GREATER AVALON EMPLOYMENT PRECINCT ECONOMIC & SCOPING STUDY AND PLANNING FRAMEWORK

Victorian Planning Authority

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OFFICES IN CANBERRA, HOBART, MELBOURNE, AND SYDNEY ON THE COUNTRY OF THE NGAMBRI/NGUNNAWAL/NGARIGO, MUWININA, WURUNDJERI, AND GADIGAL PEOPLES.

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Executive summary

The VPA engaged SGS Economics and Planning to prepare an Economic and Scoping Study (Study) and Planning Framework to inform the development of a planning scheme amendment for the land surrounding Avalon Airport designated for future industry and commercial development. This land, including Avalon Airport, is known as the Greater Avalon Employment Precinct (GAEP).

The planning scheme amendment will enable the development of the GAEP as a regional employment centre, as identified in the Geelong Regional Growth Plan (2013) and the Avalon Corridor Strategy (2022). Both State and local government have identified the GAEP as a significant employment precinct. These strategic planning documents provide the context for the current planning focus for this important employment precinct.

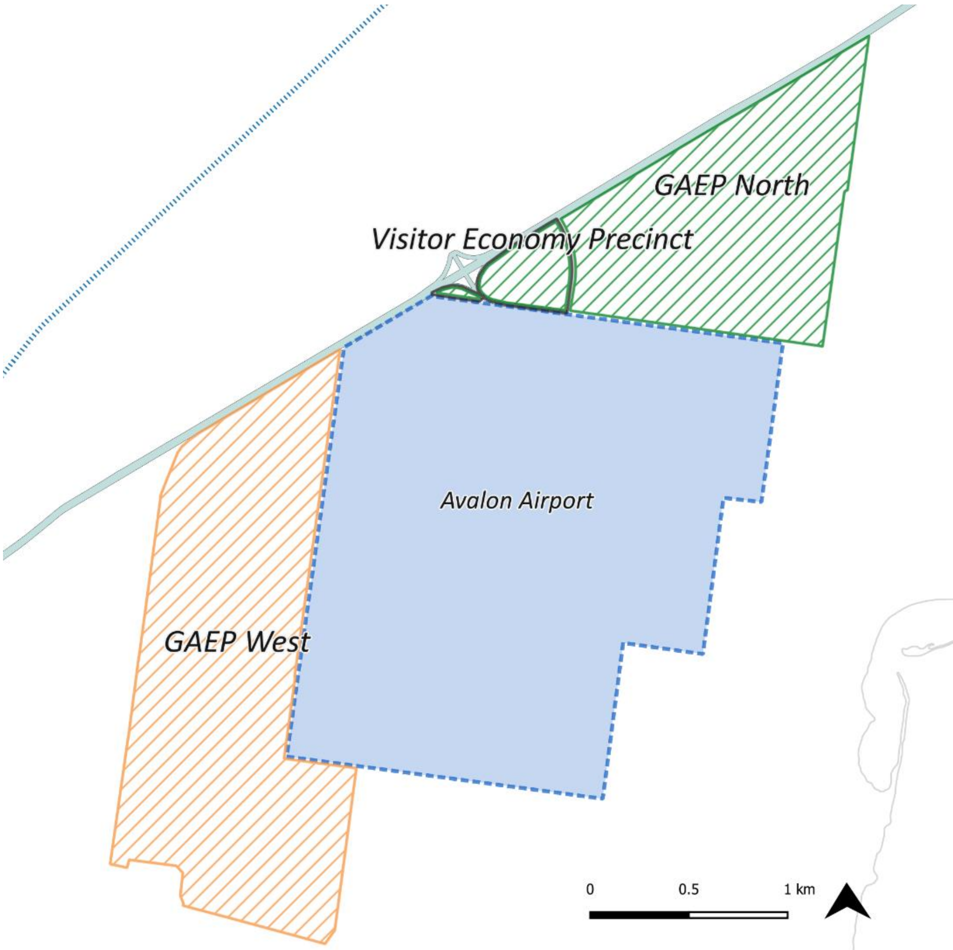
Study area

For the purposes of this work and the development of the planning scheme amendment, the GAEP has been divided into:

- The areas outside Avalon Airport which is comprised of two precincts: GAEP West and GAEP North (see Figure 1)
- The Avalon Airport site.

While Avalon Airport represents the majority landholding in the precinct it is not included in the planning scheme amendment area as the Airport is on Commonwealth land and subject to its own master planning process.

FIGURE 1: GREATER AVALON EMPLOYMENT PRECINCT STUDY AREA



Source: VPA

Future directions for the GAEP

The GAEP is approximately 50 km south west from the centre of Melbourne in the City of Greater Geelong, and part of the fast-growing western/south-western metropolitan corridor.

The wider region containing the GAEP, consisting of Golden Plains, Greater Geelong, Melton and Wyndham local government areas, has seen strong recent population growth, with a 32% increase from 607,659 in 2016 to 800,200 in 2021. The area is forecast to continue to grow, increasing by 71%, from 800,000 in 2021 to 1.3 million in 2041. By comparison Greater Melbourne as a whole is forecast to increase 38% over the same period. This significant growth in population will drive demand for enterprise and business development, and local jobs.

The GAEP benefits from proximity to Avalon Airport and freeway connections that deliver good access to Melbourne Airport, the Port of Melbourne and Geelong Port, as well as Melbourne businesses and labour markets.

The Avalon Airport Masterplan is currently being updated by Avalon Airport. It is anticipated that proposed upgrades to the runway will position Avalon as an increasingly significant freight hub.

Proposed future infrastructure projects that would strengthen the attractiveness of the GAEP include the Avalon Rail Link, the Outer Metropolitan Ring Road, Bay West Port Development and the Western Intermodal Freight Terminal.

GAEP North will be rezoned at a later stage and is subject to further investigations including transport and biodiversity matters. A feasibility study was commissioned by the Commonwealth Government to explore options to upgrade Beach Road and improve access to the Airport. It is anticipated that findings from this feasibility study will help guide planning for GAEP North as a transport and logistics hub.

Consultation with landowners and other industrial land market stakeholders supports the above perspective of positive future opportunities in the western/south- western metropolitan corridor, and the need for large lot offerings at GAEP to capture these. It also confirmed that the GAEP, due to its proximity to Greater Melbourne and the Port of Melbourne in terms of travel time, could attract industrial businesses from Greater Melbourne and as such would perform a regional role beyond that of simply serving the Geelong market.

Key industries considered suited to the GAEP are shown in the table below.

Manufacturing	Transport, postal & warehousing	Ancillary retail & commercial
Large scale manufacturing (e.g. transport equipment manufacturing, building of customised machinery and systems)	Freight and logistics, including air related (e.g. cargo facilities, freight forwarding, trucking / commercial vehicle bases, transport services)	Commercial and office activities supporting industrial uses (e.g. administrative headquarters for manufacturing or transport firms)
Advanced manufacturing (e.g. testing, design, production of high-tech equipment, sophisticated machinery)	Warehousing and distribution (e.g. distribution centres, postal services, major wholesale and product storage)	Technology and engineering SMEs (e.g. Design, engineering, development and testing of customised machinery and systems
Other manufacturing (e.g. food product manufacturing, prefabricated building manufacturing, fabricated metal products)	Data centres, providing the IT infrastructure to underpin innovation, machine learning and AI (if provision in the GAEP is a benefit for co-locating industries)	Tourism activities (e.g. car hire, service stations, souvenir shops, visitor centres, airport related)
Heavier and higher impact industry (fuel storage and distribution, high impact testing facilities)		Small-scale retail (e.g. cafes, take-away and food stores, minor convenience retail)
Circular economy activities (e.g. energy generation, waste reprocessing, storage)		Visitor accommodation (e.g. hotels, serviced apartments)

Strengths, weakness opportunities and constraints

The analysis identified several strengths for the GAEP, including:

- ***Transport access:*** proximity to the M1 and to the Port of Melbourne due to fast delivery time despite the distance; access to the western rail link; potential connection to the Melbourne-Geelong passenger train; access to planned infrastructure such as the future port and the rail link.
- ***Location***: access to a growing regional workforce; proximity to the growing south west metropolitan corridor; surrounding land uses unlikely to impact on future industrial uses; proximity to Avalon Airport.
- ***Landownership and size***: opportunity to accommodate 'super users' (large, land hungry uses); freehold land; large sites and landowners ready to bring land to market.

Opportunities identified for the GAEP include:

- ***Competitive advantage to other precincts***: limited supply of large lots remaining in the Geelong Ring Road Employment Precinct (GREP) and in existing industrial precincts in Wyndham; ability to capture demand currently absorbed by the Melbourne market.
- ***Industrial trends***: growth in circular economy and associated downstream product innovation; the rise of freight and logistics; co-location of knowledge and production.

Weaknesses include:

- ***Competition with other precincts***: the GREP (in Geelong LGA) and the proposed Southwest Quarry (in Wyndham LGA) are likely to service similar industrial activity; the well-established Western State Significant Industrial Precinct (WSSIP) in western Melbourne is well connected and still has serviced land available; there is also potential for competition for development within the GAEP, between GAEP North and West and Avalon Airport, if complementary positioning isn't established.
- ***Infrastructure***: the absence of established infrastructure within GAEP North and West (roads and utilities); a lack of clarity regarding when key proposed regional infrastructure projects will be delivered; and limited government funding available to support enabling infrastructure. There are limited options for fibre connection as GAEP is not within carrier-dark fibre network and is far from the existing internet infrastructure / internet providers.
- ***Workforce:*** the potential for a generally lower skilled workforce in the region to detract from higher value development prospects.

Constraints include:

- ***Environment***: there are some barriers to development, in terms of environmental and planning restrictions. This includes flood risk, bushfire risk, Ramsar wetlands and nationally significant biodiversity. Rural living land west of Avalon Road and the north side of the Princes Highway may require sufficient buffer distances for some types of industrial activity. Ramsar wetlands in surrounding area and airport buffer requirements may impact on the GAEP's ability to implement stormwater and greening objectives.

Recognising and addressing the weaknesses and constraints wherever possible the above analysis supports the strategic planning goals for the precinct as a major employment precinct with a focus on industrial uses.

Industrial land supply in the region

The ability to support strategic and growing industrial uses within the fast-growing region will depend on a steady supply of suitable industrial land. Land demand and supply analysis has been undertaken with two aims.

1. To establish the role and function of the GAEP Precinct (GAEP North and West and Avalon Airport) relative to other industrial precincts in the region; and
2. To determine the likely future industrial land demand and supply based on these findings.

As the major strategic competitors to the GAEP in the western/south-western metropolitan corridor the historic take-up rates from the WSIPP and the GREP were considered to develop the following scenarios:

- Scenario 1: take up rate of **120.6 (gross)** ha per year. Corridor take-up rates are discounted by 25% for an NDA take-up rate of 90.5 ha / year.
- Scenario 2: take up rate of **134.9 (gross)** ha per year. Corridor take-up rates are discounted by 25% for an NDA take-up rate of 101.2 ha / year.

In all scenarios, the GAEP was assessed as two separate precincts: Avalon Airport and the land outside Avalon Airport (GAEP North and West). The inputs and assumptions that informed the modelling are detailed in Section 6.

Based on this modelling, the addition of the GAEP would have the following impact on industrial land supply in the western/southwestern metropolitan region:

- Scenario 1 would see the GAEP provide an additional 14 years of supply, with land supply in corridor (excluding Avalon Airport) to exhaust in 2069.
- Scenario 2: would see the GAEP provide an additional 12 years of supply, with land supply in corridor (excluding Avalon Airport) to exhaust in 2063.

It should be noted that these scenarios assume no major additions to industrial land supply elsewhere in the corridor which would otherwise compete with GAEP in the estimated development periods.

Industrial land supply within the GAEP precincts

The modelling shows that GAEP West would commence in 2026 and exhaust in 2056. GAEP North is forecast to come online in 2056 and be consumed in a relatively short period as it absorbs the demand from the exhausted WSSIP, GREP, GAEP West and Airport Stage 1.

In practice this development period is likely to shift. It could be anticipated that Avalon Airport might bring Stage 2 forward to take advantage of the available demand (Avalon Airport current suggest Stage 2 commences in 2062). In addition, other industrial land supply in the corridor may be introduced thereby slowing down uptake of GAEP North.

With the commencement of both precincts forecast to occur 30+ years into the future and only a few years apart, in reality, Stage 2 (GAEP North and the Airport) would be developed over the mid to long term, in response to infrastructure provision and market demand.

Expected job yields

The modelling used employment density estimates of 16.9 jobs per hectare for GAEP North and West, and 33 jobs per hectare for Visitor Economy sub-precinct which is within GAEP North but treated separately due to the proposed commercial uses. Based on this, it is estimated that the GAEP planning scheme amendment area will support **17,963 jobs.** The modelling for GAEP North and West assumed a range of densities in different sub-precincts from 'more' to 'less' dense (see section 7.1).

By sub-precinct the analysis forecasts that by 2056:

- **GAEP West supports 7,960 jobs** (with the precinct exhausted in 2056).
- **GAEP North hosts 8,360 jobs** (precinct comes online in the 2041-56 period and is exhausted in 2063).
- The **visitor economy sub-precinct** hosts **1,643 jobs** (precinct comes online in 2041-56 period and is exhausted in 2063).

The outcomes are increasingly uncertain for modelling employment over a long period, including out beyond 30 years in this case, as new influences on production and economic factors will occur. Furthermore, it is likely that additional supply will be provided in the western and south-western corridor in due course, meaning that take up rates over a longer period will inevitably change in turn affecting the timing of future employment.

