIA

The Northern FIA is located in the suburb of Lovely Banks north of the Geelong Ring Road. The study area is approximately 1,200ha. In October 2014, in the lead up to the State election, the former Minister for Planning prepared, adopted and approved without notice an amendment to the Greater Geelong Planning Scheme to rezone land at Lovely Banks from Farming Zone to Urban Growth Zone. Land affected by the Urban Growth Zone is estimated at approximately 1,100ha. A framework plan was prepared in late 2018, and is expected to be finalised and completed in mid 2020. The Northern FIA appears to have minimal land capability constraints and is relatively straight forward to develop and service; however the public transport options and the potential for isolation from the rest of Geelong need to be addressed.

Western FIA

The Western FIA is located in the suburb of Batesford South west of the Geelong Ring Road. The study area is approximately 2,300 ha with 1,793 ha net developable area. The zoning of land at the Western FIA was not changed. The former Minister's decision was based on a desire to provide diversity in growth fronts across Geelong and to ensure that Geelong is positioned to accommodate redirected population growth from Melbourne. The Western FIA presents an opportunity to create major regional community assets and biodiversity enhancements integrated with new housing options; however complex site, road connection and capacity challenges would need to be addressed, along with a lack of public transport.

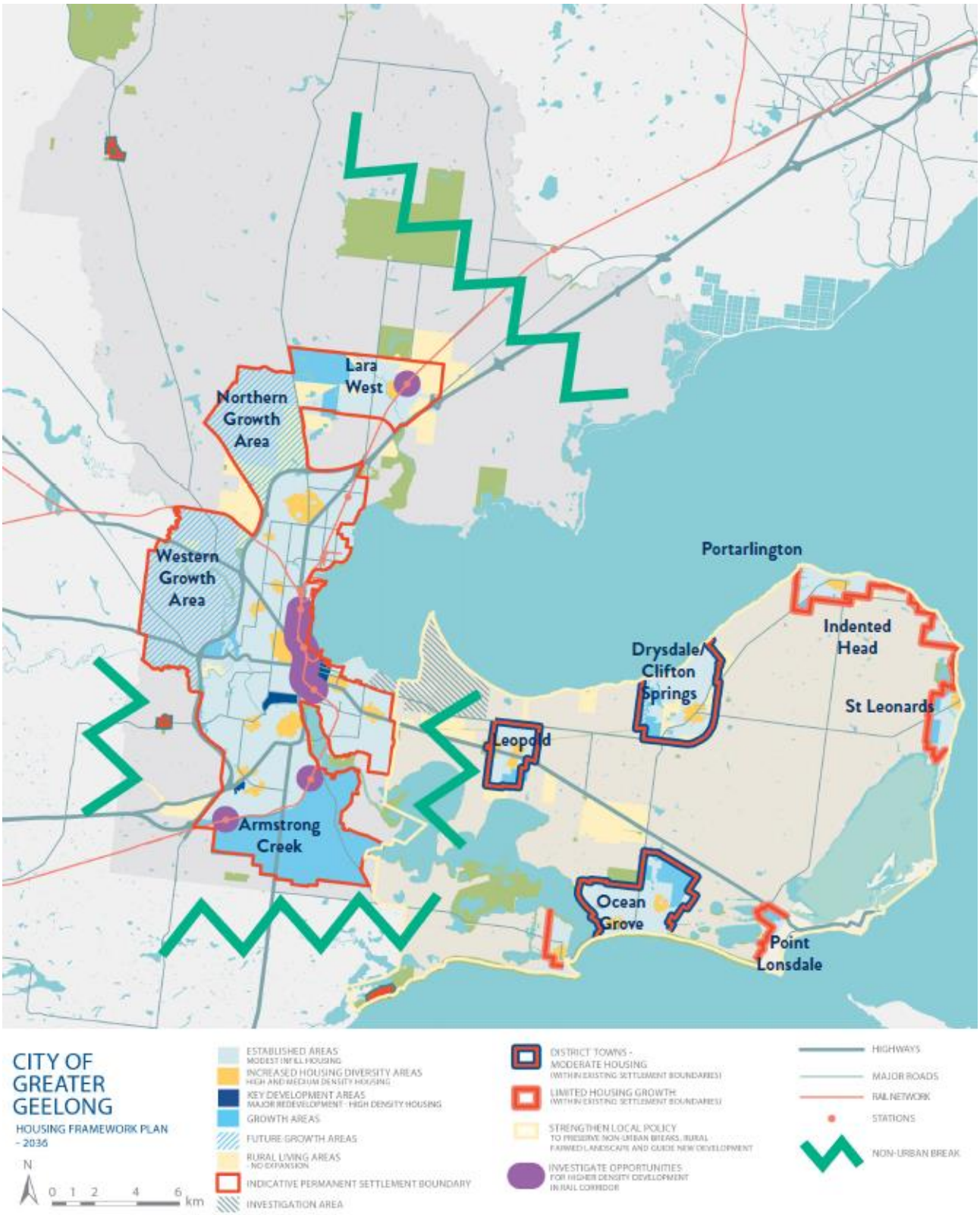
Both of the FIAs identified in the strategy are very large and comprise disparate land ownership arrangements. Whilst these areas could support significant future population growth, current infrastructure constraints may limit early-stage developments in these areas, resulting in major infrastructure challenges for Council and uncertainty about timing of delivery. Both of these areas lack direct access to public transport, whilst ACUGA has access to Waurn Ponds Railway Station and Boral's land to the west of ACUGA could be developed to include a new passenger railway station..

Bellarine Peninsula

Other growth areas on the Bellarine Peninsula are mainly located within a number of townships including Barwon Heads, Drysdale / Clifton Springs, Indented Head, Leopold, Ocean Grove, Point Lonsdale, Portarlington and St Leonards.

The *Geelong Settlement Strategy Discussion Papers* (Spatial Economics, June 2017) indicate the volume of residential development and rural-residential within the Bellarine area will be limited in future, which places the focus for residential growth on areas such as ACUGA and the FIAs. The ACUGA has limited capacity to grow south or east meaning a western extension would be the only logical direction for this area to grow in future.

Geelong's Growth Areas



Source: City of Greater Geelong Settlement Strategy (2018)

2.3_Boral's Land

Site Context

Boral's Waurn Ponds property (the site) is located approximately 75km south-west of Melbourne CBD and 13km south-west of Geelong CBD. The site is owned by Blue Circle Southern Cement, a wholly owned subsidiary of Boral Limited. The site totals approximately 1,120 ha and is currently zoned Special Use Zone (SUZ) supporting the primary purpose of extractive industries of earth resources.

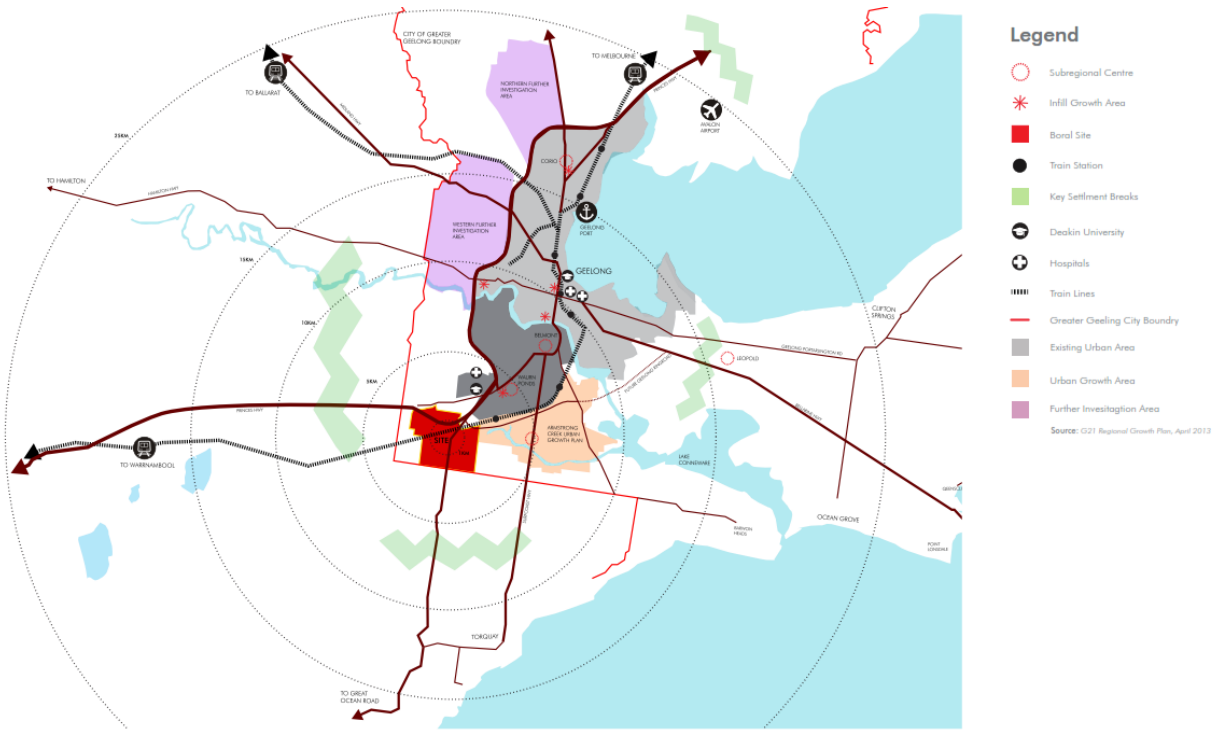
The site is strategically located with direct connections to the proposed Armstrong Creek Employment Area, Waurn Ponds train station, Waurn Ponds Town Centre, Epworth Hospital, Deakin University and surrounding Surf Coast regions.

The site has good access to freeway / highway and rail networks. It is reported that approximately 11,500 vehicles pass the site (two-way combined) on the Geelong Bypass on weekdays, with approximately 13,000 vehicles on Anglesea Road.

The site forms part of an employment node in Waurn Ponds South as part of the *G21 Regional Growth Plan*. This reflects the site's current earth resources designation and demonstrates the site has the potential to support a range of complementary employment uses in future.

This highlights the property's potential to become a major southern economic gateway for the Geelong region, capable of supporting a mix of employment, residential, tourism and community outcomes.

Site Location & Regional Context



Source: Boral

Current Situation

The site is largely flat and unencumbered and benefits from significant on-site infrastructure, representing future cost savings for Council and the community, should this land be developed for urban uses in the future.

The site comprises three precincts with good connectivity, each with their own features, access and connections to the surrounding road network and infrastructure.

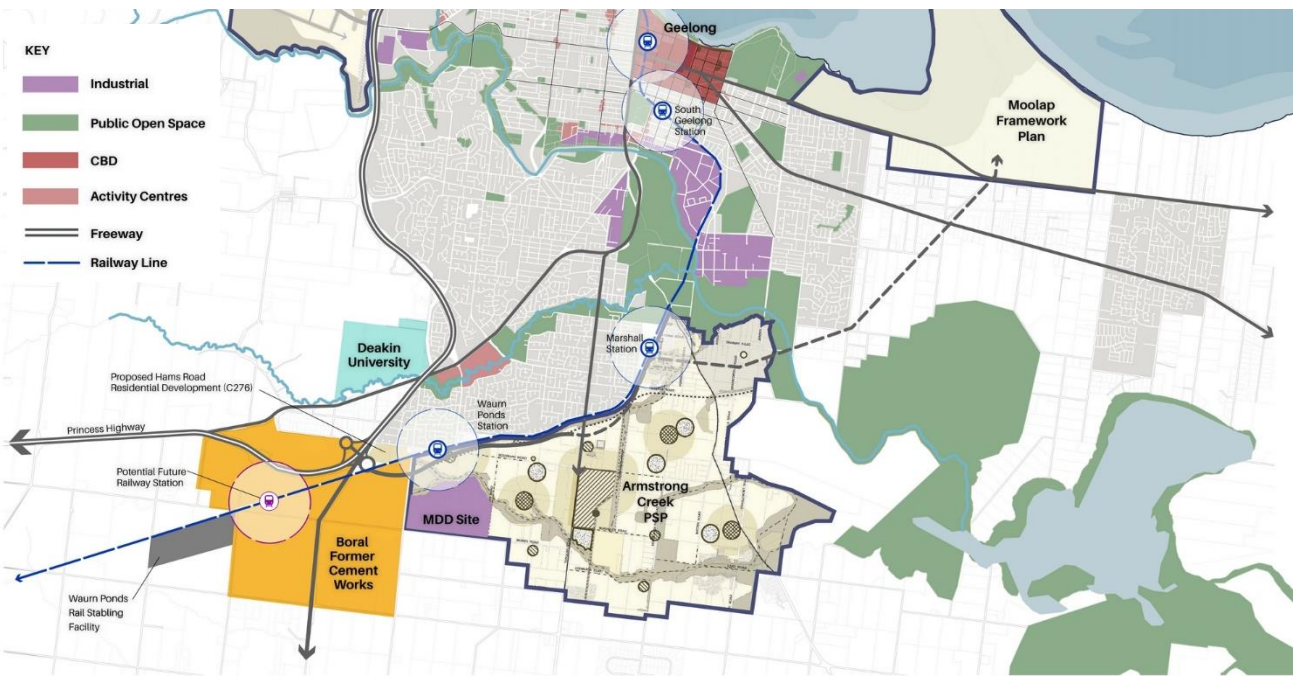
- **Northern Precinct** – approximately 125 hectares fronting McPhersons Road and Waurn Ponds Drive with dedicated Freeway ingress/egress at the existing freeway roundabout.
- **Central Precinct** – approximately 165 hectares including existing plant and equipment, quarries, dedicated underpasses the Freeway and railway line, access to surrounding arterial roads and Anglesea Road.
- **Southern Precinct** – approximately 730 hectares with connections to Mt Duneed Road, Whites Road and Ghazeepore Road.