Planning implications

Strategic planning has identified the GAEP as a major future employment precinct in the western/southwestern metropolitan region. Land use planning should support future development consistent with this direction.

The GAEP should be carefully planned to attract businesses that require generally large lot sizes (compared to those available elsewhere) and with road and other infrastructure that suits strategic industrial and enterprise activity. There is an opportunity to attract high value businesses, such as: freight and logistics operations with a national and international focus; niche, advanced and heavier industrial manufacturing uses; and specialist industries in defence, circular economy, energy and technology with specific site requirements.

Site constraints, largely environmental, will need to be considered when planning for specific uses within the planning scheme amendment area. Alongside this, development within GAEP West and North should not impact on the safe operation of Avalon Airport and as such there will need to incorporate relevant buffer areas and built form constraints.

The Avalon Airport site, which already accommodates some freight and light manufacturing is expected to further develop to include a mix of retail, commercial and industrial uses.

The future master planning of Avalon Airport and its proposed expansion should be considered in the planning of GAEP North and West. Precedents that could be further explored may include recent planning in the precincts surrounding Western Sydney Airport and Canberra Airport.

Planning Framework overview

The encouraged land uses for each of the three planning areas are shown below in Table 1. Land uses have been assigned with a view to the development of specialities and management of sensitive interfaces where applicable.

TABLE 1: LAND USE RECOMMENDATIONS BY SUB-PRECINCT

Sub-Precinct	Encouraged land uses and lot sizes

A. GAEP West	2-15 ha lot sizes
	Low impact uses:
	▪ Large scale manufacturing
	▪ Freight and logistics, including air related
	▪ Warehousing and distribution
	▪ Commercial
	  • Not large format retail/restricted retail
	5-20 ha lot sizes
	High impact uses:
	▪ Heavier and higher impact industry
	▪ Large scale and advanced manufacturing
	  • Energy / fuel / circular economy activities

B. GAEP North	1-15 ha lot sizes Low to moderate impact uses: ▪ Niche and advanced manufacturing ▪ Technology and engineering SMEs ▪ Warehousing and distribution ▪ Freight and logistics and air related ▪ Commercial • Not large format retail/restricted retail
C. Visitor Economy sub-precinct	Small lot development (less than 1ha) Low impact uses: ▪ Tourism activities (e.g. airport related) ▪ Accommodation (residential hotel only) • Small-scale retail and commercial (not large format retail / restricted retail)

Source: SGS Economics and Planning, 2023

To support the development of the GAEP North and West as industrial employment precincts, the planning framework proposes consideration of the following:

- Provision of 'worker service hubs' to provide employees with convenient access (walking or via other active transport modes such as e-scooter) to food outlets, retail uses and potentially other services such as gyms. They should be designed to create an inviting urban environment, for example, through the provision of parklets and street furniture.
- Incorporation of 'Gateway treatments' access points to the GAEP from the Princess Freeway (via a service road), using urban design treatments such as tree planting to improve the amenity of the gateways into the precincts.
- That views of the surrounding environment are enhanced, and visual impacts of development in the GAEP are minimized in the areas indicated as 'sensitive interface' areas, in recognition of the areas of environmental significance and Aboriginal cultural heritage that surround the site.

The following considerations should also be addressed in planning for GAEP North and West:

- Retail floor space caps to avoid competition with other retail centres in the City of Greater Geelong.
- Overlay options to enable specialised sub-precincts.
- Buffer requirements associated with industrial uses.
- Aviation safety requirements as they apply to the GAEP.
- The impact of significant biodiversity and ecology and sites of Aboriginal cultural heritage.
- Infrastructure requirements, noting that in developing this currently agricultural land utilities, road infrastructure, internet and active transport connections will be required to and within the GAEP.

1. Introduction

This section provides the project background and methodology and sets out the structure of the report.

1.1 Background and scope

Both State and local government have identified the GAEP as a significant employment precinct.

The final *Avalon Corridor Strategy*, adopted by the City of Greater Geelong on 13 December and Wyndham City Council on 20 December 2022, recognises the need for further detailed work to to assess a range of specific land use/ development issues and options for the land at and surrounding Avalon Airport, known as the Greater Avalon Employment Precinct (GAEP).

The Victorian Planning Authority (VPA) is seeking to prepare a planning scheme amendment to enable the development of the GAEP, which includes Avalon Airport, as a regional employment centre, as identified in the *Geelong Region Plan* and the *Avalon Corridor Strategy*. Plan for Victoria identifies the GAEP at Map 15.

While Avalon Airport represents the majority landholding in the GAEP precinct it is not included in the VPA's planning area as the Airport is on Commonwealth land and subject to its own master planning process.

The purpose of this Economic and Scoping Study and Planning Framework is to consider the economic and property market context for the site to inform the preparation of a Planning Framework. The VPA is leading the work to prepare a Planning Framework and the planning scheme amendment.

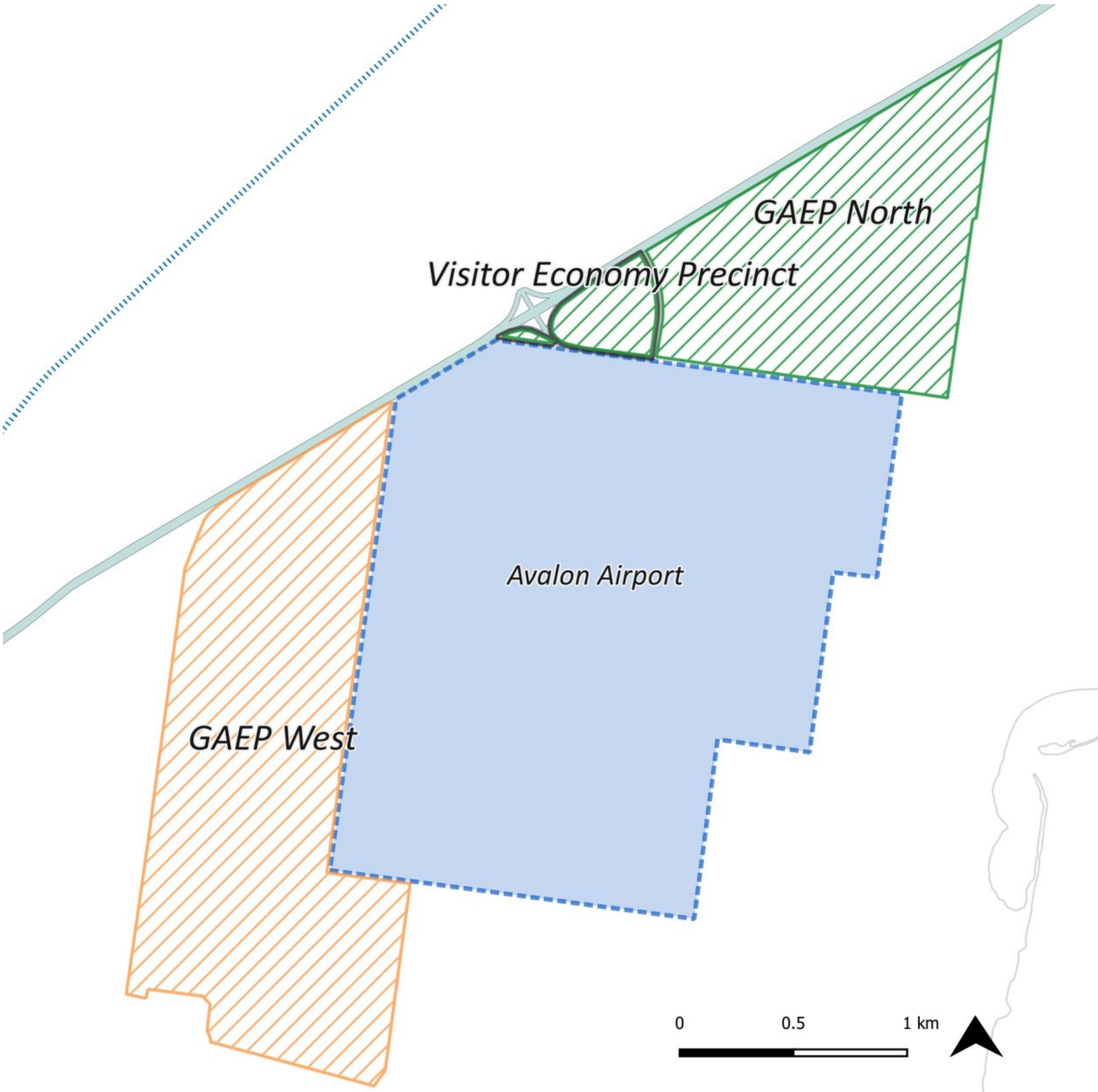
Study area and assumptions

Earlier studies prepared by SGS and others for the VPA, and an August 2023 'co-design workshop' with stakeholders, and subsequent work by the VPA has established some key development parameters in the GAEP area.

For the purposes of this work and the development of the planning scheme amendment, the GAEP has been divided into:

- The area outside Avalon Airport- GAEP West and GAEP North, including the Visitor Economy Precinct within GAEP North, as shown in Figure 2.
- The Avalon Airport- Airport operations and surrounding land containing other uses.

FIGURE 2: GAEP STUDY AREA



Source: SGS Economics and Planning, 2025

TABLE 2: GAEP LAND AREA

Precinct	Total area (ha)
Avalon airport	1856
GAEP remainder (outside Avalon airport)	1581
- GAEP West	*941*
- GAEP North (including the Visitor Economy sub-precinct)	*640*
Total GAEP	**3437**

The VPA has advised that the planning and rezoning of the GAEP will occur in two stages:

- Stage 1:
  - Insert GAEP Framework Plan as Policy in Greater Geelong Planning Scheme
  - Rezone **GAEP West** to Industrial 1 Zone
  - Apply Development Plan Overlay to GAEP West
- Stage 2:
  - Rezone **GAEP North**

It is anticipated that the delivery of key planned infrastructure projects, such as Bay West Port, the Western Intermodal Freight Terminal and the Outer Metropolitan Ring Road, would increase the demand for industrial land in the western/south-western metropolitan region, leading to the Stage 2 rezoning of GAEP North.

The Airport has identified that 654 ha of its area will be developed in Stage 1, and 546 ha in Stage 2.

A key aim of this study is to identify the implications for GAEP North and West in terms of how much land would be developed in each of the two stages. First across GAEP West and then GAEP North. The Visitor Economy sub-precinct sits within GAEP North and will be rezoned as part of GAEP North in Stage 2.

Method

This study has:

- Reviewed existing federal, State and local government studies and strategic documents relevant to the GAEP and undertaken targeted consultation to identify the strategic context and opportunities of the precinct
- Identified macro and regional economic and employment demand and demographic trends
- Identified the employment land demand in the region and allocated a future share of this to the GAEP and Airport, using assumptions provided by the VPA and Airport, plus others generated by SGS
- Identified the value proposition and spatial opportunities for the GAEP

- Developed recommendations for the Planning Framework identifying the most appropriate zoning and re-zoning opportunities for GAEP north and west.

Region definitions

For the purposes of this work, the study region has been broadly defined as the four local government areas (LGAs) of Greater Geelong, Wyndham, Golden Plains and Melton. The strategic context, macro trends and overall role of the GAEP have been considered in this regional context.

The supply and demand analysis considers the 'western/south-western metropolitan corridor'. It identified the state significant industrial area in Melbourne's west (the Western SSIP) along with the regionally significant industrial areas in and the Greater Geelong LGA (the Geelong Ring road Employment Precinct or GREP) as the key competitor precincts to the GAEP. The competitor industrial precincts are discussed further in Section 6.2.

1.2 Structure of this report

This report sets out the detailed data and contextual analysis that informs the economic analysis and quantitative take-up and job generation estimates) and culminates in directions for the Planning Framework for GAEP north and west. It is structured as follows:

- Section 2 sets out the site context and key features of the study area.
- Section 3 sets out the strategic context, drawing on existing studies and strategic documents.
- Section 4 presents the *regional population, employment and labour force profile* of the broader region, including Geelong, Wyndham, Melton and Golden Plains LGAs.
- Section 5 looks at the emerging industry trends and opportunities for the GAEP as a regionally significant employment precinct; this includes macros trends and market prospects, drawing on consultation findings and existing studies.
- Section 6 provides the land demand and supply analysis of the GAEP in the context of the western/south-western metropolitan corridor)
- Section 7 forecasts job yields for the GAEP in the context (and as a sub-set) of future projected industrial employment in the Wyndham and Geelong LGA's.
- Section 8 sets out the Planning and Scoping Considerations identified through this work; highlighting strengths, weaknesses, opportunities, and constraints that inform the development of a Planning Framework.
- Section 9 sets out the recommended Planning Framework for GAEP North and West. The Framework sets out the Vision, the specific zone and overlay options to support appropriate industrial uses, along with amenity and infrastructure considerations.

2. Precinct context

This section describes the site context such as location, land ownership, current use and planning and environmental considerations.

2.1 The study area

The GAEP is within the City of Greater Geelong, approximately 50km south west from Melbourne's city centre. The total area of the precinct is approximately 3435ha, including Avalon Airport, Melbourne's second International Airport. GAEP North and West consist of the approximately 1,581ha of land immediately surrounding the 1,856ha Avalon Airport site.

Avalon Airport is not included in the VPA planning area as the Airport is on Commonwealth land and subject to its own master planning process.[1]

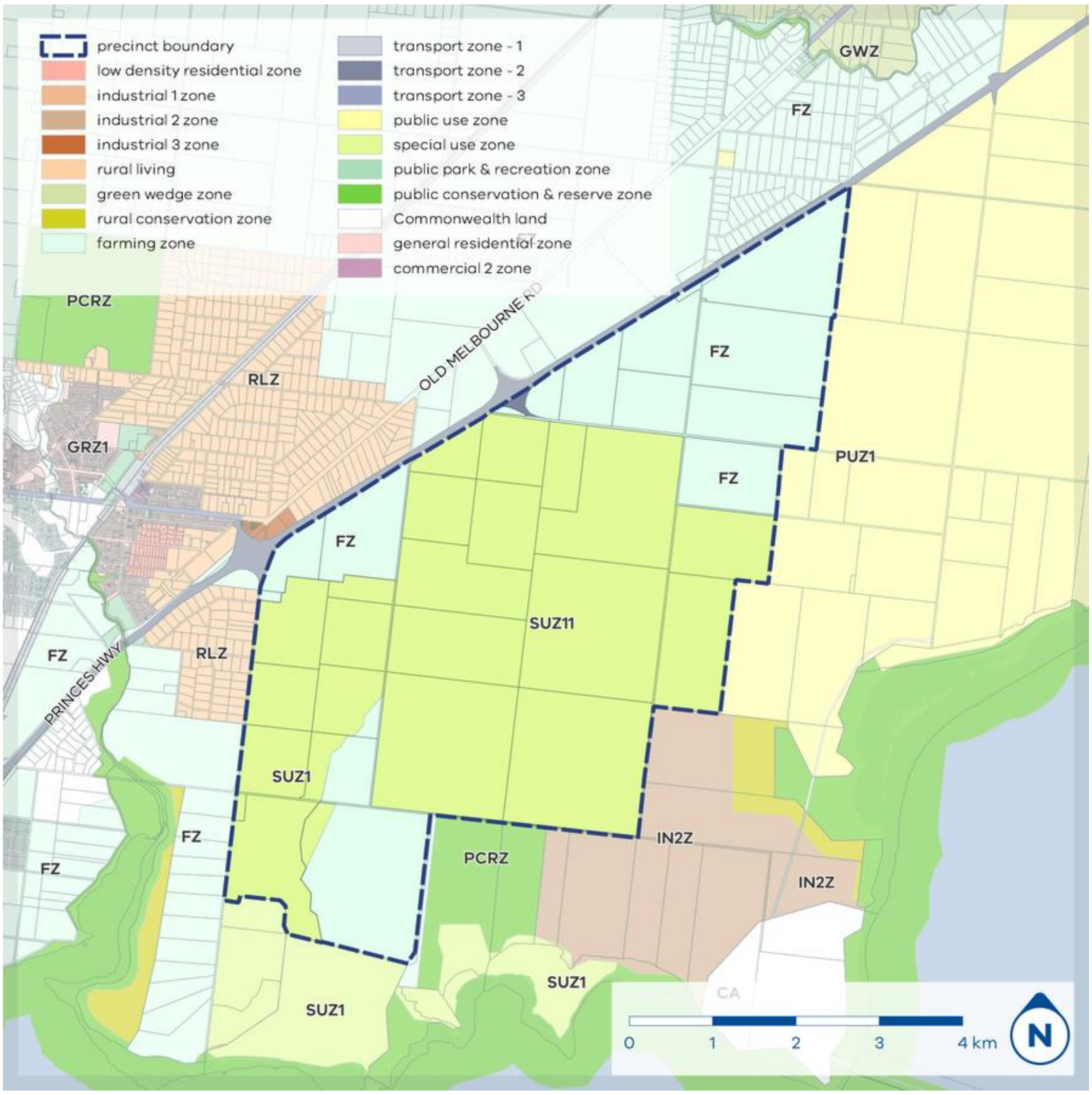
The Princes Highway bounds the GAEP to the north, connecting Geelong to Melbourne via Werribee and separating the precinct from the green break between Lara and Little River. To the east of the precinct is the Western Treatment Plant operated by Melbourne Water. To the west of the precinct are Rural Living dwellings and the Limeburner's Lagoon Flora and Fauna Reserve, which supports significant biodiversity and offers recreational opportunities. To the South of the precinct is Port Philip Bay Coastal Reserve and Corio Bay.

2.2 Current Land use and zoning

The GAEP is zoned as Farming Zone and Special Use Zone 1. A significant portion of the precinct is subject to the Environmental Significance Overlay, Vegetation Protection Overlay and Public Acquisition Overlay. Some portions of the precinct include Land Subject to Inundation, particularly in the north-east of the precinct.

[1] Part of Avalon Airport is currently freehold land.

FIGURE 3: CURRENT PLANNING ZONES AND OVERLAYS



Source: Victorian Planning Scheme

Current land owners

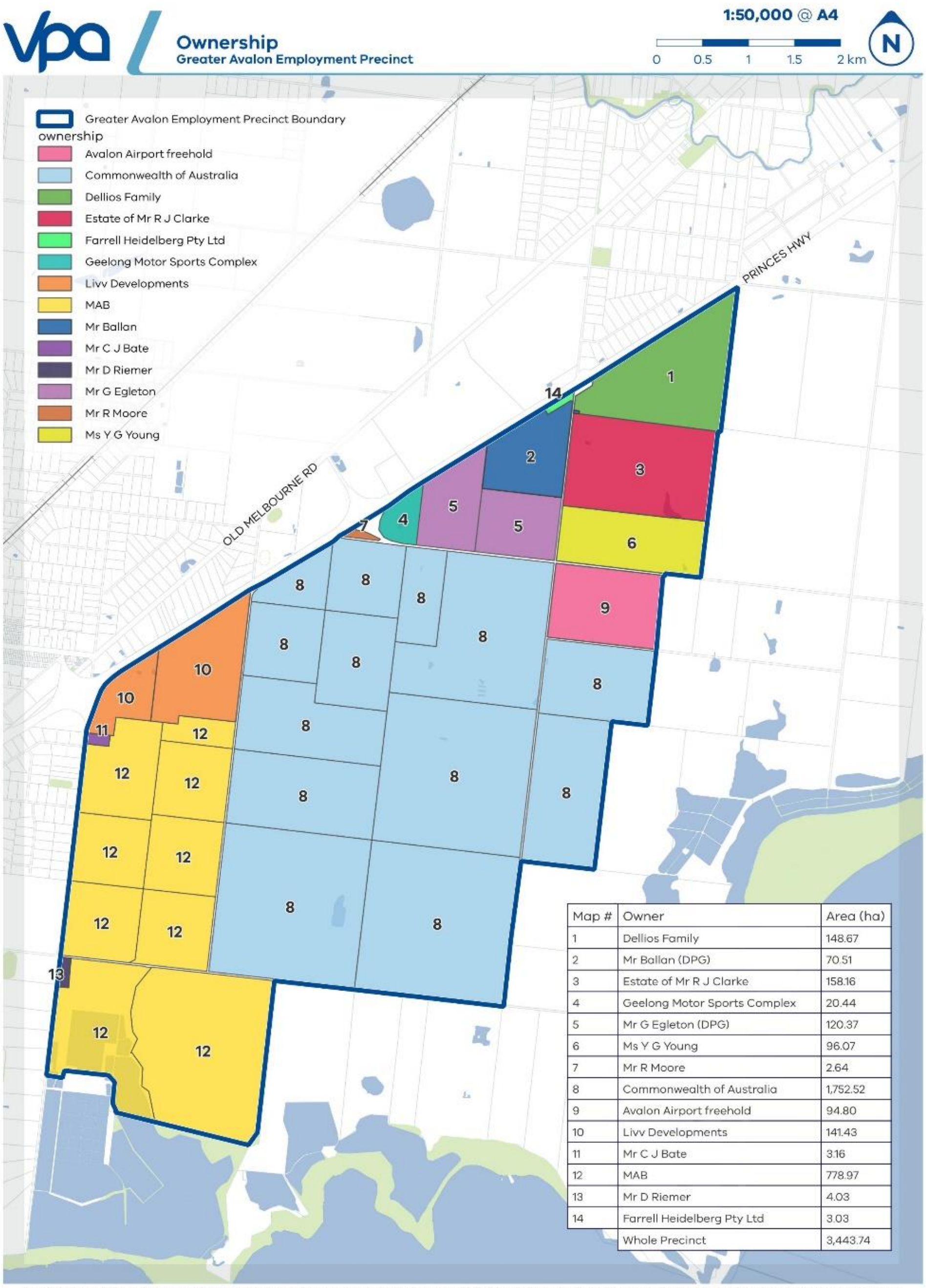
The land in GAEP and West is owned by 14 landowners, as shown in Figure 3.

This is made up of:

- Significant land holding to the west of Avalon Airport, owned by MAB Corporation. This includes a substantial wetland area which was the former Cheetham Saltworks site.
- Three landholdings to the northeast of the Airport and one to the north west of the Airport, represented by Dominion Property Group and used for agricultural purposes.
- Two properties in the Western corner of the precinct, North of MAB's landholding, owned by Livv Developments and currently used for agricultural purposes.

- A parcel of land adjacent to the interchange owned by Geelong Motor Sports Complex and currently used for community motor sports racing and practice.
- Large land parcels east of Pousties Road predominantly owned by farming families, and
- Two small parcels of land adjacent to Avalon Road owned by a private investor.
- The small parcel of land (number 14) showing the freeway service centre.

FIGURE 4: GREATER AVALON EMPLOYMENT PRECINCT LAND OWNERSHIP



Map #	Owner	Area (ha)
1	Dellios Family	148.67
2	Mr Ballan (DPG)	70.51
3	Estate of Mr R J Clarke	158.16
4	Geelong Motor Sports Complex	20.44
5	Mr G Egleton (DPG)	120.37
6	Ms Y G Young	96.07
7	Mr R Moore	2.64
8	Commonwealth of Australia	1,752.52
9	Avalon Airport freehold	94.80
10	Livv Developments	141.43
11	Mr C J Bate	3.16
12	MAB	778.97
13	Mr D Riemer	4.03
14	Farrell Heidelberg Pty Ltd	3.03
	Whole Precinct	3,443.74

Source: VPA 2025

MAB, Livv Development and Dominion Property Group have all indicated a readiness to bring their land to market as employment land, with the findings of the landowner reports prepared by the developers summarised in section 5.2.

The proposed land uses identified in the landowner reports are shown in the table below. Should retail uses be included in the planning area, floorspace caps (or equivalent controls over built form) need to be set as the GAEP should not directly compete with the regional and sub-regional retail centres identified in the City of Greater Geelong's *Retail Strategy* 2020-2036.

TABLE 3: LANDOWNERS AND PROPOSED USES IDENTIFIED IN LANDOWNER REPORTS

Site	Parcel number*	Landowner	Uses proposed by landowners
5 Beach Road	#7	Represented by Dominion Property Group	Visitor accommodation/tourism and/or highway retail/commercial use
55 Beach Road	#4	Fraser Group	Tourism and events, transport (car parking/vehicle hire), service businesses, office and commercial with complementing uses (e.g. child care/recreation), open space, entertainment and retail.
65 Beach Road, 130 Pousties Road, 80 Pousties Road	#5; #2	Represented by Dominion Property Group	Industrial, tourism and events, transport (car parking/vehicle hire), commercial use
15 Avalon Road	#10	Livv	Bulky goods, large industrial/logistics, multi-level industrial typologies, market/hotel.
255-275 Avalon Road	#12	MAB	Large scale manufacturing, transport and logistics, warehousing and distribution, and wholesale trade uses

Source: Landowner reports prepared by Dominion Property Group and MAB and information provided by VPA. *correlates to numbers on Figure 5.

Avalon Airport and adjoining land

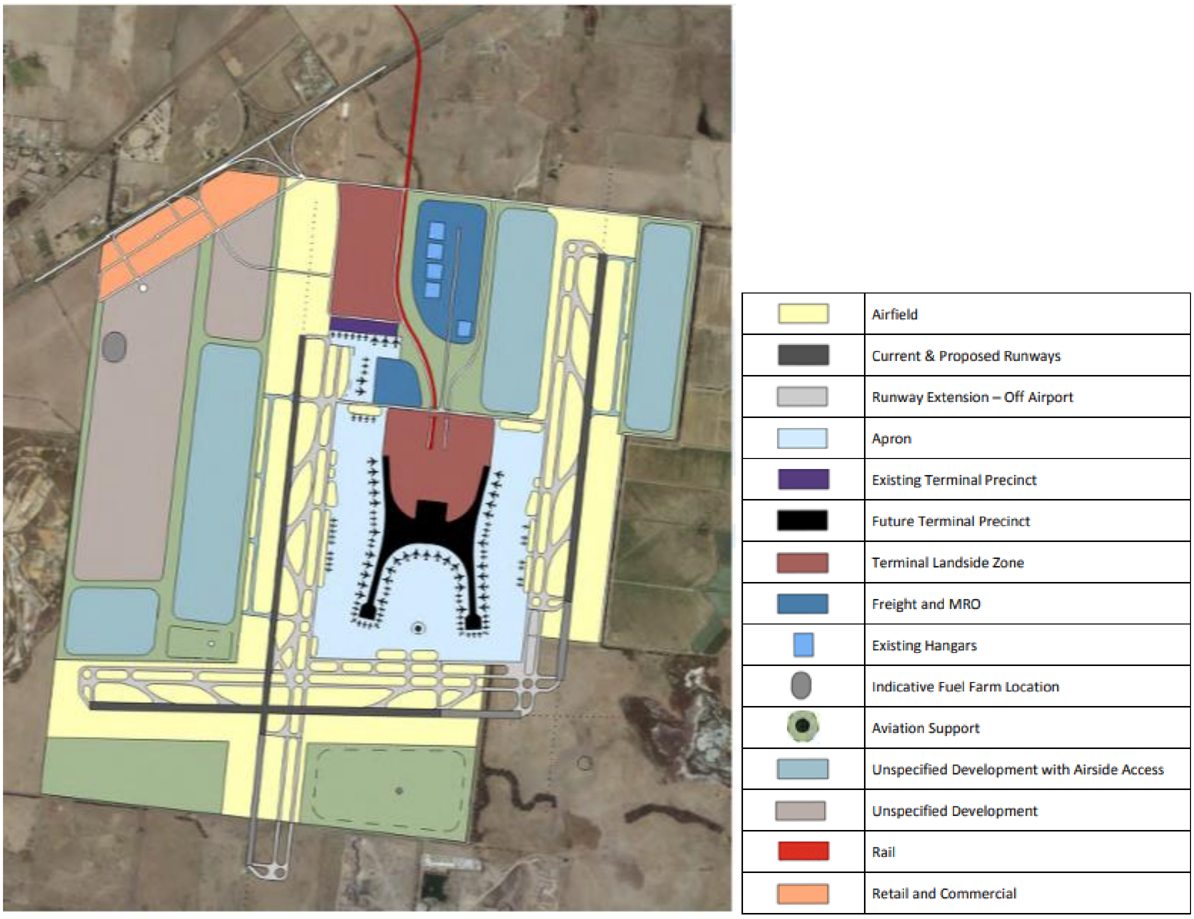
The Avalon Airport site is owned by the Federal Department of Defence and leased by Avalon Airport Australia (a subsidiary of Linfox). The Airport is the majority landholding in the precinct and is subject to a separate master planning process outside of the VPA planning area. From a planning perspective, proximity to Avalon Airport may have implications in terms of buffer requirements, specifically how close specific land uses can be to the Airport or the Airport's flight path.