Embedded infrastructure on site includes passenger railway line (including sidings and loading facilities), underpasses, electricity sub-station, representing a major opportunity and potential long term cost saving .

- Existing services infrastructure including electricity sub-station (66 KV), water bodies and clean fill areas.
- Freeway rest areas could potentially be developed into major freeway service areas with the potential to utilise existing freeway underpasses for connectivity.
- Train line and future public transport extension opportunity on site.

Significant rehabilitation works will be required across areas of the site, with the risk the site may remain vacant for many years and surrounding site infrastructure unused in the event site rehabilitation costs cannot be funded through timely site developments.

Current Situation



Source: Roberts Day (2019)

Future Opportunities

Investigations undertaken for Boral demonstrate the site has strong potential to be developed as a major southern gateway to Geelong supporting a mix of employment, tourism, residential and community related outcomes

There are a number of candidate opportunities across three interconnected precincts, reflecting existing site conditions, key infrastructure characteristics and the employment designation of the land.

- **Northern Precinct (**290 ha**) – Freeway service centres and logical extension to surrounding areas.** An immediate, short-term opportunity exists involving redeveloping the precinct for **residential** uses and freeway service centre including **refuelling services** and **Freeway retail** opportunities, as well as supporting wider site rehabilitation works and potential for **regional parkland**.
- **A major tourism regional centre / tourism hub / community infrastructure** opportunity with **short-stay accommodation** and a mix of boutique **residential** outcomes / housing choices, as well as a **major regional park** potentially rehabilitated and repurposed from the existing plant and quarry areas.
- **Southern Precinct (730 ha) – Future Employment & Residential Area.** Opportunities involve redeveloping the balance of the site / Southend Precinct for a mix of uses including **employment** land, **tourism**, **residential** uses and an **activity centre** servicing the surrounding catchment and complementing the surrounding Armstrong Creek and Waurn Ponds activity centres.

2.4_Surf Coast / Spring Creek

Spring Creek Precinct Structure Plan

The Spring Creek planning process has occurred over many years. The original structure planning area expanded about 700 ha. The Council revised its decision and subsequently recommended 245 ha for a Predicant Structure Plan. Subsequent to that, the PSP is subject to the Distinctive Areas Landscape statement of planning policy.

The *Spring Creek Precinct Structure Plan* (PSP), prepared by the Surf Coast Shire Council and the Metropolitan Planning Authority, is a long-term plan that directs development by outlining how land is to be used and also identifies the necessary supporting community infrastructure. It covers approximately 245 hectares of land, located south of Geelong and West of Torquay, and provides the strategic framework necessary to accommodate a proportion of anticipated population growth in the Torquay Jan-Juc area.

According to the Spring Creek PSP's summary land use budget, the precinct will primarily be made up of residential land (75%), followed by open space (23.2%), a small employment cluster (0.9%) and intersection flaring (0.4%). There will also be a small parcel of land (1.2 Ha or 0.5%) allocated for a neighbourhood centre local community facility, and there will also be a local convenience centre located in the north-eastern section of the precinct.

The Spring Creek PSP's land budget estimates that the precinct will yield a total of **1,781 lots**, at an average household size of 2.54 persons (based on VIF2015), thus predicting the future population of the precinct at approximately 4,524 residents.

It is anticipated by the PSP that there will be 5,000 m^2 of retail floor space, 2,100m^2 of office/commercial floor space, a community centre and a small proportion of businesses based in residents homes, and these allocations will create employment opportunities for up to 371 people.

The extent of development within Torquay (namely Spring Creek) has now been established, which will mean Armstrong Creek and other areas north of the inter-urban break will now be logical alternative options for prospective buyers who are unable to access into Spring Creek or Surf Coast markets.

Summary Land Use Budget

	Hectares	% of Total Precinct
Transport		
Intersection Flaring	0.95	0.4%
Community & Education		
Local Community Facility	1.2	0.5%
Open Space		
Conservation Reserve	9.7	3.9%
Waterway and Drainage Reserve	28.06	11.4%
Local Network Park	18.26	7.4%
Other	1.21	0.5%
Residential		
Residential Lot Size 500-600m^2	10.26	4.2%
Residential Lot Size 600-900m^2	136.19	55.4%
Residential Lot Size 1500-2000m^2	38.03	15.4%
Employment		
Employment NDA	2.1	0.9%
Total Precinct Area	***245.96***	***100%***

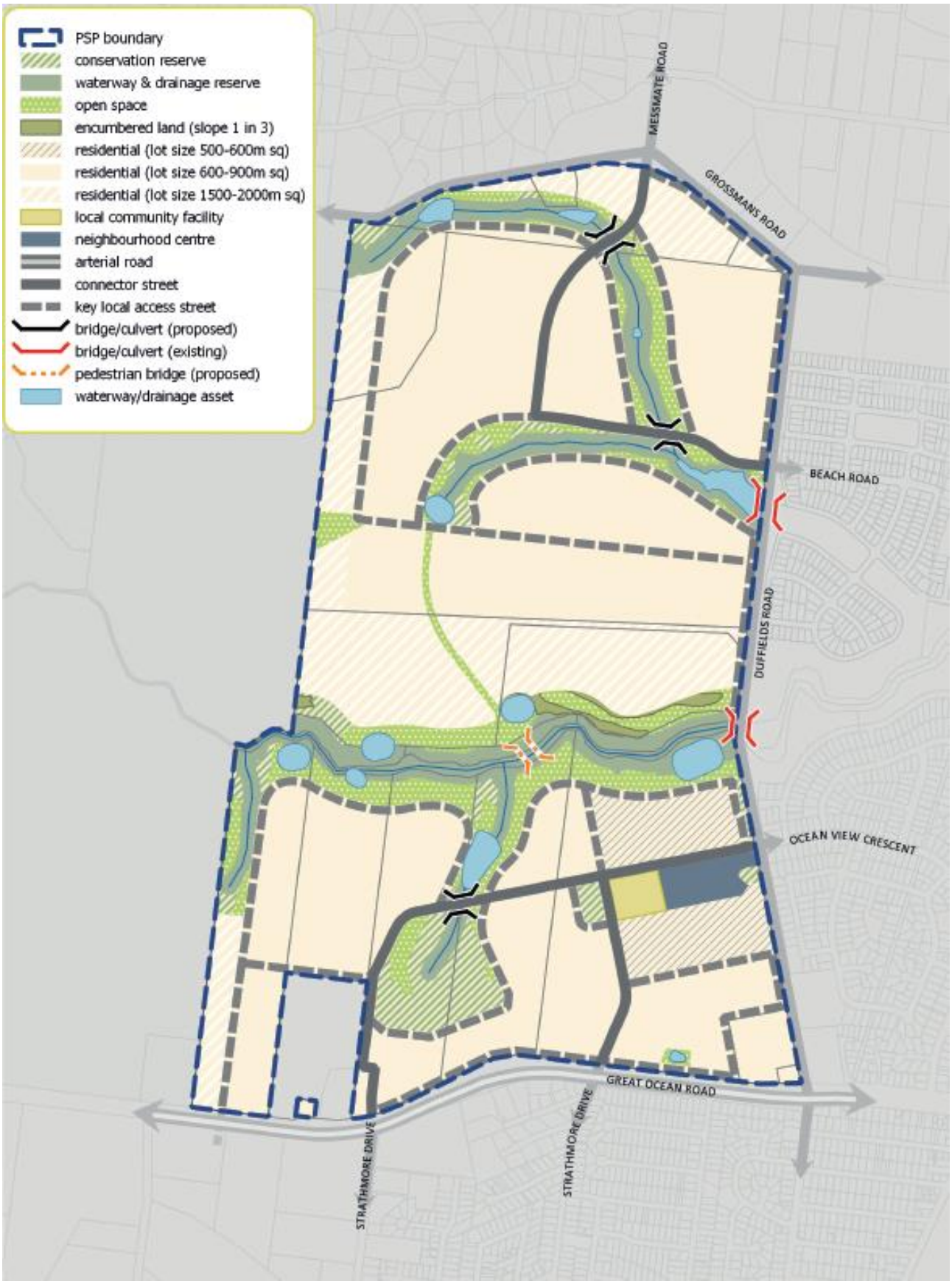
Source: Spring Creek Precinct Structure Plan, Surf Coast Shire (2015)

Dwelling Allocation

	Dwellings	Dwellings per Hectare
Residential Lot Size 500-600m^2	149	14.5
Residential Lot Size 600-900m^2	1,457	10.7
Residential Lot Size 1500-2000m^2	175	4.6

Source: Spring Creek Precinct Structure Plan, Surf Coast Shire (2015)

Spring Creek Precinct Structure Plan



Source: Spring Creek PSP, Surf Coast Shire (2015)

3_Current State Land Supply & Demand Assessment

This section provides a high-level assessment on the current state of residential land and market within the Greater Geelong LGA with a key focus on Waurn Ponds and Armstrong Creek.

This section presents the follows:

- Historic and forecast population growth
- Historic land and house sales including sales volume and median sales prices
- Residential lot construction and dwelling approvals
- Projected residential demand / supply balance

This section updates the previous *Waurn Ponds Residential Market Assessment* dated November 2018.

3.1_Population Growth

Victoria's Population Growth

Victoria's population grew by 2.2 per cent in the year ending March 2018, growing by an additional 137,400 people with its population now totalling **6.43 million.** Victoria is currently experiencing above average population growth with its average growth during the past 15 years just 1.79 per cent. Victoria is growing faster than all others states and territories and well above Australia's 2017-18 year-on-year growth rate of 1.6 per cent.

Net overseas migration is one of the main contributors to growth in Victoria, adding 83,703 people to the population in the year ending March 2018. The remainder of Victoria's population change was explained by natural increase (+38,593) and net interstate migration (+15,099).

According to Victoria in Future (VIF 2019), Victoria's population is projected to reach **8.7 million** by 2036 and **11.2 million** by 2056.

Greater Geelong & Surrounds

According to ABS in 2018 the population of City of Greater Geelong was **252,217 persons**. VIF forecasts predict that its population will grow to reach **360,245** by 2036, an increase of 2.1% per annum on average.

VIF identifies 8 districts within the City of Greater Geelong these include:

- VIFSA Lara District;
- VIFSA Bell Park-Corio District;
- VIFSA Geelong Central District;
- VIFSA Geelong Newtown District;
- VIFSA Geelong West District;
- VIFSA Grovedale-Highton District;
- VIFSA Leopold-Newcomb District; and
- VIFSA Barwon Heads-Portarlington District.

These VIFSAs within the City of Geelong are illustrated in the Annexure *A1_Maps*.

VIF forecasts that population growth in Geelong will be focused in two key districts, namely the Grovedale – Highton District and the Barwon Heads – Portarlington District.

The Grovedale-Highton district is the location of the broad hectare development currently taking place in the Highton region as well as the location of approximately 83 per cent of the Armstrong Creek Growth Area. This district is expected to grow by an additional 45,000 persons over the next 15 years.

The remaining 23 per cent of land in Armstrong Creek is located in the Barwon Heads-Portarlington district which is also the location of estate development currently taking place in regions such as Drysdale, Curlewis and Ocean Grove. This district is expected to grow by an additional 33,282 persons over the next 15 years. The Barwon Heads-Portarlington District aligns largely to the Bellarine Peninsula.

The remaining districts are expected to grow by a combined total of 42,433 additional persons between 2016-36.

3.2_Historic Residential Sales

Macroplan has assessed historic residential land and house sales in the suburb of Waurn Ponds (the location of the Boral's land) as well as the neighbouring suburb Armstrong Creek and benchmarked these local markets against the Greater Geelong residential market.

Land

Historic Sales Volume – Land

Residential land sales in Greater Geelong have increased significantly over the past 7 years, increasing from 451 in 2010 to 1,961 in 2017 (year ending June). This growth can be attributed to a number of housing estate developments across the region.

From 2013 to 2017, Armstrong Creek experienced strong residential land sales with many estates under construction in the ACUGA. Land sales peaked at 426 sales in 2017 within the suburb of Armstrong Creek whilst the ACUGA as a whole reached over 700 residential land sales in 2018.

There are limited residential land sales in Waurn Ponds due to lower levels of residential development in the suburb. Historic land sales data indicates an average of 6.4 sales per annum.

Details of the residential land sales for a number of growth areas within Greater Geelong are contained in the Annexure *A2_Data / Tables*.

Historic Median Prices – Land

Median price for residential land transactions in Greater Geelong was reported at $235,000 in 2018, in increase of 18.1% since 2017. During the five years from 2014 to 2018, median land prices have increased by 7.0% per annum on average.

In Armstrong Creek, the median land price was reported at $235,000 in 2018, up by 21.1% from 2017 and 8.8% per annum on average during the past five years of 2013-18.

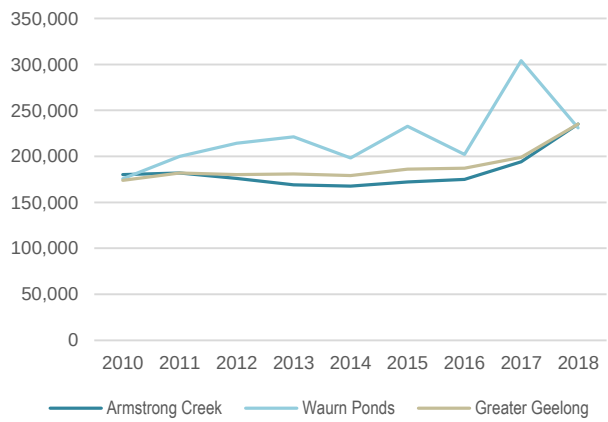
Waurn Ponds recorded a median land price of $231,000 in 2018. Historically land prices appear to have fluctuated due to limited sales records in the suburb.