Airport land to the east of the Airport already accommodates commercial and light industrial uses including CottonOn distribution centre, Australia Post's e-commerce aviation freight hub, PetStock and Hanwha manufacturing site which is producing mobile howitzers. As per the current Airport Master Plan (2015) proposed future development of the Airport land to accommodate:

- non-aviation business (retail, industrial and commercial uses)
- the long-term expansion of the airport in the western portion of the site.

The current Airport Master Plan is shown in Figure 5. This is currently being updated and may change (see discussion in next section).

FIGURE 5: AVALON AIRPORT MASTER PLAN (2015)



Source: Avalon Airport Master Plan 2015

Additional notable surrounding land uses are an aquaculture farm to the south west of the Airport and large rural residential uses and land available for future development to the north, across the Princes Freeway. Point Wilson Explosive Area, stretching across 326 hectares and owned by the Commonwealth Government is south of the Airport over Dandos Road, along with Mountain View Quarry.

2.3 Site characteristics

Significant work has been undertaken by the VPA and landowners to assess the site. This section summarises the site analysis, with more detail in Appendix B.

Transport links

Located adjacent to the Princes Freeway, the GAEP is well located with access to existing transport infrastructure including:

- Princes Freeway which provides three lanes of traffic and connects Geelong Regional City with Melbourne.
- Avalon Airport, which has recently been elevated to international Airport status.
- A SkyBus (private bus service) which links Avalon Airport, Werribee and Southern Cross Station (Melbourne CBD).
- The Geelong-Melbourne Rail Line:
  - The nearest existing train station is Lara, 5 km east of the site. There is currently no public bus service to connect Avalon Airport to Lara Railway Station or Geelong city centre.
  - Public Acquisition Overlay Schedule 14 (PAO14) applies to the reservation which extends between the rail line and Avalon Airport, with potential for a rail service connecting the GAEP to Geelong and Melbourne.
- The Geelong port, which is the new home of the Spirit of Tasmania, will continue to grow in trade volumes and traffic over the next 30 years. Prospective trade identified in the Geelong Port Development Strategy 2018 includes cargo associated with wind energy projects, Bass Strait Island trade, niche dry bulk and mining operations. The Geelong Port has plans to develop up to 25 hectares of land for a windfarm hub to support both onshore and offshore windfarm projects. The port is also developing the Geelong Hydrogen Hub as a location for hydrogen generation importers or exporters.

Relevant proposed transport infrastructure includes:

- The proposed Avalon Airport Rail Link, connecting the Airport with Melbourne and Geelong.
- Bay West Port, earmarked as Melbourne's second container port. It is noted that the Department of Transport and Ports Victoria are currently working to determine an appropriate location and potential area for a Bay West Port. With the exact location yet to be determined there is no clear timeframe for when the port will come online.
- The Western Intermodal Freight Terminal (WIFT), one of two planned intermodal freight terminals in Victoria. The other intermodal terminal, the Beveridge Intermodal Freight Terminal (BIFT), is to be developed first, with the WIFT to be developed when more capacity is needed and become the larger operation. There is no clear timeframe for when the WIFT will come online.
- The Outer Metropolitan Ring Road (OMR) and associated rail lines which are planned to link Werribee, Melton, Tullamarine, Craigieburn and Epping/Thomastown. This in turn will improve connections between Melbourne Airport, Avalon Airport, Port of Geelong, the Northern Intermodal Freight Terminal (in Donnybrook), Bay West, Mountain View Quarry (being the state's most economically viable quarry). While a public acquisition overlay is in place to reserve land for

the OMR the need for and timing of construction will be subject to future consideration for funding[2].
- A Strategic Cycling Corridor, as identified in the Avalon Corridor Strategy (ACS), located adjacent to and parallel with the southern boundary of the Princes Freeway in the ACS, and through the GAEP investigation area with proposed highway landscape plantings.

Environmental constraints and considerations

As shown in the mapping in Appendix B, there are several water, vegetation, and biodiversity considerations for parts of the GAEP:

- Existing and proposed flood controls – both the LSIO and FO – indicate the land is subject to riverine flooding, flooding inundation and sea level rise.
- The location of Ramsar wetlands, and wetland habitat in parts of the precinct.
- Biodiversity of up to national significance including coastal saltmarsh in the south-west of the precinct and Plains Grassland in the south-west and north east of the precinct.
- Significant fauna with sun moth recordings at two parcels in the south-west of the precinct.
- Unused salt evaporation ponds along the southern and south-eastern portions of the site.
- The entire precinct, with the exception of the former saltworks in the south-east, is identified as Bushfire Prone Area.
- Aboriginal Cultural Heritage Areas which may require Cultural Heritage Management Plans (CHMPs).

The precinct must appropriately plan to protect and enhance the overall habitat and environmental value while balancing urban development and amenity in the area. In developing the GAEP there is an opportunity to deliver water and biodiversity sensitive urban design outcomes that provide higher amenity to users of the precinct.

Utilities

The precinct is traversed by multiple water, oil, gas and telecommunications infrastructure assets that predominantly run parallel with the Princes Freeway reserve, including:

- APA gas pipelines, VIVA Energy White Oil & Black Oil and Western-Altona-Geelong Pipeline
- Optus and Telstra telecommunications cables
- High Voltage electrical cables

The lots within the planning area are not connected to utilities. Viva Energy Australia has outlined consideration for a suitable easement corridor for future jet fuel Pipeline assets from Black Oil Pipeline to service Avalon Airport. This may require an easement or reservation within the planning area.

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[2] https://transport.vic.gov.au/news-and-resources/projects/outer-metropolitan-ring-e6-transport-corridor

2.4 Key insights

The site context analysis shows that the planning area benefits from the following characteristics:

- Good transport access, proximity to Avalon Airport and proximity to planned regional infrastructure such as Western Intermodal Freight Terminal and Bay West, noting there are no confirmed timelines for these coming online.
- Large precinct with the most significant land owners indicating a readiness to bring the land to market for employment uses.
- The majority of GAEP is currently undeveloped and surrounding land uses are largely agriculture and aquaculture, providing an opportunity for a comprehensive and integrated development approach.
- Greater Geelong is currently a hub for employment in the study region. Workers from Golden Plains (3,800 workers), Surf Coast (6,100 workers), Melton (500 workers), and Wyndham (3,600 workers) travel to the population and employment centres in Greater Geelong for work. The GAEP could therefore be considered as future a source of employment for workers, not just from the City of Greater Geelong, but also from these surrounding councils.

The key constraints are environmental, including land subject to inundation, Ramsar wetlands, nationally significant biodiversity and bushfire prone areas.

3. Strategic context

This section outlines the strategic polices and priorities guiding the future role of the GAEP as an employment precinct.

3.1 Relevant policy and strategy documents

The Greater Avalon Employment Precinct (GAEP) is a potentially region-defining project for the Barwon South West region. The key state and local government policies guiding the future development of the site have been summarised below (greater depth and detail can be found in Appendix A).

The Victorian Government's **Economic Growth Statement** (2024) identifies Avalon as one of several regional greenfield locations to provide employment land and enable regional employment. The Statement also identifies the role Avalon Airport plays in connecting 'people and Victorian-made goods with markets around the world'.

Plan for Victoria (2025) recognises the GAEP as a key asset in the Geelong region into the future.

The **G21 Regional Growth Plan** (2013) identified Avalon Airport, along with the Geelong Ring Road Employment Precinct (GREP) as a key employment node in the 'North East Gateway' (the area to the north of Geelong towards Melbourne). The plan identified services, freight and logistics as an opportunity for this area. It cites the emerging low carbon/sustainability sector as identified in the *Low Carbon Growth Plan for Geelong*[3] (2011).

The **G21 Economic Development Strategy** (2013) suggests several key areas of employment growth for a healthy and resilient economy. Among these, freight and logistics based around Avalon Airport and the Port of Geelong, as well as advanced manufacturing and low carbon/renewable industry stand out as the key growth areas that the GAEP will be able to service. This document proposes a national transport and logistics precinct, forming a connection between the port of Geelong and Avalon Airport, to integrate the transport modes and increase efficiency in freight logistics.

The **Avalon Corridor Strategy – Economic Outlook** (2021) is a planning document for the Avalon Corridor, a section of 30,000 hectares of land between Geelong and Melbourne. The strategy aims to enhance the economic capabilities of the region whilst maintaining environmental diversity and health and suggests that the corridor should exclude residential land from its purview, so it can better address the needs of its industrial and greenfield components.

The Strategy identifies the GAEP as employment land for 'potential commercial / industrial / Airport related business' and identifies the need for a precinct structure plan (PSP), noting that it should consider practices and principles relating to Water Sensitive Urban Design (WSUD) and Biodiversity

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[3] Climate Works (2011) Low Carbon Growth Plan for Greater Geelong https://www.climateworkscentre.org/wp-content/uploads/2019/10/climateworks_lcgp_greater_geelong_summary_may2011-compressed.pdf

Sensitive Urban Design (BSUD), particularly for land west of Avalon Airport. It also suggests considering 'amending the existing Farming Zone of the Geelong Motor Sports Complex to recreational open space or other suitable zone, which could be facilitated via a future rezoning associated with the implementation of the Greater Avalon Employment Precinct Structure Plan'. The Geelong Motorsports Club have recently identified that they would like commercial and industrial uses to be considered for their site.

The Corridor strategy also notes that Avalon Airport and the Bay West Port do not create a particular synergy with freight services, as the type of goods they typically deal with have little overlap.

The **Geelong Settlement Strategy** (2020) identified the need to plan and develop the City to continue to meet housing demand, in response to high population growth in the five years 2020 and which only increased during the COVID-19 pandemic. At the time of the reports publishing, the city had 25 years of land supply identified in new growth areas and had begun to look at underutilised urban areas as potential infill sites.

The City of Geelong's **South West Employment Land Review** (2022) informs land use planning decisions in south west Geelong, including: Armstrong Creek, Waurn Ponds, Marshall and a future employment precinct called the Western Industrial Precinct (WIP). This report mainly focuses on the requirements for the Boral quarry site, to the West of Armstrong Creek, and the WIP which is proposed as 140 ha of industrial area, targeting 7,350 jobs. By reviewing these precincts in the context of the overall market it seeks to identify options for the amount of land needed, by type, over a nominal 20+ year period.

The report found that Greater Geelong has considerable years of employment land supply remaining (70 years) however, only 13 years of zoned industrial land (INZ1, INZ2 and INZ3 zoned land). These figures do not consider Avalon Airport as industrial zoned land but does include it in the forecasted employment land supply.

The key conclusions with implications for GAEP are that the '**Western Industrial Precinct and Boral land be defined as one 'investigation precinct'' and that the 'investigation precinct should focus on meeting local and sub-regional needs'**, including 'existing market demand for warehousing, large format retail and trade supplies and growth sectors such as social service and caring economy activities, sustainable growth and environment sectors and advanced manufacturing' with a 'range of lot sizes to meet demand from 250 sqm from up to 1 ha' and 'consideration should be given to large format manufacturing with needs of 4,000 sqm to five hectares'. The report does not find the Western Industrial Precinct or Boral land would be regionally or state significant and on this basis is unlikely to be a direct competitor to the GAEP Precinct.

The **Avalon Airport Masterplan** (2015) identified several site and operations developments. These include:

- expanding the existing domestic terminal to accommodate international operations
- provision to construct a new international terminal
- the establishment of airfreight terminals
- provision to lengthen the existing runway to up to 4,000 metres, development of a new parallel runway and a proposed cross runway
- the continued curfew free status of the aerodrome.

The Masterplan also identified the reservation and provision for the establishment of rail.

These upgrades would position Avalon Airport as a significant passenger and freight hub.

Beyond the Airport itself, the Masterplan proposed the development of residential hotel, retail, commercial and industrial uses.

An updated Masterplan is currently in development. It is anticipated that the Airport will continue to pursue the development of the land outside the Airport operations for a mix of retail, commercial and industrial uses. Motorsport Australia and the State Government recently announced that Avalon Airport has been selected as the preferred site for Victoria's proposed new Home of Motorsport.

3.2 Key insights

Strategic planning documents identify the GAEP as a major future employment precinct based around the airport, its aviation and freight functions, and extending to other significant industrial and economic activities. Planning should support future development consistent with this direction, including taking a long-term view of future prospects.

Based on this review there is – at this point- limited strategic justification for the idea of a fully-fledged 'aerotropolis'. An aerotropolis being a metropolitan subregion where the layout, infrastructure, and economy are centred on an airport which serves as a multimodal "airport city" core[4]. This would imply significant commercial, retail and residential activity with major supporting infrastructure, including education, health, recreation and transport infrastructure and services. It would also be at odds with strategic ambitions for residential and commercial intensification in nearby Geelong and key activity centres in western Melbourne.

Nevertheless, the idea of GAEP as a hub in a 'national transport and logistics precinct', forming a connection between the port of Geelong, the Geelong Ring Road Airport Precinct and Avalon Airport as suggested in the G21 Economic Development Strategy, including an associated deep spread of industrial and economic activity, should be further developed. In the very long term (30-40 years or more) multi-use precincts and enhanced integration of uses in a wider area around the GAEP could develop (approximating an 'aerotropolis' concept).

Taking a long term perspective, this raises two key considerations:

- The need to protect corridors for enhanced connectivity within the precinct and to nearby residential areas within a wider planning area, thereby safeguarding opportunities for enhanced integration in the future
- Careful planning in surrounding areas to 'land bank' for the future, enabling a greater complexity of uses in different sub-precincts (identifying a Stage 2 future planning and development process is consistent with this idea).

More immediate planning considerations arising from the analysis identified for the GAEP:

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[4] The Aerotropolis Group, n.d. https://www.aerotropolis.com.au/about-us/

- Inclusion of principles relating to Water Sensitive Urban Design (WSUD) and Biodiversity Sensitive Urban Design (BSUD), particularly for land west of Avalon Airport.
- Consider 'amending the existing Farming Zone of the Geelong Motor Sports Complex to recreational open space or other suitable zone, which could be facilitated via a future rezoning associated with the implementation of the Greater Avalon Employment Precinct Structure Plan[5]'. Note that the Geelong Motorsport Club have identified that their preference is for industrial/commercial uses in the long term.
- Implication of the Airport buffer requirements. Development must be in accordance with Civil Aviation Safety Authority's (CASA) regulatory requirements as set out in the National Airports Safeguarding Framework (NASF) and Clause 18.02-7S of the Greater Geelong Planning Scheme. Specific considerations are the potential intrusion of buildings or other structures into air space; plume rise from industrial uses; activities that increase the risk of bird strike and the impacts of aircraft noise on surrounding uses.

[5] City of Greater Geelong. Avalon Corridor Strategy Implementation https://www.geelongaustralia.com.au/acs/article/item/8db44d5102f0241.aspx

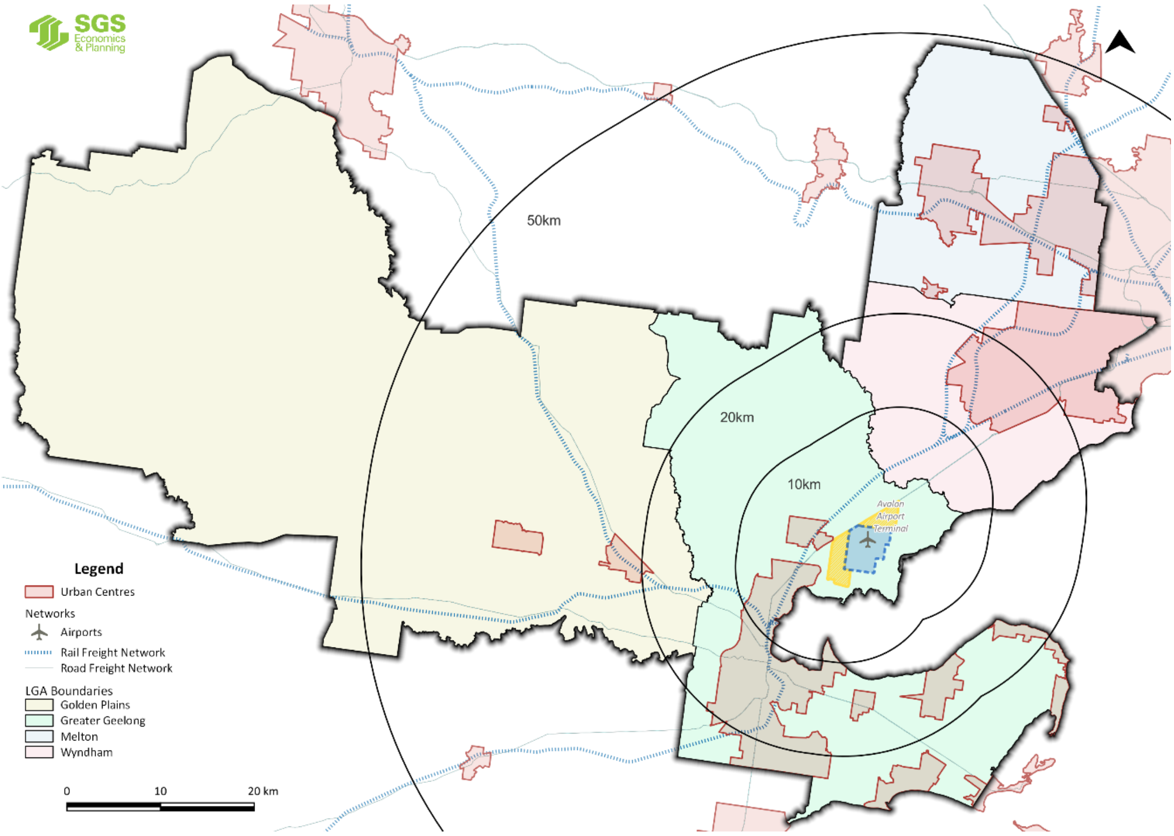
4. Regional population, employment and labour force

This section provides a summary of population, dwelling and employment figures for the broader region.

4.1 The region

The GAEP will be a regionally significant employment precinct. Future population growth, the skill levels of working residents and the current industry character and strengths of the region will all influence the precinct prospects. For the purposes of this section, the region is defined as Golden Plains, Greater Geelong, Melton and Wyndham local government areas Figure 6.

FIGURE 6: STUDY REGION



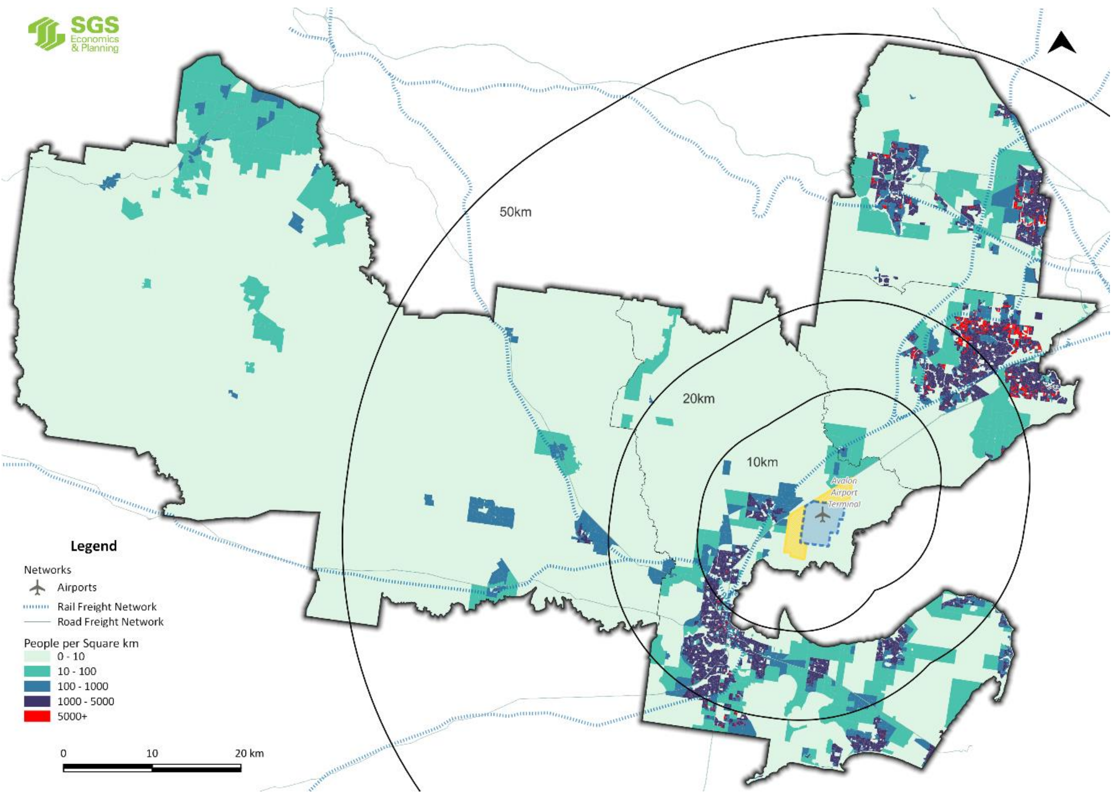
Source: SGS Economics and Planning, 2023

4.2 Population and dwellings

The study region experienced a 32 per cent increase in population over the 5 years from 2016 to 2021, up from 607,659 to 800 200. The age bracket with the highest growth was that aged 65 and above, with a 74 per cent increase in that cohort, though the largest absolute increases were in the working age cohorts aged 26 to 64. The total population growth in the region (32 percent) was over three times that of Greater Melbourne and Rest of Victoria (both 10 per cent) in the same time period (see data tables in Appendix C).

The population distribution in the region is shown in Figure 7, and highlights the location of the GAEP in between the urban areas of south-west Melbourne and northern Geelong. The settlement of Lara is immediately to the west.

FIGURE 7: POPULATION AND SETTLEMENT IN THE REGION 2021



Source: SGS Economics and Planning, 2023

Over the next 20 years, the region's population is forecast to increase by 71 per cent, from a total population of 800,000 in 2021 to 1.3 million in 2041. This is well above the forecast change for Greater Melbourne and the Rest of Victoria (see data tables in Appendix C).[6]

To sustain this population growth additional dwellings will be required in the region. Dwellings are forecasted to increase by 219,300 dwellings or 75 per cent over the next 20 years (2021-2041) in the

[6] Greater Melbourne data includes Melton and Wyndham. Rest of Victoria data includes Golden Plains and Greater Geelong.

study region. This is around three times the total dwelling increase expected in both Greater Melbourne and rest of Victoria. Additional dwelling data is provided in Appendix C.

4.3 Labour force analysis

The study region overall has a similar skills profile to the 'rest of Victoria' – though with a higher share of residents with lower skills, based on formal education and training, previous employment experience and on job training (see Appendix C for more information).

The region has a comparatively higher shares of working residents in lower skilled service and manual occupations (community and personal service, clerical and administrative and sales workers, and machinery operators and drivers).

In relation to gender there is a solid- and comparable level- of female participation in the workforce in the study region compared to Melbourne and the rest of Victoria. Given the previous datasets it is likely female participation is concentrated in lower skilled occupations, particularly compared to Greater Melbourne as a whole.

4.4 Comparative advantages across all industries

To understand the study region's competitive strengths and weaknesses, a location quotient (LQ) analysis was completed. The LQ score for a sector is given by the share of employment for that sector in the region divided by its proportional representation in a relevant comparator region. The comparator regions for this analysis are Greater Melbourne and the Rest of Victoria. An LQ score of greater than 1.0 signifies that the sector in question is a speciality in the region (relative to Greater Melbourne/Rest of Victoria). All regions will have some sectors with LQ scores greater than 1.0 and some less than 1.0.

Over-representation (a score greater than 1.0) may suggest that these industries have a comparative (can produce products at a lower cost) or competitive (differentiation from a competitor) advantage, and the LGAs may be 'exporting' from these sectors to other regions. This includes *exporting* services to tourists that might visit the areas.

The analysis, as detailed in Appendix C, indicates that employment in the region is growing significantly. Employment growth is significantly though not wholly related to population growth associated with greenfield development in Wyndham in south western Melbourne and Armstrong Creek and Geelong generally.

For the study region, against the rest of Victoria there are only a few sectors of apparent competitive advantage (Wholesale Trade and Transport, Postal and Warehousing are amongst these). Against Greater Melbourne the study region shows an apparent competitive advantage particularly in:

- transport, postal and warehousing and wholesale trade (reflecting the strong role of these sectors in the region's industrial areas with good access to transport and distribution networks)
- construction (reflecting the general residential and infrastructure growth requiring building and construction activity)

- health care and social assistance (reflecting population growth and the need for 'population serving' activities)
- mining (likely reflecting residual quarries in the region)
- education and training (in particular their role as 'population serving' activities)
- accommodation and food services (influenced by Geelong and the region's 'holiday' economy)
- retail trade (reflecting its role serving a growing population)
- rental, hiring and real estate (again reflecting housing and industrial property growth).

Manufacturing employment in the study region has marginally declined and surprisingly, is not a 'strength' relative to the rest of Victoria as a whole, though it is compared to metro Melbourne. The full analysis is available in Appendix C.