Residential Land Sales Volume, 2010-2018

FY	Waurn Ponds	Armstrong Creek	Greater Geelong
2010	6	62	451
2011	10	61	526
2012	5	61	455
2013	11	114	650
2014	11	121	699
2015	10	118	779
2016	1	212	1,231
2017	2	426	1,961
2018	2	121	614

Source: DELWP / Valuer General Victoria (2019), RP Data (2019)

Median Land Prices, 2010-2018



Source: DELWP / Valuer General Victoria (2019)

Houses

Historic Sales Volume – Houses

The volume of house sales in Greater Geelong has increased significantly during the past 7 years, from 2,890 house sales in 2010 to 6,292 in 2017 (year ending June), before declining to 4,617 in 2018.

House sales in Armstrong Creek show a similar trend to the Greater Geelong LGA, peaking at over 500 sales in 2016 before falling to 182 in 2018. This growth comes as a result of a significant increase in housing estate development activities mainly within the ACUGA.

House sales in Waurn Ponds has been relatively stagnant during the past seven years, averaging around 50-65 sales per annum. This is largely due to limited residential development within the suburb.

Historic Median Prices – Houses

Median house prices for properties transacted in Greater Geelong were reported at $539,900 in 2018, a growth of 13.2% from 2017. During the five years from 2014 to 2018, median house prices have increased by 8.5% per annum on average.

In 2018, median house prices for properties transacted in Armstrong Creek were reported at $535,000, up by13.6% since 2017 and 4.9% per annum from five years ago on average, largely in line with the Greater Geelong. Historic sales prices in Armstrong Creek indicate a significant increase during 2011-2013 when the ACUGA commenced and then gradually stabilised during the following years.

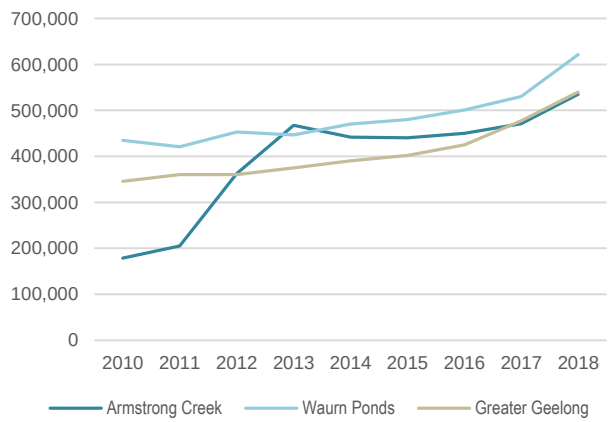
Waurn Ponds recorded a median house price of $621,500 in 2018, higher than Armstrong Creek and Greater Geelong. House sales prices in Waurn Ponds also indicates a relatively high rate of growth, up by 17.3% from 2017 and 7.2% per annum over the past five years. It is noted that residential lots in Waurn Ponds are generally valued higher than those in Armstrong Creek, largely due to generally larger lot sizes and current diminishing residential land supply in the area.

House Sales Volume, 2010-2018

FY	Waurn Ponds	Armstrong Creek	Greater Geelong
2010	50	68	2,890
2011	53	93	2,845
2012	51	85	3,078
2013	60	182	3,728
2014	59	255	4,293
2015	80	363	5,245
2016	67	535	6,201
2017	64	474	6,292
2018	47	182	4,617

Source: DELWP / Valuer General Victoria (2019), RP Data (2019)

Median House Prices, 2010-2018



Source: DELWP / Valuer General Victoria (2019)

3.3_Residential Land Supply

Residential Building Approvals

Between July 2011 to June 2019, the City of Greater Geelong experienced a significant growth in the number of dwelling approvals, with 2,686 dwellings approved on average per year across the LGA. In particular, during the past 2 years of FY2017-18 and 2018-19, the number of dwelling approvals reached over 3,400 within the LGA.

Over 80% of these approvals were for detached houses, with the balance for other residential types (i.e. semi-detached, townhouses, flats, units and apartments). It is noted the number of approvals for other residential types indicates relatively strong growth during the past 2 years.

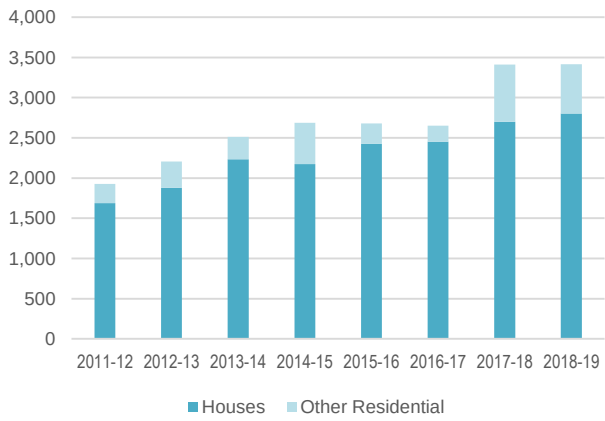
Residential Land & Lot Construction

The *Geelong Settlement Strategy Growth Scenarios Discussion Papers* (Spatial Economics, 2017) have been referred to regarding residential lot construction. The *Discussion Papers* indicates between July 2006 to December 2016 the average annual residential lot construction across the City of Greater Geelong was 1,800 lots. Approximately 65% of total lot construction was broad hectare, followed by dispersed infill lot construction (27%), major infill (8%) and rural residential (1%).

The *Discussion Papers* also assessed residential lot construction at a sub-regional / township level (geography definition in the Annexure *A1_Maps*) in 5.5 years to 2017, including:

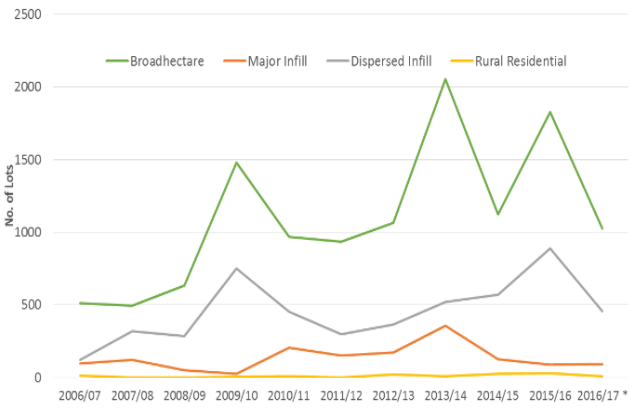
- Established areas of Urban Geelong - 757 lots per annum (34% of total activity);
- Armstrong Creek Growth Area - 548 lots per annum (25%);
- Drysdale/Clifton Springs - 243 lots per annum (11%);
- Ocean Grove - 167 lots per annum (8%);
- Leopold - 162 lots per annum (7%); and
- Northern Growth Front (e.g. Lara) - 114 lots per annum (5%).

Residential Building Approvals, City of Greater Geelong, FY 2011-12 – 2018-19



Source: ABS 8731

Residential Lot Construction by Type, City of Greater Geelong, July 2006 to May 2017*



Note: 2016-2017 year to May
Source: Residential Land Supply Monitoring Project, Spatial Economics

Residential Land Supply

The *Discussion Papers* also indicate, as at December 2016 total residential lot supply across the City of Greater Geelong including Bellarine Peninsula was 82,790, comprising:

- 37,190 zoned broad hectare / major infill lots (44.9% of total supply);
- 5,543 zoned major redevelopment (dwellings) (6.7%); and
- 40,057 unzoned lots (48.4%).

The location of zoned broad hectare residential land stocks is mainly within the following urban centres:

- Armstrong Creek – 18,211 lots (50.1%);
- Northern Growth Front – 5,297 lots (14.6%);
- Urban Geelong – 3,886 lots (10.7%);
- Ocean Grove – 3,520 lots (9.7%); and
- Clifton Springs / Drysdale – 2,086 lots (5.7%).

The following table presents potential residential lot supply by type.

Residential Lot Potential by Supply Type, December 2016

	Zoned Broad hectare (lots)	Zoned Major Infill (lots)	Zoned Major Redevelopment (dwellings)	Unzoned Stocks (lots)	Total (lots)
Bellarine Peninsula	**8,972**	**39**		**3,481**	**12,492**
Barwon Heads	28				**28**
Bellarine Rural	35				**35**
Drysdale/Clifton Springs	2,086	10		2,300	**4,396**
Indented Heads	186				**186**
Leopold	504	21		931	**1,456**
Ocean Grove	3,520	8			**3,528**
Point Lonsdale	814				**814**
Portarlington	252			250	**502**
St Leonards	1,547				**1,547**
Geelong	**27,394**	**785**	**5,543**	**36,576**	**70,298**
ACUGA	18,211			1,450	**19,661**
Northern Growth Front	5,297			16,715	**22,012**
Urban Geelong	3,886	785	5,543	411	**10,625**
Western Growth Area				18,000	**18,000**
Total City of Greater Geelong	**36,366**	**824**	**5,543**	**40,057**	**82,790**

Source: Residential Land Supply Monitoring Project, Spatial Economics

3.4_Projected Residential Demand

According to VIF2019, it is estimated that the number of dwellings in the City of Greater Geelong will increase by 58,543 between 2016 and 2036 (or an average of around 2,927 per annum).

Geelong's Urban Area has quite a different market segment to the Bellarine Peninsula with people migrating to the regions for different reasons. For example, Melbournians may migrate to Geelong due to its relative affordability with the intention of commuting to Melbourne for employment. However, it is unlikely that a household would choose to live in the Bellarine Peninsula and intend to commute to Melbourne city each day, with many moving to escape the city for a 'sea change'.

For this reason Macroplan has determined demand by region. Macroplan has identified the relevant VIFSA districts which fall within the Bellarine Peninsula in order to determine likely demand for property in the Bellarine Peninsula, with the remaining districts identified as Geelong balance. This indicates that over 60% of projected residential dwelling demand growth is expected to be contained in Geelong with the balance remaining in the Bellarine Peninsula.

It is noted that the *G21 Regional Plan* has set an aspirational population growth rate target of 2.5% per annum for Greater Geelong LGA, higher than VIF 2019's projected growth rate of 2.1%. This takes into consideration strong underlying demand and supply opportunities in greenfield locations, a range of supply opportunities on brownfield and greyfields locations and steady infill redevelopment in Greater Geelong, as well as potential demand transfer from Melbourne's Western Growth Corridor and elsewhere, which may lead to higher levels of dwelling requirements within the Greater Geelong.

Scenarios of population growth and dwelling demand relative to residential land supply and consumption will be further tested in Section *4_Future State Land Supply & Demand Assessment*.

Forecast population, households and dwellings, City of Greater Geelong, 2016-31

City of Greater Geelong	2016	2021	2026	2031	2036
Population	239,529	271,254	301,563	330,720	360,245
Change in population (5yrs)		31,725	30,309	29,157	29,525
CAGR		*2.5%*	*2.1%*	*1.9%*	*1.7%*
Households	97,663	110,938	123,945	136,930	150,766
Average household size	2.4	2.4	2.3	2.3	2.3
Population in non-private dwellings	5,524	6,314	7,062	7,931	8,816
Dwellings	106,478	121,161	135,538	149,876	165,021
Dwelling occupancy rate	91.7%	91.6%	91.4%	91.4%	91.4%

Source: VIF 2019

Projected No. Dwellings , City of Greater Geelong, 2016-31

	2016	2021	2026	2031	2036
Bellarine Peninsula	37,128	43,493	49,521	55,214	60,210
Geelong Balance	69,350	77,668	86,017	94,661	104,811

Source: VIF 2019

4_Future State Land Supply & Demand Assessment

This section estimates potential future residential land supply / demand balance in the sub-regions and townships of Greater Geelong with a focus on broad hectare residential land under a number of scenarios, including:

- VIF 2019 population projections (2.1% p.a.), and
- G21 aspirational growth target (2.5% p.a.).

Under the G21 scenario, a sensitivity analysis also tests possible impacts on land supply / demand balance particularly within the ACGUA from a range of factors such as:

- Constraints for residential development in ACUGA,
- Potential demand transfer from Spring Creek.

4.1_Scenarios & Assumptions

Forecast Scenarios

Historic population growth across Greater Geelong LGA indicates increasingly fast growth during recent years, with year-on-year growth rates exceeding 2.0% for the five consecutive years from 2014 to 2019.

This translates into growth of total households (i.e. occupied private dwelling) and total private dwellings across the LGA. Census statistics indicate the number of total households / occupied private dwellings has increased by around **1,019 per annum** on average during 2001-2016 in the LGA. This is largely consistent with the total residential lot consumption and sales rates. Considering vacancy factor, the number of total private dwellings has increased by **1,349 per annum** on average during the same period in the LGA.

The following table presents historic population, households and dwellings in Greater Geelong, which forms the basis for assessing future supply / demand balance scenarios.

For analysis purposes, two forecast scenarios have been defined based on the latest **State Government's population projections VIF 2019** and **G21's aspirational population growth rate target**.