Analysis of LQ score for Greater Geelong and Wyndham show:

- Geelong's consistent comparative strengths relative to Greater Melbourne and Rest of Victoria include health care and social assistance, construction, education and training as well as retail trade.
- Wyndham has a strong comparative advantage in transport, postal and warehousing and this sector is expected to continue expanding with additional demand for industrial floorspace. Wyndham's additional comparative advantages that are consistent across the geographies include retail trade, wholesale trade, education and training as well as construction.

Manufacturing is not a relative strength in either council area, relative to the comparator regions, but with new industrial land development opportunities including GAEP manufacturing activity will continue to be attracted to the region.

4.5 Comparative advantages in manufacturing

Compared to the Rest of Victoria, the study region has apparent comparative strength in polymer and rubber production, petroleum and coal manufacturing, basic chemical and chemical product manufacturing, textile, leather, clothing, and footwear production as well as printing. When compared to Greater Melbourne, the study region has a competitive advantage in petroleum and coal manufacturing and marginal advantages in non-metallic, mineral production, textile, leather, clothing and footwear production and food product manufacturing.

The petroleum refining is a dominant regional manufacturing speciality but is declining in importance. The 'heavy' and traditional manufacturing sectors are generally similar. Noticeably, food product and beverage manufacturing are growing as well as emerging as specialities. The full analysis is available in Appendix C.

4.6 Key insights

The population, dwelling and employment profiles of the region (the four local government areas) within which the GAEP sits, points to several key considerations for the future development of the GAEP.

A strong regional workforce:

- Population growth in the region is expected to continue at rates well above the population growth of Greater Melbourne and rest of Victoria, with a forecast increase of 64 per cent over the next twenty years.
- This population growth is also reflected in significant dwelling growth, with a forecast 74 per cent increase to 2041.
- This large and growing workforce will need access to employment and places for enterprise and business and development.
- The skill level (level of formal education and training) of a population is indicative of the readiness of the workforce. According to 2021 census data, the region as a whole has less highly skilled residents and more lower skilled (level four) residents than Greater Melbourne. The *Greater Geelong Economic Profile* (2022) indicates that Greater Geelong has a significantly higher share of residents with a degree qualification compared to the Rest of Victoria, at 33 per cent and 25 per cent respectively.
- For the GAEP, this suggests access to a rapidly growing workforce with low to moderate skill levels. However, as manufacturing and industrial jobs become more technologically advanced and require more specialised and higher order skills, they may need additional education and training.
- Alternatively, if the site is able to attract activities requiring higher skill competencies, then it will contribute to growing a higher skilled resident workforce. In this way the medium to long term development of the precinct will contribute to a maturing of the economy of the corridor.
- For residents in Melbourne's west, the precinct offers accessibility benefits of reduced travel time due to going against the main flow of traffic going into the city during peak hour, based on current travel patterns. As a result, the precinct may be able to attract more skilled workers from Melbourne's west.

Industry and employment growth, and emerging specialities, in the region appear to be driven by:

- The strong role of sectors in the region's industrial areas given good access to transport and distribution networks (such as transport, postal, warehousing and wholesale trade.
- The general residential growth and infrastructure development requiring both building and construction activity and rental, hiring and real estate services.
- General population growth requiring 'population serving' activities (health care and social assistance, education and training, accommodation and food services and retail trade).

When looking at manufacturing specifically, expanding sectors with a traditional strength/emerging sector include polymer product and rubber product manufacturing, basic chemical and chemical product manufacturing, and food product manufacturing. The analysis considers manufacturing as a traditional strength but declining prominence. 'Heavy' and traditional manufacturing sectors (including petroleum refining and polymer related activities) remain significant but are declining in importance. They are unlikely to provide major new employment opportunities.

A lack of large industrial lots may also be contributing to the decline in heavy manufacturing. Food product and beverage manufacturing are growing as well as emerging as specialities in the region. Chemical product and furniture and related activities are emerging as strengths. More recently, Geelong has seen a transition towards specialised manufacturing which may not be captured within the ABS categories. Projects related to this type of manufacturing include the Hanwha defence project which has begun construction on a new Armoured Vehicle Centre of Excellence in the Avalon Airport precinct.

5. Emerging trends and opportunities

This Chapter examines macro and local trends influencing the shape and function of industrial precincts.

5.1 Macro industry trends

Megatrends in manufacturing include: a shift towards bespoke manufacturing and made to measure; expanding into services as well as products; smart connected systems incorporating technology and data systems; sustainable operations through technical innovation, net zero and circular economy precincts and reduced transportation costs; and supply chain transformations with increased collaboration along the supply chain and co-location to increase efficiency.

Renewable fuels will continue to grow in popularity ranging from electricity, hydrogen, and many other green energies to fuel the transport sector, from cars and trucks, to ships and planes. As zero and low carbon solutions become more technically and commercially viable, it will be an important consideration for the strategic planning of GAEP- anticipating how people and vehicles will move in the future. Viva Energy Australia has outlined consideration for a suitable easement corridor for future jet fuel Pipeline assets from BOPL Pipeline to service Avalon Airport. The purpose of this pipeline would be to transport jet fuel to the airport, reducing the need to truck supply, and in turn avoid transport emissions, while also improving overall safety and increasing capacity for fuel supply to the airport. This would help meet Avalon Airport's future fuel demand.

Advanced manufacturing is characterised not by what is produced, rather by how it is produced. This is enabling diversification in manufacturing as technology allows for more nimble and flexible production. As manufacturing becomes more technologically driven, it needs to be matched by a more highly skilled workforce.

Co-location of knowledge and production, locating industrial precincts are close to close to concentrations of research and development capability, allows for the alignment of advanced manufacturing capabilities with knowledge economy services and intelligence.

Circular economy continually seeks to reduce the environmental impacts of production and consumption, while enabling economic growth through more productive use of natural resources. Industrial precincts present a compelling opportunity to further the transition towards a circular economy, be it processing of recycling or production of good using recovered materials.

Freight and logistics, and the impact of e-commerce has seen the desire for quick delivery disrupting traditional supply chains. First and last mile transport and handling of freight goods will remain important, along with access to logistics centres near urban populations.

Importance of supply chains, with research by the CSIRO[7] finding that Australia's supply and value chain advantage is most acute in the intersection of the knowledge economy and advanced manufacturing capabilities; in niche low-volume high-value markets requiring specialisation, strong links to world-class R&D and high levels of quality control. This advantage has a clear spatial dimension to it, with precincts close to the places where knowledge is developed and funded (Universities, hospitals and commercial districts) being well placed to play this role.

Supply chain co-location efficiencies see inter-dependant industries co-locate presenting the opportunity to leverage supply chain links.

Data centres are an increasingly important part of the IT infrastructure that underpins innovations in Artificial Intelligence, smart agriculture, smart manufacturing, smart supply chain along with the ability to support 'real time' requirements such as video conferencing, live conferencing, gaming, banking, content streaming services. Looking forward autonomous vehicles (cars, buses, trains) will need access to networks with zero latency so they can make decisions in real time. Data centres require access to a guaranteed electricity supply and consume large amounts of electricity. Currently, Avalon has limited options for fibre connection as it is not within carrier-dark fibre network and is far from the available carrier-neutral networks. Ausnet is the only data centre in Geelong. Invest Victoria has identified data centres as a sector well suited to the GAEP. While they have a low job density, they may be a key catalyst for co-locating investment.

Business operations in industrial precincts reflects the co-location benefits many businesses offer, such as R&D or specific professional services, and that industrial precincts can play a role in supporting business in niche sectors whose require non-commercial or retail floorspace.

Community related synergies are increasingly located in industrial precincts near residential areas, this includes uses such as off-site storage, dark kitchens (servicing food delivery), gym and recreational facilities which require large floorplates and high ceilings and boutique lifestyle products such as breweries and gin distilleries.

Key insights

- The focus on building advanced manufacturing capabilities in Victoria presents an opportunity for the GAEP, given the ability to provide large areas of industrial zoned land in relatively close proximity to the population and businesses of Greater Melbourne, particularly Melbourne's west, and Geelong. Proximity to ManuFutures (Deakin Universities Advanced Manufacturing precinct) and the ability offer large scale industrial sites may be an advantage.
- Developing local capability to become more self-sufficient in waste processing and re-purposing waste through a 'circular economy' is a key focus area for the Victorian Government, and for many Australian industries. These are land uses that require industrial zones and typically benefit from being located away from established residential areas but close to transport networks.

[7] CSIRO (2016) Advanced Manufacturing Roadmap

- As a greenfield precinct of considerable size, there are opportunities to explore and encourage supply chain co-location efficiencies, particularly in relation to advanced manufacturing and green technologies.
- In the Victorian Planning System office use may be allowed in industrial zones 1 and 2 (permit required). Smaller niche manufacturing and advanced manufacturing (that requires the co-location of knowledge/research development and production) may benefit from inclusion of flexible office/industrial space in industrial areas.
- Freight and logistics operations are a relevant land use given the proximity to Avalon Airport and, with the growth of e-commerce and on-demand delivery, land for freight and logistics operations with good access to urban populations remains valuable.
- Data centres produce a low number of jobs, in addition to their significant electricity and water requirements. While they are not considered the preferred industry due to these constraints, there may be a role for data centres as a catalyst for co-locating industries and investment.
- Industrial precincts across Greater Melbourne host a number of non-traditional functions. In the case of the GAEP, the ability to accommodate complementary functions, such as office space for business services, or functions that improve amenity such as food outlets, cafes, gyms may be beneficial due to the somewhat isolated nature of the precinct. It is noted the GAEP precinct should not directly compete with the regional and sub-regional retail centres identified in the City of Greater Geelong's *Retail Strategy* 2020-2036.

5.2 Market prospects

Consultation summary

SGS consulted with government and private sector stakeholders to gain a deeper understanding of the GAEP's strategic positioning and opportunities regarding industrial demand, supply and feasibility of delivering employment floorspace to market. These findings are based on stakeholder's experiences consulting with businesses seeking industrial land, and their broader understanding of industrial business needs.

The findings of the consultation are categorised by theme, as follows.

GAEP's strategic attributes

- The GAEP presents a unique opportunity for industrial land use development, and a critical opportunity to attract high value industrial activities to support employment growth in the region.
- There is a lack of available industrial land in Geelong, which is in high demand and more affordable relative to Greater Melbourne (benefits of Geelong's location includes savings on freight transport costs and payroll tax). There is also greater opportunity for businesses to expand in Geelong, whereas in Melbourne they're more likely to be landlocked.
- Proximity to transport connections e.g. Avalon Airport, Melbourne's most active port, railway, freight routes. Such locations with good transport links for industrial sites are not prevalent in Geelong. Avalon Airport is underutilised by businesses as a freight and logistics hub and there is

opportunity to enhance access via road and rail. The 2015 Avalon Airport Masterplan identified plans for a dedicated airfreight facility as part of the airport's future development aspirations.

- It will be important to ensure transportation supports and enables business development. Congestion issues and increased travel times are barriers to attracting development.
- Proximity to other industrial employment clusters e.g. Werribee south precinct, Ballarat West Employment Zone.
- Proximity to labour force – residential settlements in Geelong and to the west of Greater Melbourne, maximise the talent pool.
- The broader region is attractive for both businesses and labour force, through its lifestyle attractors, including its coastal areas and surfing locations.

Avalon Airport Masterplan

- The 2015 Avalon Airport Masterplan is currently in the process of being updated. The 2015 Masterplan included long term plans for runway expansion and increasing terminal capacity, increasing airfreight capacity and the development of non-aviation uses such as a dedicated retail and commercial precinct in the north western corner of the airport land, including a business park with light industry and warehousing.
- Any proposed expansion will require infrastructure planning and investment.
- Consideration of adjoining potential land uses will be important to ensure connectivity and linkages, including complementary land uses. The staging of Airport expansion should be considered when developing adjoining sites.

Industrial land opportunity

- There are a broad range of potential industrial businesses with diverse needs. The GAEP provides an opportunity to meet a portion of the overall demand for industrial land.
- Higher value industrial activities, including those in the emerging technology sector, may benefit from this location. For example, recycling, clean technology, and other innovative industries.
- Heavy industrial uses, such as manufacturing, enable increased opportunities for job creation – for every 3 jobs created, another 2 jobs are created – thereby multiplying employment opportunities in the broader region.
- The precinct is well positioned for ecommerce activity.
- Future land uses should ensure they do not affect aerospace activities or create an aviation risk. In particular, they must comply with Civil Aviation Safety Authority's (CASA) regulatory requirements.
- Future land uses should consider cohesion with the proposed expansion of Avalon Airport and its future non-aviation activities. Particularly considering as per the 2015 Masterplan the proposed development will offer a full range of amenities.
- Invest Victoria provided the following examples of uses seeking suitable industrial land in Melbourne's west:
    - Food wholesale distributor: 5-7 ha
    - Packaging manufacturer: 20+ ha
    - International food manufacturer: 15 – 17 ha
    - Equipment Hire company: 5 – 10 ha

- Freight company: 10- 20 ha
- Steel Manufacturing: 20 ha

Floorspace needs

- Providing appropriate lot sizes for business floorspace needs should be a high priority.
- Provides a significant opportunity for larger lot sizes. Enquiries for 5ha sites or more. In particular, there is a lack of lots of around 2500sqm or more to support heavy and land hungry industrial uses.
- Emerging startup businesses are growing and in need of larger floorspace.
- Larger buffer allowances in this location provide opportunity for heavy industrial uses, thereby potentially filling a gap in the market.

Development considerations

- There is a lack of higher amenity heavy industrial precincts in Geelong, a gap which this precinct could fill if well-planned.
- Businesses are more likely to be attracted to this location if it includes a full range of amenity and services, such as small food outlets, gym, etc. and proximity in terms of travel time to Melbourne and Geelong.
- Infrastructure needs of businesses is an important consideration, including transport and safe cycling connections (employment access) for staff, road access for larger vehicles, access to significant electricity supply levels (including renewable energy) (particularly for advanced manufacturing, and resolving location of gas pipelines.
- Commercial activity within the precinct must not directly compete with the regional and sub-regional retail centres identified in the City of Greater Geelong's *Retail Strategy* 2020-2036.
- Data centres require access to high energy loads and water. These requirements should be considered at the structure planning stage. This includes access to utilities and enabling opportunities to recycle water from industrial operators in the precinct.

Site purchase or lease considerations

- It is common for developers to purchase large wholesale sites and subdivide them, and for these sites to be owned by institutional investors. Owner-occupiers make up the minority.
- Developers will have a major influence on how future development is led and staged.
- Intention to develop is an important consideration. The aim should be to avoid or discourage land banking for speculative purposes, an issue which has become prevalent in Geelong. Current industrial landowners in some precincts may be looking for opportunistic sales / 'the right buyer', while also being capable of developing the site themselves, and as a result are not in a hurry to sell or develop. This lack of development activity can impact strategic economic development for the region and competitiveness in attracting new industry.
- A build to lease model involves businesses purchasing land to develop, then leasing sites or completed units to other businesses.
- Businesses looking for an industrial site can liaise with Invest Victoria and get assistance with site selection and lease brokerage.

Successful precedents

- The CottonOn Group, North Geelong: the large site headquarters site provides a full range of amenities for its staff consisting of approximately 1,200 people. As shown in the image below. It is worth noting that this development was assisted with funding from State Government, and as it is a somewhat unique business model, may be less likely to occur organically in the setting of GAEP.
- Essendon Fields: provides a successful example of an attractive mixed-use precinct with industrial, office, accommodation and retail uses.
- Western Sydney Airport: provides an example of an Airport located outside the metropolitan area, comprising a mix of uses outside the Airport operation, including logistics, trade, aerospace and defence, advanced manufacturing and tourism. The Airport is an important part of Greater Sydney's three unique but connected cities, as detailed in the Greater Sydney Region Plan 'A Metropolis of Three Cities'.
- Canberra Airport: caters to aviation and non-aviation activities, by integrating three precincts (Brindabella, Majura Park and Fairbairn) as part of the Business Park. They are characterised by campus style environments that aim to create a sense of community and achieve balance between work, health and lifestyle. They offer childcare facilities, BBQ and entertainment areas, sport and recreation facilities, financial and retail services, a medical centre, conference and meeting room facilities, food and beverage outlets, a hotel and car parking for staff and visitors.

GAEP landowner reports

Of the 12 private landowners, MAB corporation and Dominion Property Group prepared a series of reports.

MAB's reports focussed on the sites they own and investigated their suitability for rezoning as an industrial and commercial district. Dominion has published 4 lot-specific reports so far, to assess the suitability of each lot as a part a high-level masterplan. The masterplan is, broadly speaking, the industrial and commercial rezoning of this precinct around Avalon Airport.

Overall, these reports found the land to be very well suited to an industrial rezoning, due to flat and mostly open lands, prime location from Geelong and Melbourne, and access to high-impact investment sites. Some additional insights are highlighted below.

Access to Melbourne markets

Location analysis for MAB of their proposed 'MAB Avalon Business Park' compared the site to three alternate precincts: 'the west' (Tarneit); North Melbourne (Beveridge); Melbourne Outer South East (Dandenong). The analysis found:

- From an overall inbound transport time/distance and cost perspective the MAB Avalon Business Park compare favourably to all sites and "in particular its inbound profile supports an efficient delivery cost model"[8]. The sites outbound profile is slightly inferior compared to Tarneit, but better

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[8] Tm insight (2019) MAB Avalon Business Park Location Analysis, April 2019

than Beveridge and Dandenong sites. The Avalon site has more direct routing and less congestion than the other sites.

Industrial land context

MAB's Industrial Market Research Report prepared by Urbis (2019) found that:

- The MAB land represents a significant holding within the Geelong industrial market. Outside the airport itself, at 780ha (combined) it exceeds any currently available holdings or future supply within the immediate area. "The size of the development if made available for purchase would be the single largest industrial holding in the Melbourne market from an active development perspective and more than double the next largest being the Melbourne Airport Business Park at Tullamarine although this estate only provides leasehold tenure."
- "A large holding of this size creates the opportunity for a consolidation of land uses within a desirable area and allows for long term place making[9]."
- Opportunity to cater to previously untapped industrial demand for large lots and 'Super Users", noting that the Geelong Industrial submarket has historically comprised catered to smaller local operators but more recently has seen examples of Super Users locate in GREP.
- Geelong large-scale active land market is currently limited to the GREP and Avalon area, with the GREP fast becoming exhausted with limited supply of Large Lots.
- The GAEP would provide the option of freehold, noting the Avalon Airport land does not allow for the option of freehold.
- The Avalon precinct could capture part of the demand currently absorbed by the Melbourne Metropolitan Market, significantly changing the overall market dynamic of Geelong.

Industry suitability

The analysis found the site would be suited to a big box retailer or '3PL' (housing construction, warehouse and logistics industries) organisations. Co-location with Avalon Airport could present the opportunity for specialist Victorian air freight cargo operations. This aligns with the Economic and social impact assessment of the MAB Avalon precinct (2020), prepared by Deloitte Access Economics, which found manufacturing; transport, postal and warehousing; wholesale trade and to a lesser extent agri-business to be the most likely industries to locate in the precinct.

Key proposed industries and subsectors identified in the landowner reports are shown in the table below. Of the proposed uses manufacturing, and transport, postal and warehousing align with the strategic vision for the precinct. With regard to retail bulky goods, it is noted that the precinct should not directly compete with the regional and sub-regional retail centres identified in the City of Greater Geelong's *Retail Strategy* 2020-2036.

[9] URBIS (2019) Industrial Market Research Report 225-275 Avalon Road, Avalon, Vic, 3212

TABLE 4: PROPOSED USES IDENTIFIED IN LANDOWNER REPORTS

Manufacturing	Transport, postal and warehousing	Wholesale trade	Tourism/ Other
Fabricated Metal Product Manufacturing Prefabricated Building Manufacturing Transport Equipment Manufacturing Machinery and Equipment Manufacturing Food Product Manufacturing	Road Transport Air and Space Transport Postal and Courier Pick-up and Delivery Services Transport Support Services Warehousing and Storage Services	Basic Material Wholesaling Machinery and Equipment Wholesaling Motor Vehicle and Motor Vehicle Parts Wholesaling Grocery wholesaling	Tourism Retail bulky goods

Source: Deloitte (2020)

5.3 Key market insights

The macro-trends point to generally positive prospects for the GAEP:

- The focus on building advanced manufacturing capabilities in Victoria presents an opportunity for the GAEP, given the ability to provide large areas of industrial zoned land in relatively close proximity to the population and businesses of Greater Melbourne, particularly Melbourne's west, and Geelong. Proximity to ManuFutures (Deakin Universities Advanced Manufacturing precinct) and the ability offer large scale industrial sites may be an advantage.
- Developing local capability to become more self-sufficient in waste processing and re-purposing waste through a 'circular economy' is a key focus for the Victorian Government, and for many Australian industries. These are land uses suited to industrial zones and typically benefit from being located away from established residential areas but close to transport networks.
- As a greenfield precinct of considerable size, there are opportunities to explore and encourage supply chain co-location efficiencies, particularly in relation to advanced manufacturing and green technologies.
- Data centres produce a low number of jobs and require access to large amounts of electricity and water. While they are not considered the preferred industry due to these constraints, there may be a role for data centres as a catalyst for co-locating industries and investment. This assumes the required infrastructure around electricity and water can be delivered to support this type of use in the precinct.
- In the Victorian Planning System office uses may be allowed in industrial zones 1 and 2 (permit required). Smaller niche manufacturing and advanced manufacturing (that requires the co-location of knowledge/research development and production) may benefit from inclusion of flexible office/industrial space in industrial areas.

- Land for freight and logistics operations is a relevant land use given the proximity to Avalon Airport and, with the growth of e-commerce and on-demand delivery land for freight and logistics operations that has good access to urban populations remains valuable.
- Industrial precincts across Greater Melbourne are hosting a number of non-traditional functions. In the case of the GAEP, the ability to accommodate complimentary functions, such as office space for business services, or functions that improve amenity such as food outlets, cafes, gyms may be beneficial due to the somewhat isolated nature of the precinct.

The findings of the consultation process and review of the GAEP landowner reports confirm the opportunities identified in the macro analysis and highlight the unique role the GAEP can play in supporting business activity and employment in the region and meeting a share of the overall demand for industrial land. The GAEP is well located for employment land uses, through its proximity to transport connections, freight networks, labour markets (residential settlements) and connectivity to other industrial precincts in Geelong, Melbourne and Ballarat.

The sites within the GAEP are ripe for development. In making sites available for industrial development a logical staging approach should be included, with mechanisms to facilitate orderly development (and discourage land withholding for speculative purposes).

The precinct should be carefully planned to attract businesses that require different lot sizes supported by appropriate infrastructure and amenities. There is an opportunity to attract higher value businesses, including a spectrum of industrial manufacturing uses, alongside ‘land-hungry’ freight and logistics, in larger lots, in addition to a mix of enterprises requiring small to medium sized lots. There are also emerging sectors adopting new technologies that may have a range of specific site requirements.

Businesses and staff are also more likely to be attracted to this precinct through provision of a full range of amenity and services. Precedents with successful activity hubs include the CottonOn Group manufacturing site in North Geelong and the Essendon Fields industrial precinct.

The future master planning of Avalon Airport and its proposed expansion should be considered in the planning of the precinct. Precedents may include Western Sydney Airport and Canberra Airport.

6. Land demand and supply

This chapter considers the GAEP's impact on industrial land demand and supply in the Western Corridor (Wyndham, Geelong and the Western SSIP) and identifies potential land-take up rates for the precinct, given assumptions about different shares of demand being attributed to competitor and comparator industrial areas in the corridor.

This analysis looks at the characteristics of the GAEP in the context of the broader industrial land market in Wyndham and Geelong, and the impact of the Western SSIP. The aim of the analysis is twofold:

1. To establish the role and function of the GAEP (GAEP North and West and Avalon Airport) relative to other industrial precincts in the region; and
2. Determine the likely future industrial land demand and supply based on these findings.

6.1 Method

The following method has been applied:

- Identify regionally significant and state significant industrial precincts in the western/south western metropolitan corridor considered to be competitor precincts to the GAEP (namely Western State Significant Industrial Precinct and the Geelong Ring Road Employment Precinct).
- Review historic and forecasted consumption rates in the competitor precincts to identify a potential comparator rate to apply to the GAEP
- Generate two take-up scenarios for the GAEP and the sub-precincts based on:
  - a lower and higher assumed land 'take-up' rate across all the competitor precincts (WSSIP, GREP, GAEP precinct and the Airport).
  - the advice and assumptions provided by the VPA for available vacant supply and take-up rates for Avalon Airport and the net developable land in the precinct and proposed staging for the sub-precincts.
  - GAEP's attributes and role amongst the competitor industrial areas and how take-up rates might change over time (Avalon Airport is isolated from GAEP North and West for this analysis).
  - Identify the amount of land in the GAEP precincts attributable to Stages 1 and 2.

6.2 Competitor industrial precincts

Due to its location and accessibility, scale and the opportunity to leverage airport related development and activity the GAEP is likely to be of regional or state-wide significance, which is acknowledged by its inclusion as a priority precinct in Plan for Victoria. The selection of competitor precincts for the industrial land supply analysis was therefore limited to precincts considered of regional and/or state significance in the western/south western metropolitan corridor, which has been identified as the submarket within which GAEP will compete.