Historic Population, Households & Dwellings, Greater Geelong (C), 2001-16

Greater Geelong (C)	2001	2006	2011	2016	*2001-16 Change*	*2001-16 Change p.a.*	*2001-16 AAGR*
Population	**191,534**	**201,495**	**215,837**	**239,529**	*47,995*	*3,200*	*1.5%*
Persons in Occupied Private Dwellings	*97.5%*	*97.1%*	*94.1%*	*92.4%*			
Households / Occupied Private Dwellings	**71,704**	**74,591**	**80,527**	**86,995**	*15,291*	*1,019*	*1.3%*
Average Household Size	*2.51*	*2.52*	*2.43*	*2.43*			
Total Private Dwellings	**80,957**	**87,974**	**92,734**	**101,199**	*20,242*	*1,349*	*1.5%*
Occupancy Rate	*88.6%*	*84.8%*	*86.8%*	*86.0%*			

Source: ABS Census, ABS Stats

Forecast Scenario 1 – VIF 2019

VIF 2019 has revised population projections up for a number of areas including Greater Geelong, compared to the previous release. VIF 2019 indicates the following forecast headline indicators:

- Total population to reach over **360,000 persons** by 2036, indicating a growth of around **120,000 persons** or **2.1% p.a.** from 2016;
- Total households to reach over 150,000 by 2036 based on projected household sizes, or a growth of **2,655 households p.a.** during 2016-36;
- Total private dwellings required at approximately 165,000 by 2036, or an additional requirement for **2,927 dwellings p.a.** during 2016-36.

Forecast Scenario 2 – G21

The *G21 Regional Plan* sets an aspirational population growth target of 2.5% per annum for Greater Geelong LGA, higher than VIF 2019's projected growth rate of 2.1%. Based on a higher growth rate, it is forecast:

- Total population to reach up to **392,500 persons** by 2036, or a growth of over **152,900 persons** or **2.5% p.a.** from 2016;
- Total households to reach over 164,000 by 2036, or a growth of **3,330 households p.a.** during 2016-36;
- Total private dwellings required up to 179,800 by 2036, or an additional requirement for **3,666 dwellings p.a.** during 2016-36.

Scenario 1 – VIF 2019, Greater Geelong (C), 2016-36

Greater Geelong (C)	2016	2021	2026	2031	2036	*2016-36 Change*	*2016-36 Change p.a.*	*2016-36 AAGR*
Population	**239,529**	**271,254**	**301,563**	**330,720**	**360,245**	*120,716*	*6,036*	*2.1%*
Persons in Occupied Private Dwellings	*97.7%*	*97.7%*	*97.7%*	*97.6%*				
Households / Occupied Private Dwellings	**97,663**	**110,938**	**123,945**	**136,930**	**150,766**	*53,103*	*2,655*	*2.2%*
Average Household Size	*2.40*	*2.39*	*2.38*	*2.36*	*2.33*			
Total Private Dwellings	**106,478**	**121,161**	**135,538**	**149,876**	**165,021**	*58,543*	*2,927*	*2.2%*
Occupancy Rate	*91.7%*	*91.6%*	*91.4%*	*91.4%*	*91.4%*			

Source: ABS Stats, VIF (2019)

Scenario 2 – G21, Greater Geelong (C), 2016-36

Greater Geelong (C)	2016	2021	2026	2031	2036	*2016-36 Change*	*2016-36 Change p.a.*	*2016-36 AAGR*
Population	**239,529**	**272,994**	**309,622**	**349,455**	**392,491**	*152,962*	*7,648*	*2.5%*
Persons in Occupied Private Dwellings	*97.7%*	*97.7%*	*97.7%*	*97.6%*				
Households / Occupied Private Dwellings	**97,663**	**111,649**	**127,257**	**144,687**	**164,261**	*66,599*	*3,330*	*2.6%*
Average Household Size	*2.40*	*2.39*	*2.38*	*2.36*	*2.33*			
Total Private Dwellings	**106,478**	**121,938**	**139,160**	**158,366**	**179,793**	*73,314*	*3,666*	*2.7%*
Occupancy Rate	*91.7%*	*91.6%*	*91.4%*	*91.4%*	*91.4%*			

Source: ABS Stats, G21 Regional Growth Plan (2013), VIF (2019)

Sensitivity Analysis Applied to Scenario 2

Under the G21 scenario, a sensitivity analysis is undertaken to test possible impacts on the total land supply / demand balance resulting from a range of factors, including:

- **Sensitivity 1: Constraints for residential development in ACUGA.** The *Armstrong Creek – Western Industrial Precinct Economic Analysis* prepared by Ethos Urban (October 2019) indicates around 260 ha of land identified for residential development (or approximately 4,500 dwellings and 20% of total dwellings in the ACUGA) is considered constrained due to lack of infrastructure, lack of access and because of ownership fragmentation, and is likely to represent a longer-term development proposition. This sensitivity analysis considers this land constraint during the forecast period of 2016-36 and assumes these lots will not be ready for development until post 2036 when infrastructure and access in place and ownership fragmentation consolidated. This assumption will lead to a reduction in developable residential land supply by 20% in the ACUGA during the forecast period of 2016-36.
- **Sensitivity 2: potential demand transfer from Spring Creek.** The Spring Creek PSP has estimated a total yield of 1,781 lots that may accommodate approximately 4,524 residents. However, with the planning protection from overdevelopment for small towns, Armstrong Creek and other areas north of the inter-urban break will be the only logical alternative option for prospective buyers who are unable to get into Spring Creek or Surf Coast markets. This assumption will result in an increase in residential land consumption in Geelong particularly the ACUGA.
- **Sensitivity 1+2**: a combined impact from both of the above shocks adding them both together.

General Assumptions

The assessment adopts the following assumptions.

- The study area is **Greater Geelong LGA**, with a main focus on a number of **sub-regions** consistent with the definitions in the *Discussion Papers* (Spatial Economics, June 2017, refer to Annexure *A1_Maps*), including:
  - Bellarine Peninsula: Barwon Heads, Drysdale / Clifton Springs, Indented Head, Leopold, Ocean Grove, Point Lonsdale, Portarlington and St Leonards;
  - Geelong: ACUGA, Northern Growth Front (i.e. Lara), Northern FIA, Urban Geelong and Western FIA;
  - Balance of the LGA.
- The study period is **2016-36**, consistent with VIF's forecast period and aligning to the latest residential land supply data available.
- Residential land supply is based on information provided in the *Discussion Papers* (refer to *Section 3.3*), including zoned and unzoned residential land supply as at 2016.
- With a key focus on broad hectare residential land, the assessment adopts the *Discussion Papers*' assumption that **74%** of Greater Geelong's dwelling requirements are met from broad hectare or major infill residential supply sources, with the balance coming from dispersed infill and urban renewal sites.
- Historic residential land and house sales within each sub-region (refer to Annexure *A2_Data / Tables*) have been used to proximate possible future residential land consumption rates.
- Residential development in Northern and Western FIAs is assumed to commence **post 2025**.
- A large share of future dwelling requirements under both scenarios is assumed to be met by broad hectare development particularly in the ACUGA and Northern and Western FIAs, which means land consumption rates in the **ACUGA** and **Northern and Western FIAs** are the key variables in modelling future land supply / demand balance whilst land consumption remains on trend in the other sub-regions.

4.2_Supply / Demand Balance Outputs

Forecast Scenario 1 – VIF 2019

Under the VIF 2019 scenario, in order to accommodate the projected population growth of **2.1% p.a.** during the forecast period of 2016-36 within Greater Geelong, it is estimated that:

- Land consumption in ACUGA will need to remain around **700-800 lot p.a.** during the forecast period, which is largely consistent with recent historic levels;
- Land consumption in the Northern and Western FIAs will need to ramp up progressively from around **100 lot p.a. to 600 lot p.a.** after commencement in 2025 to the end of forecast period at 2036;
- Land consumption in the other sub-regions remains on historic trend.

At the estimated land consumption rates, it is projected that the current supply (both zoned and unzoned) in the ACUGA and Northern and Western FIAs may not be exhausted theoretically during the forecast period.

Supply / Demand Balance, Scenario 1 – VIF 2019, Greater Geelong Sub-regions, 2020-36

Sub-Regions	Residential Broad Hectare Supply			Est. Annual Consumption (lots)*	Years of Supply (from 2019)^		
	Zoned (lots)	Unzoned (lots)	**Total (lots)**		Zoned (years)	Unzoned (years)	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
ACUGA	18,211	1,450	**19,661**	700-800	17+	-	**17+**
Northern Growth Front	5,297	715	**6,012**	248	17+	-	**17+**
Northern FIA	12,000	4,000	**16,000**	100-600	17+	-	**17+**
Urban Geelong	4,671	411	**5,082**	164	17+	-	**17+**
Western FIA	0	18,000	**18,000**	100-600	0.0	17+	**17+**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**		**17+**	**17+**	**17+**

***Note:** * Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
^ Year of supply is calculated from 2019, i.e. year 0 = 2019 and year 1 = 2020, land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.
***Source:** Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

Forecast Scenario 2 – G21

Under the G21 scenario, in order to accommodate the target population growth of **2.5% p.a.** during the forecast period of 2016-36 within Greater Geelong, it is estimated that:

- Land consumption in ACUGA will need to achieve around **700 lot p.a.** to up to **1,500 lot p.a.** during the forecast period;
- Land consumption in the Northern and Western FIAs will need to ramp up rapidly from around **100 lot p.a. to 1,100 lot p.a.** after commencement in 2025 to the end of forecast period at 2036;
- Land consumption in the other sub-regions remains on historic trend.

At the estimated land consumption rates, it is projected that the current supply (both zoned and unzoned) in the ACUGA may be exhausted during the next **15 years** from now (or by 2034 from 2019) theoretically, and the current supply in the Northern and Western FIAs may not exhaust during the forecast period.

Given different market segments in each of Geelong's growth areas, it is indicated that there may be further requirements for additional residential land in Geelong's southern growth corridor during the next 15 years when existing residential land supply in the ACUGA is expected to be exhausted under this scenario.

Supply / Demand Balance, Scenario 2 – G21, Greater Geelong Sub-regions, 2020-36

Sub-Regions	Residential Broad Hectare Supply			Est. Annual Consumption (lots)*	Years of Supply (from 2019)^		
	Zoned (lots)	Unzoned (lots)	**Total (lots)**		Zoned (years)	Unzoned (years)	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
ACUGA	18,211	1,450	**19,661**	700-1,500	13.7	1.0	**14.7**
Northern Growth Front	5,297	715	**6,012**	248	17+	-	**17+**
Northern FIA	12,000	4,000	**16,000**	100-1,100	17+	-	**17+**
Urban Geelong	4,671	411	**5,082**	164	17+	-	**17+**
Western FIA	0	18,000	**18,000**	100-1,100	0.0	17+	**17+**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**		**17+**	**17+**	**17+**

***Note:** * Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
^ Year of supply is calculated from 2019, i.e. year 0 = 2019 and year 1 = 2020; land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.
***Source:** Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

4.3_Supply / Demand Balance Sensitivities

The sensitivity analysis tests possible impact on land supply / demand balance particularly within the ACUGA. The sensitivity analysis is undertaken under the G21 scenario.

Sensitivity 1 – Constraints in ACUGA

The *Armstrong Creek – Western Industrial Precinct Economic Analysis* prepared by Ethos Urban (October 2019) indicates around 260 ha of land identified for residential development (or approximately 4,500 dwellings and 20% of total dwellings in the ACUGA) is considered constrained due to lack of infrastructure, lack of access and because of ownership fragmentation. This is likely to represent a longer-term development proposition – at least 5 years as noted in the report.

Given the reported land constraints and timing uncertainty, this sensitivity analysis assumes 20% of the lots in the ACUGA may not be ready for development until **post 2036** hypothetically. This assumption will lead to a reduction in developable residential land supply by **20%** in the ACUGA during the forecast period of 2016-36.

At the estimated consumption rates under the G21 scenario, it is projected that the current developable supply (both zoned and unzoned) in the ACUGA may be exhausted during the next **12 years** (or by 2032) theoretically. With the land constraint assumed, the G21 population growth target may not be accommodated during the forecast period, indicating potential requirements for additional residential land during this period.

Sensitivity 2 – Demand Transfer from Spring Creek

Due to the planning protection against the Spring Creek PSP, ACUGA and other areas north of the inter-urban break will be the only logical alternative option for prospective buyers who are unable to get into Spring Creek or Surf Coast areas.

Assuming approximately half of the potential demand for Spring Creek PSP to transfer to the ACUGA during the next 5-10 years, this is equivalent to roughly **100-200 lots p.a.** on top of the estimated consumption rates under the G21 scenario.

With an increase in estimated land consumption assumed in the ACUGA, it is projected that the current supply (both zoned and unzoned) in the ACUGA may be exhausted during the next **13-14 years** (or by 2033) theoretically.

Sensitivity 1+2

Assuming both shocks, the sensitivity analysis indicates the current developable supply (both zoned and unzoned) in the ACUGA may be exhausted during the next **11 years** (or by 2031) theoretically.

The following table presents the outputs of the sensitivity analysis.

Supply / Demand Balance Sensitivities, Scenario 2 – G21, ACUGA, 2020-36

ACUGA	Residential Broad Hectare Supply			Est. Annual Consumption (lots)*	Years of Supply (from 2019)^		
	Zoned (lots)	Unzoned (lots)	**Total (lots)**		Zoned (years)	Unzoned (years)	**Total (years)**
Sensitivity 1	14,569	1,160	**15,729**	700-1,500	11.3	0.8	**12.1**
Sensitivity 2	18,211	1,450	**19,661**	800-1,700	12.4-13.0	1.0	**13.3-14.0**
Sensitivity 1+2	14,569	1,160	**15,729**	800-1,700	10.1-10.6	0.7-0.8	**10.8-11.4**

***Note:** * Estimated annual consumption is based on historic residential land and house sales within each sub-region; estimated annual consumption rates in ACUGA is and the Northern and Western FIAs are variables in achieving population growth targets under the scenario.*
***^** Year of supply is calculated from 2019, i.e. year 0 = 2019 and year 1 = 2020; land consumption during 2016-19 has been deducted from the supply (as at 2016) based on actual land / house sales.*
***Source:** Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017), RP Data, Macroplan (2019)*

5_Summary & Conclusions

The assessment and modelling indicates that in order to accommodate projected population growth of 2.1% p.a. under the VIF 2019 scenario, there appears to be sufficient broad hectare residential land supply (both zoned and unzoned) in the ACUGA and the Northern and Western FIAs to support this growth during the forecast period of 2016-36.

However, in order to accommodate the target population growth of 2.5% p.a. under the G21 scenario, land consumption in the ACUGA and the Northern and Western FIAs will need to achieve higher rates compared to historic average. At increased land consumption rates, the current supply (both zoned and unzoned) in the ACUGA may be exhausted during the next **15 years** from now theoretically.

Coupled with land constraints in the ACUGA that limits developable land supply in the short term and potential demand transfer from Spring Creek, current land supply (both zoned and unzoned) in the ACUGA may be exhausted as soon as the next **11 years** theoretically.

The Boral land should be the preferred growth corridor because:

- it can be developed as a transit oriented development
- of access to employment
- of access to key facilities (Deakin University, Waurn Ponds Activity Centre and the hospital)
- a direct access to freeways and roads with 11,500 vehicles passing the site per day
- it has an existing community of interest and access to recreational facilities and schools

The northern side warrants immediate rezoning in order to shape its rehabilitation innovatively in line with State Government policy. It will take 2-3 years to rehabilitate. The southern site can be programmed in line with demand.

I note that

- Pursuant to Clause 11.02.15 Supply of Urban Land, the plan is to accommodate projected population growth over at least 15 period
- This proposal does not detract from growth in the Northern and Western growth areas.

With residential land supply in ACUGA exhausting in the next **10 years**, this indicates there is likely further requirements for additional residential land in Geelong's southern growth corridor.

Annexure

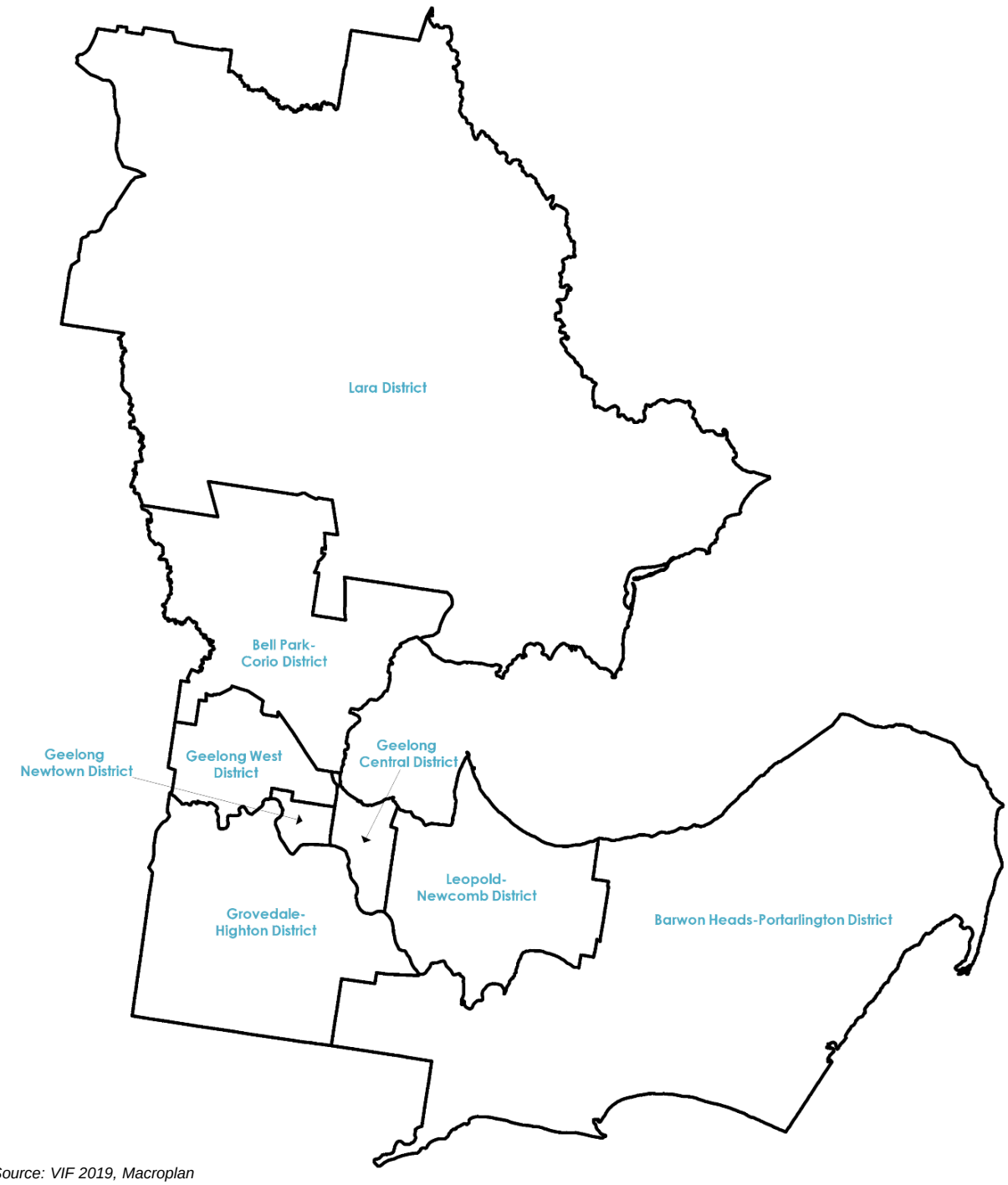
A1_Maps

A2_Data / Tables

A3_Residential Land Supply & Demand Balance Model

A1_Maps

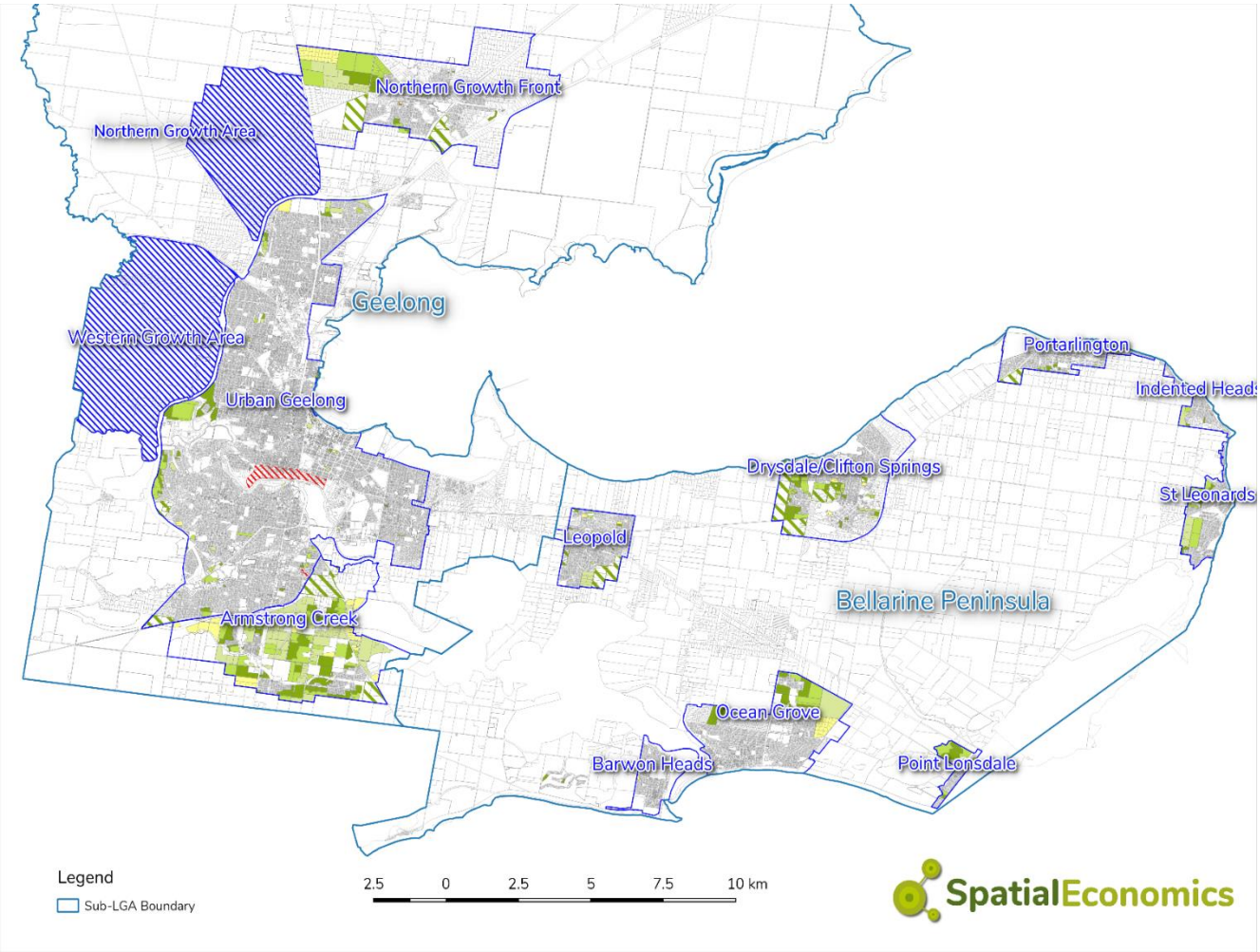
VIF Districts, Greater Geelong LGA



Source: VIF 2019, Macroplan

A1_Maps

Sub-regions & Townships, Greater Geelong LGA



Source: Geelong Settlement Strategy Growth Scenarios Discussion Papers, Spatial Economics (2017)

A2_Data / Tables

Residential Land Sales, 2011-19 (Year Ending June)

Res Land Sales	2011	2012	2013	2014	2015	2016	2017	2018	2019*
Bellarine Peninsula									
Barwon Heads	6	6	11	7	9	5	1	2	5
Drysdale/Clifton Springs	42	57	57	75	78	106	139	319	68
Indented Heads	16	14	12	22	17	21	31	13	6
Leopold	64	60	43	85	49	44	12	17	11
Ocean Grove	20	46	42	61	71	58	109	103	65
Point Lonsdale	4	5	7	18	22	31	42	63	27
Portarlington	20	13	18	18	18	35	59	82	16
St Leonards	12	10	18	8	21	26	67	210	55
Geelong									
Armstrong Creek Growth Area	69	91	91	171	214	225	416	732	165
Northern Growth Front	70	63	35	44	41	61	83	45	16
Northern FIA	4	1	1	1	1	0	26	29	20
Urban Geelong	102	134	99	113	103	97	139	280	126
Western FIA	8	8	3	3	40	51	82	26	20
Balance	14	18	18	24	15	19	25	40	15
Greater Geelong (C)	**451**	**526**	**455**	**650**	**699**	**779**	**1,231**	**1,961**	**615**

*Note: * Sales volume during 2019 is preliminary only*
Source: RP Data

A2_Data / Tables

House Sales, 2011-19 (Year Ending June)

Res Land Sales	2011	2012	2013	2014	2015	2016	2017	2018	2019*
Bellarine Peninsula									
Barwon Heads	56	62	59	70	85	118	109	100	76
Drysdale/Clifton Springs	182	205	220	237	292	419	494	570	309
Indented Heads	34	26	34	52	48	65	76	59	36
Leopold	224	181	201	205	238	248	268	282	247
Ocean Grove	193	207	248	307	351	381	512	473	364
Point Lonsdale	54	50	51	82	96	121	127	104	100
Portarlington	88	58	69	120	140	143	170	142	99
St Leonards	80	64	64	94	82	119	144	183	104
Geelong									
Armstrong Creek Growth Area	90	145	134	280	422	653	939	817	304
Northern Growth Front	201	161	177	197	222	350	358	351	282
Northern FIA	25	31	25	15	20	19	52	35	26
Western FIA	68	59	60	69	127	120	130	136	110
Greater Geelong (C)	**2,890**	**2,845**	**3,078**	**3,728**	**4,293**	**5,245**	**6,201**	**6,292**	**4,617**

*Note: * Sales volume during 2019 is preliminary only*
Source: RP Data

A3_Residential Land Supply & Demand Balance Model

A3_Residential Land Supply Demand Balance Model

Region / Subregion	SSC
Bellarine Peninsula	
Barwon Heads	Barwon Heads
Drysdale/Clifton Springs	Clifton Springs
	Curlewis
	Drysdale
Indented Heads	Indented Heads
Leopold	Leopold
Ocean Grove	Ocean Grove
Point Lonsdale	Point Lonsdale
Portarlington	Portarlington
St Leonards	St Leonards
Geelong	
Armstrong Creek Growth Area	Armstrong Creek
	Charlemont
	Marshall
	Mount Duneed
Northern Growth Front	Lara
Northern FIA	Lovely Banks
Urban Geelong	Bell Park
	Belmont
	Breakwater
	Corio
	Drumcondra
	East Geelong
	Geelong
	Geelong West
	Grovedale
	Hamlyn Heights
	Herne Hill
	Highton
	Manifold Heights
	Newcomb
	Newtown
	Norlane
	North Geelong
	North Shore
	Rippleside
	South Geelong
	St Albans Park
	Thomson
	Whittington
Western FIA	Batesford
	Bell Post Hill
	Fyansford
Balance	
Boral Waurn Ponds Land	
Greater Geelong (C)	

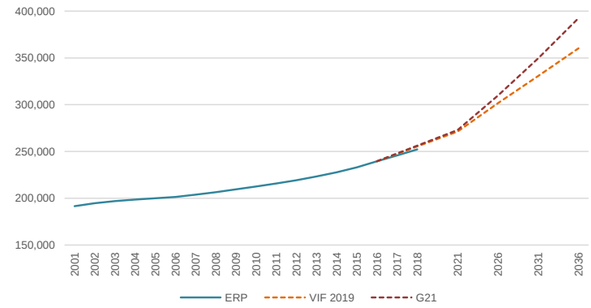
A3_Residential Land Supply Demand Balance Model

Source: ABS Stats — As at June 30th

ERP	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2021	2026	2031	2036
Greater Geelong (C)	191,534	194,713	196,973	198,541	199,996	201,495	203,802	206,479	209,429	212,585	215,837	219,152	223,357	227,744	232,926	239,529	245,728	252,217				
Growth		*1.7%*	*1.2%*	*0.8%*	*0.7%*	*0.7%*	*1.1%*	*1.3%*	*1.4%*	*1.5%*	*1.5%*	*1.5%*	*1.9%*	*2.0%*	*2.3%*	*2.8%*	*2.6%*	*2.6%*				
VIF 2019																239,529			271,254	301,563	330,720	360,245
G21																239,529			272,994	309,622	349,455	392,491

Source: ABS Census

Greater Geelong (C)	2001	2006	2011	2016	2001-16
Population	**184,331**	**197,477**	**210,873**	**233,429**	
Change		*13,146*	*13,396*	*22,556*	*49,098*
Change p.a.		*2,629*	*2,679*	*4,511*	*3,273*
AAGR		*1.4%*	*1.3%*	*2.1%*	*1.6%*
Persons in Occupied Private Dwellings	179,764	187,977	195,441	211,302	*31,538*
Share of Total Population	*97.5%*	*97.1%*	*94.1%*	*92.4%*	
Persons in Non-Private Dwellings	4,567	5,635	12,174	17,387	
Share of Total Population	*2.5%*	*2.9%*	*5.9%*	*7.6%*	
Households / Occupied Private Dwellings	**71,704**	**74,591**	**80,527**	**86,995**	
Change		*2,887*	*5,936*	*6,468*	*15,291*
Change p.a.		*577*	*1,187*	*1,294*	*1,019*
AAGR		*0.8%*	*1.5%*	*1.6%*	*1.3%*
Average Household Size	*2.51*	*2.52*	*2.43*	*2.43*	
Total Private Dwellings	**80,957**	**87,974**	**92,734**	**101,199**	
Change		*7,017*	*4,760*	*8,465*	*20,242*
Change p.a.		*1,403*	*952*	*1,693*	*1,349*
AAGR		*1.7%*	*1.1%*	*1.8%*	*1.5%*
Occupancy Rate	*88.6%*	*84.8%*	*86.8%*	*86.0%*	



Source: VIF 2019

Greater Geelong (C)	2016	2021	2026	2031	2036	2016-36
Population	**239,529**	**271,254**	**301,563**	**330,720**	**360,245**	
Change		*31,725*	*30,309*	*29,157*	*29,525*	*120,716*
Change p.a.		*6,345*	*6,062*	*5,831*	*5,905*	*6,036*
AAGR		*2.5%*	*2.1%*	*1.9%*	*1.7%*	*2.1%*
Persons in Occupied Private Dwellings	234,010	264,940	294,502	322,789	351,429	*86,489*
Share of Total Population	*97.7%*	*97.7%*	*97.7%*	*97.6%*	*97.6%*	
Persons in Non-Private Dwellings	5,524	6,314	7,062	7,931	8,816	
Share of Total Population	*2.3%*	*2.3%*	*2.3%*	*2.4%*	*2.4%*	
Households / Occupied Private Dwellings	**97,663**	**110,938**	**123,945**	**136,930**	**150,766**	
Change		*13,275*	*13,007*	*12,986*	*13,836*	*53,103*
Change p.a.		*2,655*	*2,601*	*2,597*	*2,767*	*2,655*
AAGR		*2.6%*	*2.2%*	*2.0%*	*1.9%*	*2.2%*
Average Household Size	*2.40*	*2.39*	*2.38*	*2.36*	*2.33*	
Total Private Dwellings	**106,478**	**121,161**	**135,538**	**149,876**	**165,021**	
Change		*14,683*	*14,377*	*14,338*	*15,145*	*58,543*
Change p.a.		*2,937*	*2,875*	*2,868*	*3,029*	*2,927*
AAGR		*2.6%*	*2.3%*	*2.0%*	*1.9%*	*2.2%*
Occupancy Rate	*91.7%*	*91.6%*	*91.4%*	*91.4%*	*91.4%*	

Source: G21, Spatial Economics

Greater Geelong (C)	2016	2021	2026	2031	2036	2016-36	
Population	**239,529**	**272,994**	**309,622**	**349,455**	**392,491**		
Change		*33,465*	*36,628*	*39,833*	*43,037*	*152,962*	
Change p.a.		*6,693*	*7,326*	*7,967*	*8,607*	*7,648*	
AAGR		*2.65%*	*2.55%*	*2.45%*	*2.35%*	*2.50%*	*Source: Spatial Economics*
Persons in Occupied Private Dwellings	234,010	266,639	302,371	341,075	382,886	*116,247*	
Share of Total Population	97.7%	97.7%	97.7%	97.6%	97.6%		*Source: VIF 2019*
Persons in Non-Private Dwellings	5,524	6,355	7,250	8,380	9,605		
Share of Total Population	2.3%	2.3%	2.3%	2.4%	2.4%		*Source: VIF 2019*
Households / Occupied Private Dwellings	**97,663**	**111,649**	**127,257**	**144,687**	**164,261**		
Change		*13,986*	*15,607*	*17,431*	*19,574*	*66,599*	
Change p.a.		*2,797*	*3,121*	*3,486*	*3,915*	*3,330*	
AAGR		*2.7%*	*2.7%*	*2.6%*	*2.6%*	*2.6%*	
Average Household Size	*2.40*	*2.39*	*2.38*	*2.36*	*2.33*		*Source: VIF 2019*
Total Private Dwellings	**106,478**	**121,938**	**139,160**	**158,366**	**179,793**		
Change		*15,460*	*17,222*	*19,206*	*21,427*	*73,314*	
Change p.a.		*3,092*	*3,444*	*3,841*	*4,285*	*3,666*	
AAGR		*2.7%*	*2.7%*	*2.6%*	*2.6%*	*2.7%*	
Occupancy Rate	*91.7%*	*91.6%*	*91.4%*	*91.4%*	*91.4%*		*Source: VIF 2019*

A3_Residential Land Supply Demand Balance Model

Source: Spatial Economics

Residential Lot Potential Supply 2016	Zoned: Zoned Broad-hectare	Zoned: Zoned Major Infill	Zoned: Zoned Major Redevelopment	Total Zoned	Unzoned	Total
	Lots	Lots	Dwellings	Lots	Lots	Lots
Bellarine Peninsula	**8,937**	**39**	**0**	**8,976**	**3,481**	**12,457**
Barwon Heads	28			28		**28**
Drysdale/Clifton Springs	2,086	10		2,096	2,300	**4,396**
Indented Heads	186			186		**186**
Leopold	504	21		525	931	**1,456**
Ocean Grove	3,520	8		3,528		**3,528**
Point Lonsdale	814			814		**814**
Portarlington	252			252	250	**502**
St Leonards	1,547			1,547		**1,547**
Geelong	**39,394**	**785**	**5,543**	**45,722**	**24,576**	**70,298**
Armstrong Creek Growth Area	18,211			18,211	1,450	**19,661**
Northern Growth Front	5,297			5,297	715	**6,012**
Northern FIA	12,000			12,000	4,000	**16,000**
Urban Geelong	3,886	785	5,543	10,214	411	**10,625**
Western FIA				0	18,000	**18,000**
Balance	**35**			**35**		**35**
Boral Waurn Ponds Land						
Greater Geelong (C)	**48,366**	**824**	**5,543**	**54,733**	**28,057**	**82,790**

Zoned Broad-hectare / Major Infill	0-2 years	3-5 years	6-10 years	11+ years	No Timing	Total
Bellarine Peninsula	**2,782**	**3,139**	**2,218**	**837**	**0**	**8,976**
Barwon Heads				28		**28**
Drysdale/Clifton Springs	861	955	122	158		**2,096**
Indented Heads	51	70	65			**186**
Leopold	54	70	320	81		**525**
Ocean Grove	944	794	1,220	570		**3,528**
Point Lonsdale	426	388				**814**
Portarlington	132	90	30			**252**
St Leonards	314	772	461			**1,547**
Geelong	**6,865**	**8,223**	**9,295**	**3,716**	**12,080**	**40,179**
Armstrong Creek Growth Area	4,407	3,972	7,174	2,658		**18,211**
Northern Growth Front	996	2,219	1,312	750	20	**5,297**
Northern FIA					12,000	**12,000**
Urban Geelong	1,462	2,032	809	308	60	**4,671**
Western FIA						**0**
Balance	**35**					**35**
Boral Waurn Ponds Land						
Greater Geelong (C)	**9,682**	**11,362**	**11,513**	**4,553**	**12,080**	**49,190**

Lot Construction	Zoned Broad-hectare	Major Infill	Dispersed Infill	Total
	Lot p.a.	Lot p.a.	Lot p.a.	Lot p.a.
Bellarine Peninsula				
Barwon Heads				
Drysdale/Clifton Springs	210			243
Indented Heads				
Leopold	124			162
Ocean Grove	115		45	167
Point Lonsdale				
Portarlington				
St Leonards				
Geelong				
Armstrong Creek Growth Area	548			548
Northern Growth Front	87			114
Northern FIA				
Urban Geelong	226	142		757
Western FIA				
Balance				
Boral Waurn Ponds Land				
Greater Geelong (C)	**1,460**	**176**	**564**	**2,200**
	66.4%	8.0%	25.6%	

	Developable
Shock 1	100%

A3_Residential Land Supply Demand Balance Model

Source: RP Data As at June 30th

Res Land Sales	2011	2012	2013	2014	2015	2016	2017	2018	2019	Min	Avg	Max
Bellarine Peninsula												
Barwon Heads	6	6	11	7	9	5	1	2	5	1	6	11
Drysdale/Clifton Springs	42	57	57	75	78	106	139	319	68	42	105	319
Indented Heads	16	14	12	22	17	21	31	13	6	6	17	31
Leopold	64	60	43	85	49	44	12	17	11	11	43	85
Ocean Grove	20	46	42	61	71	58	109	103	65	20	64	109
Point Lonsdale	4	5	7	18	22	31	42	63	27	4	24	63
Portarlington	20	13	18	18	18	35	59	82	16	13	31	82
St Leonards	12	10	18	8	21	26	67	210	55	8	47	210
Geelong												
Armstrong Creek Growth Area	69	91	91	171	214	225	416	732	165	69	242	732
Northern Growth Front	70	63	35	44	41	61	83	45	16	16	51	83
Northern FIA	4	1	1	1	1	0	26	29	20			
Urban Geelong	102	134	99	113	103	97	139	280	126	97	133	280
Western FIA	8	8	3	3	40	51	82	26	20	3	27	82
Balance	*14*	*18*	*18*	*24*	*15*	*19*	*25*	*40*	*15*	*14*	*21*	*40*
Boral Waurn Ponds Land												
Greater Geelong (C)	**451**	**526**	**455**	**650**	**699**	**779**	**1,231**	**1,961**	**615**	**451**	**819**	**1,961**

House Sales	2011	2012	2013	2014	2015	2016	2017	2018	2019				74%
Bellarine Peninsula													
Barwon Heads	56	62	59	70	85	118	109	100	76	56	82	118	61
Drysdale/Clifton Springs	182	205	220	237	292	419	494	570	309	182	325	570	241
Indented Heads	34	26	34	52	48	65	76	59	36	26	48	76	36
Leopold	224	181	201	205	238	248	268	282	247	181	233	282	172
Ocean Grove	193	207	248	307	351	381	512	473	364	193	337	512	249
Point Lonsdale	54	50	51	82	96	121	127	104	100	50	87	127	64
Portarlington	88	58	69	120	140	143	170	142	99	58	114	170	84
St Leonards	80	64	64	94	82	119	144	183	104	64	104	183	77
Geelong													
Armstrong Creek Growth Area	90	145	134	280	422	653	939	817	304	90	420	939	311
Northern Growth Front	201	161	177	197	222	350	358	351	282	161	255	358	189
Northern FIA	25	31	25	15	20	19	52	35	26				
Urban Geelong													
Western FIA	68	59	60	69	127	120	130	136	110	59	98	136	73
Balance													
Boral Waurn Ponds Land													
Greater Geelong (C)	**2,890**	**2,845**	**3,078**	**3,728**	**4,293**	**5,245**	**6,201**	**6,292**	**4,617**	**2,845**	**4,354**	**6,292**	3,222

Consumption	Type	Proxy	Est. Consumption As at June 30th				
			2016	2017	2018	2019	2020
Bellarine Peninsula							
Barwon Heads	Established	Land Sales	5	1	2	5	3
Drysdale/Clifton Springs	Combination	74% House S	310	366	422	229	332
Indented Heads	Established	Land Sales	21	31	13	6	18
Leopold	Combination	74% House S	184	198	209	183	194
Ocean Grove	Combination	74% House S	282	379	350	269	320
Point Lonsdale	Combination	74% House S	90	94	77	74	84
Portarlington	Established	Land Sales	35	59	82	16	48
St Leonards	Combination	74% House S	88	107	135	77	102
Geelong							
Armstrong Creek Growth Area	Greenfield	House Sales	653	939	817	304	678
Northern Growth Front	Combination	74% House S	259	265	260	209	248
Northern FIA	Greenfield	House Sales	19	52	35	26	33
Urban Geelong	Established	Land Sales	97	139	280	126	161
Western FIA	* Established	*Land Sales	51	82	26	20	45
Balance	Established	Land Sales	19	25	40	15	25
Boral Waurn Ponds Land							
Greater Geelong (C)							

Demand Transfer	
Shock 2	100 Lots

** Currently there are established areas in Batesford*

A3_Residential Land Supply Demand Balance Model

Source: VIF 2019, Spatial Economics, RP Data, MacroPlan

				As at June 30th																			
	Scenario 1 - VIF 2019			**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
1	**Broad-hectare / Major Infill Consumption**	**Total**	*Avg p.a.*																				
	Bellarine Peninsula																						
	Barwon Heads	59	*3*	5	1	2	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Drysdale/Clifton Springs	6,661	*333*	310	366	422	229	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332
	Indented Heads	356	*18*	21	31	13	6	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	Leopold	3,888	*194*	184	198	209	183	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194
	Ocean Grove	6,438	*322*	282	379	350	269	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
	Point Lonsdale	1,673	*84*	90	94	77	74	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
	Portarlington	973	*49*	35	59	82	16	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	St Leonards	2,053	*103*	88	107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102
	Geelong																						
	Armstrong Creek Growth Area	14,688	*734*	653	939	817	304	678	700	750	750	800	800	800	800	800	800	750	700	700	700	700	700
	Northern Growth Front	4,950	*248*	259	265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	3,963	*198*	19	52	35	26	0	0	0	0	0	0	100	150	200	250	300	350	400	450	500	550	600
	Urban Geelong	3,282	*164*	97	139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	3,978	*199*	51	82	26	20	0	0	0	0	0	0	100	150	200	250	300	350	400	450	500	550	600
	Balance	505	*25*	19	25	40	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Boral Waurn Ponds Land																						
	Greater Geelong (C)	**53,467**	***2,673***	**2,113**	**2,737**	**2,748**	**1,559**	**2,213**	**2,235**	**2,285**	**2,285**	**2,335**	**2,335**	**2,535**	**2,635**	**2,735**	**2,835**	**2,885**	**2,935**	**3,035**	**3,135**	**3,235**	**3,335**	**3,435**
2	**Broad-hectare / Major Infill Land Exhaustion**	**Total**	*Years*																				
2.1	**Zoned**																						
	Bellarine Peninsula																						
	Barwon Heads	28	*10*		1	2	5	3	3	3	3	3	3	2	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	2,096	*7*		366	422	229	332	332	332	83	0	0	0	0	0	0	0	0	0	0	0	0
	Indented Heads	186	*11*		31	13	6	18	18	18	18	18	18	18	10	0	0	0	0	0	0	0	0
	Leopold	525	*3*		198	209	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	3,528	*11*		379	350	269	320	320	320	320	320	320	320	290	0	0	0	0	0	0	0	0
	Point Lonsdale	814	*10*		94	77	74	84	84	84	84	84	84	65	0	0	0	0	0	0	0	0	0
	Portarlington	252	*5*		59	82	16	48	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	St Leonards	1,547	*16*		107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	4	0	0	0
	Geelong																						
	Armstrong Creek Growth Area	14,688	*20*		939	817	304	678	700	750	750	800	800	800	800	800	800	750	700	700	700	700	700
	Northern Growth Front	4,950	*20*		265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	3,963	*14*		52	35	26	0	0	0	0	0	0	100	150	200	250	300	350	400	450	500	550	600
	Urban Geelong	3,282	*20*		139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance	35	*2*		25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																						
	Greater Geelong (C)	**35,894**	***20***	**0**	**2,655**	**2,692**	**1,459**	**1,994**	**2,015**	**2,018**	**1,769**	**1,736**	**1,736**	**1,816**	**1,761**	**1,511**	**1,561**	**1,561**	**1,561**	**1,513**	**1,559**	**1,609**	**1,659**	**1,709**
2.2	**Unzoned**																						
	Bellarine Peninsula																						
	Barwon Heads	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	2,300	*8*		0	0	0	0	0	0	249	332	332	332	332	332	332	59	0	0	0	0	0
	Indented Heads	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Leopold	931	*6*		0	0	65	194	194	194	194	90	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Point Lonsdale	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Portarlington	250	*7*		0	0	0	0	1	48	48	48	48	48	9	0	0	0	0	0	0	0	0
	St Leonards	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Geelong																						
	Armstrong Creek Growth Area	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Northern Growth Front	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Northern FIA	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Urban Geelong	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Western FIA	3,978	*14*		82	26	20	0	0	0	0	0	0	100	150	200	250	300	350	400	450	500	550	600
	Balance	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																						
	Greater Geelong (C)	**7,459**	***20***	**0**	**82**	**26**	**85**	**194**	**195**	**242**	**491**	**470**	**380**	**480**	**491**	**532**	**582**	**359**	**350**	**400**	**450**	**500**	**550**	**600**

A3_Residential Land Supply Demand Balance Model

Source: VIF 2019, Spatial Economics, RP Data, MacroPlan

				As at June 30th																			
	Scenario 1 - VIF 2019			**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
2.3	**Total Broad-hectare / Major Infill**																							
	Bellarine Peninsula																							
	Barwon Heads	28	*10*		1	2	5	3	3	3	3	3	3	2	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	4,396	*14*		366	422	229	332	332	332	332	332	332	332	332	332	332	59	0	0	0	0	0	0
	Indented Heads	186	*11*		31	13	6	18	18	18	18	18	18	18	10	0	0	0	0	0	0	0	0	0
	Leopold	1,456	*8*		198	209	183	194	194	194	194	90	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	3,528	*11*		379	350	269	320	320	320	320	320	320	320	290	0	0	0	0	0	0	0	0	0
	Point Lonsdale	814	*10*		94	77	74	84	84	84	84	84	84	65	0	0	0	0	0	0	0	0	0	0
	Portarlington	502	*11*		59	82	16	48	48	48	48	48	48	48	9	0	0	0	0	0	0	0	0	0
	St Leonards	1,547	*16*		107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	4	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	14,688	*20*		939	817	304	678	700	750	750	800	800	800	800	800	800	750	700	700	700	700	700	700
	Northern Growth Front	4,950	*20*		265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	3,963	*14*		52	35	26	0	0	0	0	0	0	100	150	200	250	300	350	400	450	500	550	600
	Urban Geelong	3,282	*20*		139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	3,978	*14*		82	26	20	0	0	0	0	0	0	100	150	200	250	300	350	400	450	500	550	600
	Balance	35	*2*		25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**43,353**	***20***	**0**	**2,737**	**2,718**	**1,544**	**2,188**	**2,210**	**2,260**	**2,260**	**2,206**	**2,116**	**2,296**	**2,252**	**2,043**	**2,143**	**1,920**	**1,911**	**1,913**	**2,009**	**2,109**	**2,209**	**2,309**
3	**Greater Geelong (C)**	**Total**	*Avg p.a.*																					
	Broad-hectare / Major Infill Supply	**43,353**	***2,168***		2,737	2,718	1,544	2,188	2,210	2,260	2,260	2,206	2,116	2,296	2,252	2,043	2,143	1,920	1,911	1,913	2,009	2,109	2,209	2,309
	Res Lot / Dwelling Supply	**58,585**	***2,929***		3,699	3,673	2,086	2,957	2,986	3,054	3,054	2,981	2,859	3,103	3,043	2,761	2,896	2,595	2,582	2,585	2,715	2,850	2,985	3,120
	Total Private Dwellings			**106,478**	**110,177**	**113,850**	**115,936**	**118,893**	**121,879**	**124,934**	**127,988**	**130,969**	**133,828**	**136,931**	**139,974**	**142,735**	**145,631**	**148,225**	**150,808**	**153,393**	**156,108**	**158,958**	**161,943**	**165,063**
	Occupancy Rate			91.7%					91.6%					91.4%					91.4%					91.4%
	Total Households			97,663					111,596					125,218					137,782					150,805
	Average Household Size			2.40					2.39					2.38					2.36					2.33
	Total Persons in Occupied Private Dwellings			234,010					266,511					297,528					324,797					351,519
	Persons in Occupied Private Dwellings			97.7%					97.7%					97.7%					97.6%					97.6%
	Total Population Accommocated	**120,808**	***6,040***	**239,529**					**272,863**					**304,662**					**332,777**					**360,337**

4 Summary

Sub-Regions	**Residential Broad Hectare Supply**			**Est. Annual**	**Years of Supply**		
	Zoned (lots)	Unzoned (lots	**Total (lots)**	**Consumpti**	Zoned (years)	Unzoned (yea	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
Armstrong Creek Growth Area	18,211	1,450	**19,661**	700-800	21.8	2.0	**23.8**
Northern Growth Front	5,297	715	**6,012**	248	18.4	2.9	**21.3**
Northern FIA	12,000	4,000	**16,000**	100-600	57.6	20.2	**77.7**
Urban Geelong	4,671	411	**5,082**	164	25.5	2.5	**28.0**
Western FIA	0	18,000	**18,000**	100-600	0.0	90.5	**90.5**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**				

A3_Residential Land Supply Demand Balance Model

Source: VIF 2019, Spatial Economics, RP Data, MacroPlan

As at June 30th

	Scenario 2 - G21			2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
1	**Broad-hectare / Major Infill Consumption**	**Total**	*Avg p.a.*																					
	Bellarine Peninsula																							
	Barwon Heads	59	*3*	5	1	2	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Drysdale/Clifton Springs	6,661	*333*	310	366	422	229	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332
	Indented Heads	356	*18*	21	31	13	6	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	Leopold	3,888	*194*	184	198	209	183	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194
	Ocean Grove	6,438	*322*	282	379	350	269	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
	Point Lonsdale	1,673	*84*	90	94	77	74	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
	Portarlington	973	*49*	35	59	82	16	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	St Leonards	2,053	*103*	88	107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102
	Geelong																							
	Armstrong Creek Growth Area	23,138	*1,157*	653	939	817	304	678	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
	Northern Growth Front	4,950	*248*	259	265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	6,913	*346*	19	52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Urban Geelong	3,282	*164*	97	139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	6,928	*346*	51	82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Balance	505	*25*	19	25	40	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**67,817**	***3,391***	**2,113**	**2,737**	**2,748**	**1,559**	**2,213**	**2,235**	**2,335**	**2,435**	**2,535**	**2,635**	**2,935**	**3,235**	**3,535**	**3,835**	**4,035**	**4,235**	**4,535**	**4,735**	**4,935**	**5,135**	**5,235**
2	**Broad-hectare / Major Infill Land Exhaustion**	**Total**	*Years*																					
2.1	**Zoned**																							
	Bellarine Peninsula																							
	Barwon Heads	28	*10*		1	2	5	3	3	3	3	3	3	2	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	2,096	*7*		366	422	229	332	332	332	83	0	0	0	0	0	0	0	0	0	0	0	0	0
	Indented Heads	186	*11*		31	13	6	18	18	18	18	18	18	18	10	0	0	0	0	0	0	0	0	0
	Leopold	525	*3*		198	209	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	3,528	*11*		379	350	269	320	320	320	320	320	320	320	290	0	0	0	0	0	0	0	0	0
	Point Lonsdale	814	*10*		94	77	74	84	84	84	84	84	84	65	0	0	0	0	0	0	0	0	0	0
	Portarlington	252	*5*		59	82	16	48	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	St Leonards	1,547	*16*		107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	4	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	18,211	*17*		939	817	304	678	700	800	900	1000	1100	1200	1300	1400	1500	1500	1500	1500	1073	0	0	0
	Northern Growth Front	4,950	*20*		265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	6,913	*14*		52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1050	1100
	Urban Geelong	3,282	*20*		139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance	35	*2*		25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**42,367**	***20***	**0**	**2,655**	**2,692**	**1,459**	**1,994**	**2,015**	**2,068**	**1,919**	**1,936**	**2,036**	**2,216**	**2,311**	**2,211**	**2,411**	**2,511**	**2,611**	**2,663**	**2,332**	**1,359**	**1,459**	**1,509**
2.2	**Unzoned**																							
	Bellarine Peninsula																							
	Barwon Heads	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	2,300	*8*		0	0	0	0	0	0	249	332	332	332	332	332	332	59	0	0	0	0	0	0
	Indented Heads	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Leopold	931	*6*		0	0	65	194	194	194	194	90	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Point Lonsdale	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Portarlington	250	*7*		0	0	0	0	1	48	48	48	48	48	9	0	0	0	0	0	0	0	0	0
	St Leonards	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	1,450	*2*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	427	1,023	0	0
	Northern Growth Front	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Northern FIA	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Urban Geelong	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Western FIA	6,928	*14*		82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Balance	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**11,859**	***20***	**0**	**82**	**26**	**85**	**194**	**195**	**242**	**491**	**470**	**380**	**480**	**541**	**632**	**732**	**559**	**600**	**750**	**1,277**	**1,973**	**1,050**	**1,100**

A3_Residential Land Supply Demand Balance Model

Source: VIF 2019, Spatial Economics, RP Data, MacroPlan

As at June 30th

	Scenario 2 - G21			**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
2.3	**Total Broad-hectare / Major Infill**																							
	Bellarine Peninsula																							
	Barwon Heads	28	*10*		1	2	5	3	3	3	3	3	3	2	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	4,396	*14*		366	422	229	332	332	332	332	332	332	332	332	332	332	59	0	0	0	0	0	0
	Indented Heads	186	*11*		31	13	6	18	18	18	18	18	18	18	10	0	0	0	0	0	0	0	0	0
	Leopold	1,456	*8*		198	209	183	194	194	194	194	90	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	3,528	*11*		379	350	269	320	320	320	320	320	320	320	290	0	0	0	0	0	0	0	0	0
	Point Lonsdale	814	*10*		94	77	74	84	84	84	84	84	84	65	0	0	0	0	0	0	0	0	0	0
	Portarlington	502	*11*		59	82	16	48	48	48	48	48	48	48	9	0	0	0	0	0	0	0	0	0
	St Leonards	1,547	*16*		107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	4	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	19,661	*18*		939	817	304	678	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,500	1,500	1,500	1,500	1,023	0	0
	Northern Growth Front	4,950	*20*		265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	6,913	*14*		52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Urban Geelong	3,282	*20*		139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	6,928	*14*		82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Balance	35	*2*		25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**54,226**	***20***	**0**	**2,737**	**2,718**	**1,544**	**2,188**	**2,210**	**2,310**	**2,410**	**2,406**	**2,416**	**2,696**	**2,852**	**2,843**	**3,143**	**3,070**	**3,211**	**3,413**	**3,609**	**3,332**	**2,509**	**2,609**
3	**Greater Geelong (C)**	**Total**	*Avg p.a.*																					
	Broad-hectare / Major Infill Supply	**54,226**	***2,711***		2,737	2,718	1,544	2,188	2,210	2,310	2,410	2,406	2,416	2,696	2,852	2,843	3,143	3,070	3,211	3,413	3,609	3,332	2,509	2,609
	Res Lot / Dwelling Supply	**73,278**	***3,664***		3,699	3,673	2,086	2,957	2,986	3,122	3,257	3,251	3,265	3,643	3,854	3,842	4,247	4,149	4,339	4,612	4,877	4,503	3,391	3,526
	Total Private Dwellings			**106,478**	**110,177**	**113,850**	**115,936**	**118,893**	**121,879**	**125,001**	**128,258**	**131,509**	**134,774**	**138,417**	**142,271**	**146,113**	**150,361**	**154,509**	**158,848**	**163,461**	**168,338**	**172,840**	**176,231**	**179,757**
	Occupancy Rate			91.7%					91.6%					91.4%					91.4%					91.4%
	Total Households			97,663					111,596					126,577					145,128					164,229
	Average Household Size			2.40					2.39					2.38					2.36					2.33
	Total Persons in Occupied Private Dwellings			234,010					266,511					300,758					342,114					382,810
	Persons in Occupied Private Dwellings			97.7%					97.7%					97.7%					97.6%					97.6%
	Total Population Accommocated	**152,884**	***7,644***	**239,529**					**272,863**					**307,969**					**350,520**					**392,413**

4 Summary

Sub-Regions	**Residential Broad Hectare Supply**			**Est. Annual**	**Years of Supply**		
	Zoned (lots)	Unzoned (lots	**Total (lots)**	**Consumpti**	Zoned (years)	Unzoned (yea	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
Armstrong Creek Growth Area	18,211	1,450	**19,661**	700-1500	13.7	1.0	**14.7**
Northern Growth Front	5,297	715	**6,012**	248	18.4	2.9	**21.3**
Northern FIA	12,000	4,000	**16,000**	100-1100	31.7	11.6	**43.3**
Urban Geelong	4,671	411	**5,082**	164	25.5	2.5	**28.0**
Western FIA	0	18,000	**18,000**	100-1100	0.0	52.0	**52.0**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**				

A3_Residential Land Supply Demand Balance Model

Source: VIF 2019, Spatial Economics, RP Data, MacroPlan

As at June 30th

	Scenario 2 - G21 Sensitivity	Total	Avg p.a.	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
1	**Broad-hectare / Major Infill Consumption**	**Total**	*Avg p.a.*																					
	Bellarine Peninsula																							
	Barwon Heads	59	*3*	5	1	2	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Drysdale/Clifton Springs	6,661	*333*	310	366	422	229	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332
	Indented Heads	356	*18*	21	31	13	6	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
	Leopold	3,888	*194*	184	198	209	183	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194	194
	Ocean Grove	6,438	*322*	282	379	350	269	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
	Point Lonsdale	1,673	*84*	90	94	77	74	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84
	Portarlington	973	*49*	35	59	82	16	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
	St Leonards	2,053	*103*	88	107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102
	Geelong																							
	Armstrong Creek Growth Area	24,138	*1,207*	653	939	817	304	678	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,600	1,500	1,500	1,500	1,500	1,500	1,500
	Northern Growth Front	4,950	*248*	259	265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	6,913	*346*	19	52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Urban Geelong	3,282	*164*	97	139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	6,928	*346*	51	82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Balance	505	*25*	19	25	40	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**68,817**	***3,441***	**2,113**	**2,737**	**2,748**	**1,559**	**2,213**	**2,335**	**2,435**	**2,535**	**2,635**	**2,735**	**3,035**	**3,335**	**3,635**	**3,935**	**4,135**	**4,235**	**4,535**	**4,735**	**4,935**	**5,135**	**5,235**
2	**Broad-hectare / Major Infill Land Exhaustion**	**Total**	*Years*																					
2.1	**Zoned**																							
	Bellarine Peninsula																							
	Barwon Heads	28	*10*		1	2	5	3	3	3	3	3	3	2	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	2,096	*7*		366	422	229	332	332	332	83	0	0	0	0	0	0	0	0	0	0	0	0	0
	Indented Heads	186	*11*		31	13	6	18	18	18	18	18	18	18	10	0	0	0	0	0	0	0	0	0
	Leopold	525	*3*		198	209	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	3,528	*11*		379	350	269	320	320	320	320	320	320	320	290	0	0	0	0	0	0	0	0	0
	Point Lonsdale	814	*10*		94	77	74	84	84	84	84	84	84	65	0	0	0	0	0	0	0	0	0	0
	Portarlington	252	*5*		59	82	16	48	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	St Leonards	1,547	*16*		107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	4	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	18,211	*17*		939	817	304	678	800	900	1000	1100	1200	1300	1400	1500	1600	1600	1500	1500	73	0	0	0
	Northern Growth Front	4,950	*20*		265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	6,913	*14*		52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1050	1100
	Urban Geelong	3,282	*20*		139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance	35	*2*		25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**42,367**	***20***	**0**	**2,655**	**2,692**	**1,459**	**1,994**	**2,115**	**2,168**	**2,019**	**2,036**	**2,136**	**2,316**	**2,411**	**2,311**	**2,511**	**2,611**	**2,611**	**2,663**	**1,332**	**1,359**	**1,459**	**1,509**
2.2	**Unzoned**																							
	Bellarine Peninsula																							
	Barwon Heads	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	2,300	*8*		0	0	0	0	0	0	249	332	332	332	332	332	332	59	0	0	0	0	0	0
	Indented Heads	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Leopold	931	*6*		0	0	65	194	194	194	194	90	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Point Lonsdale	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Portarlington	250	*7*		0	0	0	0	1	48	48	48	48	48	9	0	0	0	0	0	0	0	0	0
	St Leonards	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	1,450	*2*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,427	23	0	0
	Northern Growth Front	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Northern FIA	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Urban Geelong	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Western FIA	6,928	*14*		82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Balance	0	*0*		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**11,859**	***20***	**0**	**82**	**26**	**85**	**194**	**195**	**242**	**491**	**470**	**380**	**480**	**541**	**632**	**732**	**559**	**600**	**750**	**2,277**	**973**	**1,050**	**1,100**

A3_Residential Land Supply Demand Balance Model

Source: VIF 2019, Spatial Economics, RP Data, MacroPlan

				As at June 30th																			
	Scenario 2 - G21 Sensitivity			**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
2.3	**Total Broad-hectare / Major Infill**																							
	Bellarine Peninsula																							
	Barwon Heads	28	*10*		1	2	5	3	3	3	3	3	3	2	0	0	0	0	0	0	0	0	0	0
	Drysdale/Clifton Springs	4,396	*14*		366	422	229	332	332	332	332	332	332	332	332	332	332	59	0	0	0	0	0	0
	Indented Heads	186	*11*		31	13	6	18	18	18	18	18	18	18	10	0	0	0	0	0	0	0	0	0
	Leopold	1,456	*8*		198	209	183	194	194	194	194	90	0	0	0	0	0	0	0	0	0	0	0	0
	Ocean Grove	3,528	*11*		379	350	269	320	320	320	320	320	320	320	290	0	0	0	0	0	0	0	0	0
	Point Lonsdale	814	*10*		94	77	74	84	84	84	84	84	84	65	0	0	0	0	0	0	0	0	0	0
	Portarlington	502	*11*		59	82	16	48	48	48	48	48	48	48	9	0	0	0	0	0	0	0	0	0
	St Leonards	1,547	*16*		107	135	77	102	102	102	102	102	102	102	102	102	102	102	102	4	0	0	0	0
	Geelong																							
	Armstrong Creek Growth Area	19,661	*18*		939	817	304	678	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,600	1,500	1,500	1,500	23	0	0
	Northern Growth Front	4,950	*20*		265	260	209	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248	248
	Northern FIA	6,913	*14*		52	35	26	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Urban Geelong	3,282	*20*		139	280	126	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
	Western FIA	6,928	*14*		82	26	20	0	0	0	0	0	0	100	200	300	400	500	600	750	850	950	1,050	1,100
	Balance	35	*2*		25	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Boral Waurn Ponds Land																							
	Greater Geelong (C)	**54,226**	***20***	**0**	**2,737**	**2,718**	**1,544**	**2,188**	**2,310**	**2,410**	**2,510**	**2,506**	**2,516**	**2,796**	**2,952**	**2,943**	**3,243**	**3,170**	**3,211**	**3,413**	**3,609**	**2,332**	**2,509**	**2,609**
3	**Greater Geelong (C)**	**Total**	*Avg p.a.*																					
	Broad-hectare / Major Infill Supply	**54,226**	***2,711***		2,737	2,718	1,544	2,188	2,310	2,410	2,510	2,506	2,516	2,796	2,952	2,943	3,243	3,170	3,211	3,413	3,609	2,332	2,509	2,609
	Res Lot / Dwelling Supply	**73,278**	***3,664***		3,699	3,673	2,086	2,957	3,122	3,257	3,392	3,386	3,400	3,778	3,989	3,977	4,382	4,284	4,339	4,612	4,877	3,151	3,391	3,526
	Total Private Dwellings			**106,478**	**110,177**	**113,850**	**115,936**	**118,893**	**122,015**	**125,271**	**128,663**	**132,050**	**135,450**	**139,228**	**143,217**	**147,194**	**151,577**	**155,861**	**160,200**	**164,812**	**169,689**	**172,840**	**176,231**	**179,757**
	Occupancy Rate			91.7%					91.6%					91.4%					91.4%					91.4%
	Total Households			97,663					111,719					127,319					146,363					164,229
	Average Household Size			2.40					2.39					2.38					2.36					2.33
	Total Persons in Occupied Private Dwellings			234,010					266,807					302,519					345,024					382,810
	Persons in Occupied Private Dwellings			97.7%					97.7%					97.7%					97.6%					97.6%
	Total Population Accommocated	**152,884**	***7,644***	**239,529**					**273,166**					**309,773**					**353,501**					**392,413**

4 Summary

Sub-Regions	**Residential Broad Hectare Supply**			**Est. Annual**	**Years of Supply**		
	Zoned (lots)	Unzoned (lots	**Total (lots)**	**Consumpti**	Zoned (years)	Unzoned (yea	**Total (years)**
Bellarine Peninsula	**8,976**	**3,481**	**12,457**				
Barwon Heads	28	0	**28**	3	6.5	0.0	**6.5**
Drysdale/Clifton Springs	2,096	2,300	**4,396**	333	3.3	6.9	**10.2**
Indented Heads	186	0	**186**	18	7.4	0.0	**7.4**
Leopold	525	931	**1,456**	194	0.0	4.8	**4.8**
Ocean Grove	3,528	0	**3,528**	322	8.0	0.0	**8.0**
Point Lonsdale	814	0	**814**	84	6.7	0.0	**6.7**
Portarlington	252	250	**502**	49	2.2	5.1	**7.3**
St Leonards	1,547	0	**1,547**	103	12.1	0.0	**12.1**
Geelong	**40,179**	**24,576**	**64,755**				
Armstrong Creek Growth Area	18,211	1,450	**19,661**	800-1600	13.0	1.0	**14.0**
Northern Growth Front	5,297	715	**6,012**	248	18.4	2.9	**21.3**
Northern FIA	12,000	4,000	**16,000**	100-1100	31.7	11.6	**43.3**
Urban Geelong	4,671	411	**5,082**	164	25.5	2.5	**28.0**
Western FIA	0	18,000	**18,000**	100-1100	0.0	52.0	**52.0**
Balance	**35**	**0**	**35**	25	0.0	0.0	**0.0**
Greater Geelong (C)	**49,190**	**28,057**	**77,247**				

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