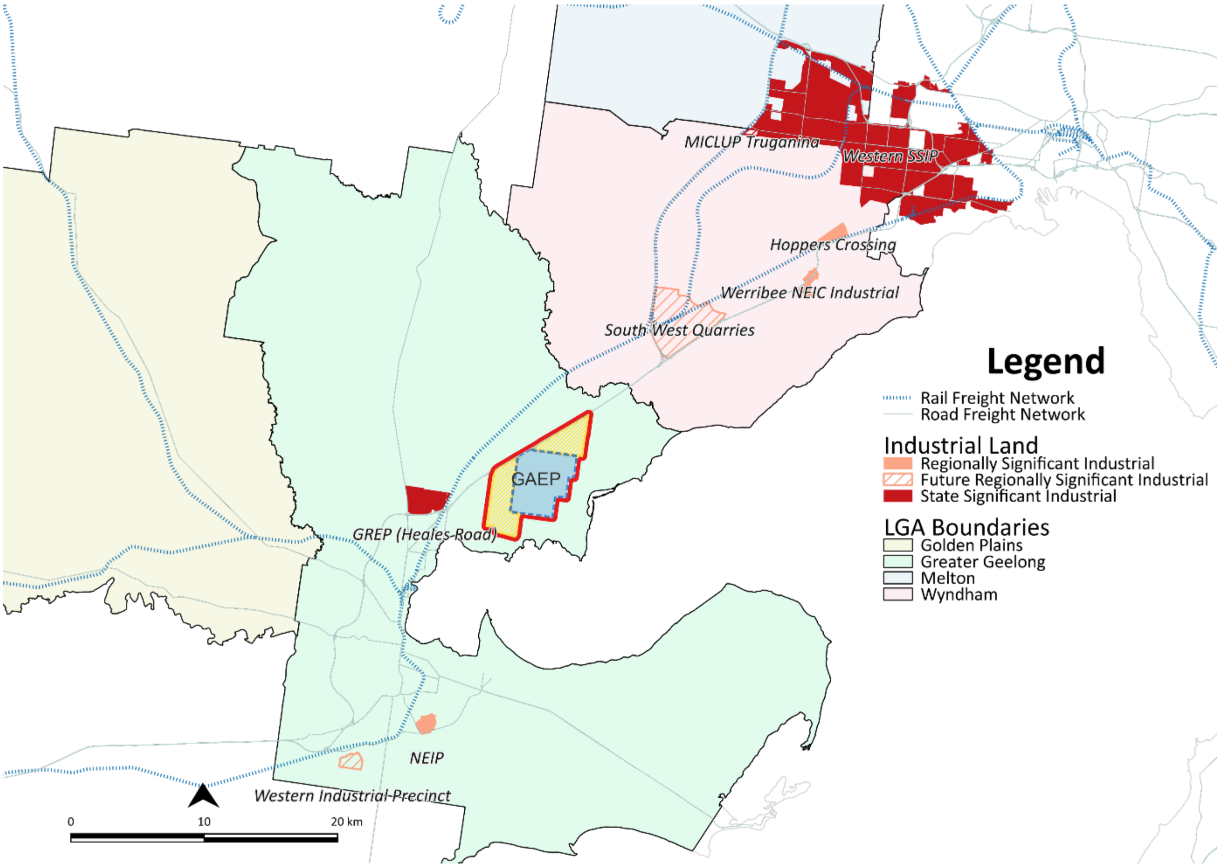
As detailed in Appendix D, analysis of the seven regional and state significant precincts within the Wyndham and Greater Geelong LGAs found the Geelong Ring-road Employment Precinct (GREP) plus the Western State Significant Industrial Precinct (WSSIP) to be the likely strategic competitors to the GAEP in the western/south-western metropolitan corridor, notwithstanding the presence of other industrial areas, which are considered to be more locally focussed or not yet confirmed for development in the near to mid-term (the South West Quarries site for example). The strategic rationale for these areas as competitor precincts is summarised in Table 5.

TABLE 5: COMPETITOR INDUSTRIAL PRECINCTS IN THE WESTERN/SOUTH WESTERN METROPOLITAN CORRIDOR

Ranking	Precinct	Reasoning
1	GREP	Highly connected and versatile industrial land, close to Geelong's growing population centres with an industrial buffer zone away from competing land uses. Land usage rates have been solid with an average consumption rate of 13.6 ha annually. This precinct's accessibility and amenity qualities and preparedness for the market makes it the premier industrial site in Greater Geelong presently.
2	GAEP – GAEP North and West and Avalon airport	Large availability of land close to both Geelong's growing population centres and Greater Melbourne. Presents economic opportunity to develop high value industrial activity, not limited by lot size and close to road, rail, sea and air. Minimal development restrictions once planning is complete and well placed to enter the market pending the development of a planning scheme amendment.
3	Western State Significant Industrial Precinct (WSSIP)	Much of this precinct is already occupied, however it is so large that it still offers significant development opportunities. State Strategic Significance status confers development advantages. Land take-up here has accelerated over the last 8-10 years. Future expansion of this precinct is planned to occur outside of Wyndham LGA, on the north side in Melton LGA.

Source: SGS Economics and Planning, 2023.

FIGURE 8: COMPETITOR PRECINCTS IN THE WESTERN/SOUTH WESTERN METROPOLITAN CORRIDOR



Source: SGS Economics and Planning, 2023

Industrial employment and lot size demand

Analysis of broad categories for industrial employment and lot size needs determined that larger (inter)national businesses seeking locations which will enable them to serve an expansive national and international market are considered the most likely form of development of GAEP North and West. This aligns with the strategic directions of developing the area as a state or at least regionally significant industrial precinct.

This categorisation typically implies uses that include warehousing, distribution hubs, logistics, waste management and manufacturing firms, leaning to the land-intensive end of the industrial spectrum. These uses typically seek lot sizes ranging from 1-5 ha and beyond to 5+ ha. Proximity to surrounding residential areas can be restrictive for many of these activities, and access to transport networks is a necessity.

This analysis is consistent with findings from the stakeholder engagement and has been used to inform the assessment of competitor precincts, recognising the ability to develop lot sizes from 1 to 5 and 5+ hectares as a competitive characteristic. Access to larger lot sizes and connectivity options were considered as part of the multicriteria assessment of competitive precincts.

6.3 Competitor precincts' supply and historic industrial land consumption

Take-up rates in the GREP and WSSIP provide a reference for identifying potential take up rates in the GAEP.

The total land supply inclusive of future releases of industrial land in the Western SSIP, and estimated consumption or take-up rates, for the two competitor precincts as of 2023 is summarised in Table 6. These are gross areas. Discounting to account for specific site constraints and establish net developable area (NDA) occurs in following steps.

TABLE 6: COMPETITOR INDUSTRIAL PRECINCTS SUPPLY AND RECENT CONSUMPTION

	1	2	3	4	5	6
Precinct	**Total industrial land (ha)**	**Vacant industrial land (ha)**	**Future industrial land supply (ha)**	**Total available supply (ha) (2+3)**	**Average annual consumption rate**	
Western SSIP	6166.8	1657	1033.8	2690.8	107.0*	121.3 **
GREP	500	300		300	13.6	13.6
Totals				**2990.8**	**120.6**	**134.9**

Source: SGS Economics and Planning, 2023. Note: The forecast consumption rate for the GREP is as stated in the City of Greater Geelong's Industrial Land Supply Audit (2018) The consumption rate for the Western SSIP is based on *10 year average to 2021 and **8 year average to 2021.

The Western SSIP the take-up rates have varied over time. In this area the 10-year average take up rate of gross industrial land from the most recent data (released in 2021) was 107 ha per year where the average over the last 8 years was 121.3 ha per year. Two scenarios are suggested by using the two different rates, added to the estimate of 13.6 ha per year in the GREP. A discount of 25% was applied to establish the take-up rate of net developable area in both scenarios:

- Scenario 1: take up rate of **120.6 (gross)** ha per year (90.5 ha NDA / year).
- Scenario 2: take up rate of **134.9 (gross)** ha per year (101.2 ha NDA / year).

6.4 Industrial land supply inputs

This section details the inputs used to model GAEP's impact on industrial land demand and supply in the western/southwestern metropolitan corridor.

GAEP staging

The VPA has advised that the planning of the GAEP will occur in two stages, with the precinct outside Avalon Airport divided into two areas, GAEP West and GAEP North. The proposed staging is as follows:

- **Stage 1** rezoning of **GAEP West** for development. It is assumed that around half of Avalon Airport's industrial land will also come online during this period.
- **Stage 2** rezoning of **GAEP North**, with the remainder of Avalon Airport's industrial land to come online during this period.

It is assumed that completion of the following planned strategic infrastructure would create or contribute to the threshold demand for Stage 2:

- Outer Metro Ring (OMR)
- Intermodal Western Intermodal Freight Precinct (WIFT)
- Bay West, and
- The Urban Growth Boundary has been extended.

Avalon Airport land supply and consumption assumptions

The split of the developable industrial land in the Avalon Airport across the two stages was provided by Avalon Airport to the VPA as shown in Table 7.

TABLE 7: AVALON AIRPORT INDUSTRIAL LAND SUPPLY

Precinct	Total area (ha)	Already developed area (ha)	Future supply (gross ha)
Stage 1	654	48	606
Stage 2	546	-	546
Total	**1200**	**48**	**1152**

Source: Avalon Airport

The land consumption assumptions for the industrial land at Avalon Airport were provided by Avalon Airport to the VPA as shown in Table 8.

TABLE 8: AVALON AIRPORT INDUSTRIAL LAND CONSUMPTION ASSUMPTIONS

Exhaustion	Total area (ha)	Implied NDA take up rate (gross ha/year)
By 2030	78-80 (minus 48 already developed)	6
By 2040	160	14
By 2056	304	17
2056+	654	Approx 18

Source: Avalon Airport

The net developable area (NDA) for Avalon Airport was provided by Avalon Airport to the VPA as shown in Table 9.

TABLE 9: AVALON AIRPORT NET DEVELOPABLE AREA (NDA) – ASSUMES 90% DEVELOPABLE

Precinct	Total area (ha)	NDA (ha)	NDA within the precinct (Rounded %)
Avalon airport	1200 (48 already developed)	1080 (43 already developed)	90%

Source: Avalon Airport

GAEP net developable area (excluding Avalon Airport)

The net developable area (NDA) for the GAEP precinct was provided by the VPA as shown in Table 10.

TABLE 10: NET DEVELOPABLE ARE (NDA) – GAEP EXCLUDING AVALONG AIRPORT

Precinct	**Total Area (ha)**	**NDA (ha)**	**NDA within the precinct (Rounded %)**	**NDA within the precinct (Rounded ha)**
GAEP North	582	503	85%	**495**
GAEP West	941	456.4	50%	**471**
*Visitor Economy sub-precinct**	*58*	*49.3*	*65%*	***49.3***
TOTAL	***1581***	***1009***	***64%***	**1,015**

Source: VPA. Note: The NDA for the GAEP may change, subject to the outcomes of the drainage assessment currently being undertaken by the VPA. *The Visitor Economy sub-precinct is within GAEP North but treated separately to the industrial land supply due to the proposed uses.

Starting shares across competitor precincts

It is assumed that the take-up rate in the western / south-western metropolitan corridor will be spread across the competitor precincts and the GAEP precinct (GAEP North and West and Avalon Airport) in the future. Identifying the share of future growth that will occur across the precincts is an inexact science. Allocating take-up based on pro-rata shares does not make sense given the different attributes or incumbency advantage that existing precincts have over new ones.

Table 11 shows the assumed 'starting' shares across the competitor precincts at the end of 2025. For this analysis, the Western SSIP is granted a strategic and 'incumbency' advantage in the near to mid-term, notwithstanding the attractions of the future GAEP, and GREP also has a strong role as an incumbent. It is anticipated that over time take-up in the GAEP will accelerate as a critical mass develops, local and planned regional infrastructure is provided and as Western SSIP confronts more congestion, or the available sites are less attractive.

With this reasoning the Western SSIP is assumed to absorb 70% of the demand across the corridor, GREP 10% and GAEP including the airport 20% to 2039. Beyond 2040 to 2050 the GAEP consumption rate is assumed to accelerate to 34% (6% in GREP and 60% in Western SIPP). After 2050 the GAEP is assumed to be in a mature phase with take up matching the Western SSIP (49% each) until it is exhausted. GREP takes the residual (2%) until exhausted. Note that the estimated future take-up rate in the airport industrial land itself, within the wider GAEP, has been provided by the Airport.

Summary of assumptions for take-up analysis

A summary of the assumptions provided by the VPA and Avalon Airport, or generated by SGS, used to model GAEP's impact on industrial land demand and supply in the western/south-western metropolitan corridor is as follows:

- Take up begins by end of 2026
- Airport take up rates will occur as forecast by Avalon Airport, over the given time periods shown in section 6.4.
- The Western State Significant Industrial Precinct (SIPP) and Geelong Ring-road Employment Precinct (GREP) are considered the major strategic competitors to the GAEP in the western/south-western metropolitan corridor. Historic take-up rates from these precincts have been used to determine the two take up rates modelled for the GAEP:
  – Scenario 1: take up rate of **120.6 (gross)** ha per year. Corridor take-up rates are discounted by 25% to identify an NDA take-up rate of 90.5 ha / year.
  – Scenario 2: take up rate of **134.9 (gross)** ha per year. Corridor take-up rates are discounted by 25% to identify an NDA take-up rate of 101.2 ha / year.
- TOTAL industrial land consumption remains constant across the corridor into the future under the two scenarios.
- NDA in the SSIP and GREP land is assumed to be 75% of gross area.
- The assumed allocation or share of gross land take-up across the competitor precincts is shown below in Table 11. GAEP and Avalon airport take up an increasing portion of the regional land consumption over time, beginning at 18 ha/year but increasing to 36 ha/year by 2056 as the other competitor precincts 'exhaust' (based on NDA figures).
- GAEP absorbs market demand when surrounding precincts exhaust.
- GAEP West is developed before GAEP North.
- Airport land develops at the rates provided by Avalon Airport to the VPA, i.e. it does not absorb the market demand when surrounding precincts are exhausted.
- In modelling take up rates beyond 2050, the outcomes are increasingly uncertain in the future as new influences on production and economic factors occur. Furthermore, it is likely that additional supply will be provided in the western / south-western metropolitan corridor in future, meaning that take up rates for individual precincts will inevitably change over a longer period.
- The Visitor Economy sub-precinct is treated separately to the industrial land supply and is constrained to 49.3 hectares of NDA.

TABLE 11: ASSUMED ALLOCATION OR SHARE OF GROSS LAND TAKE-UP ACROSS THE COMPETITOR PRECINCTS

			Share of take-up				
Precinct	Undeveloped land	Pro-rata share	'Incumbency' advantage (2025-2039)	'GAEP accelerates' (2040)	'GAEP matures' (2050+)	Scenario 1- Annual gross take-up rate (ha/year)	Scenario 2- Annual gross take-up rate (ha/year)
Western SSIP	2690.8	47%	70%	60%	49%	-	-
GREP	300	5%	10%	6%	2%	-	-
GAEP incl airport	2779	48%	20%	34%	49%	-	-
Totals	5769.8	100%	100%	100	100%	120.6	134.9

6.5 Industrial land supply analysis

Scenario 1

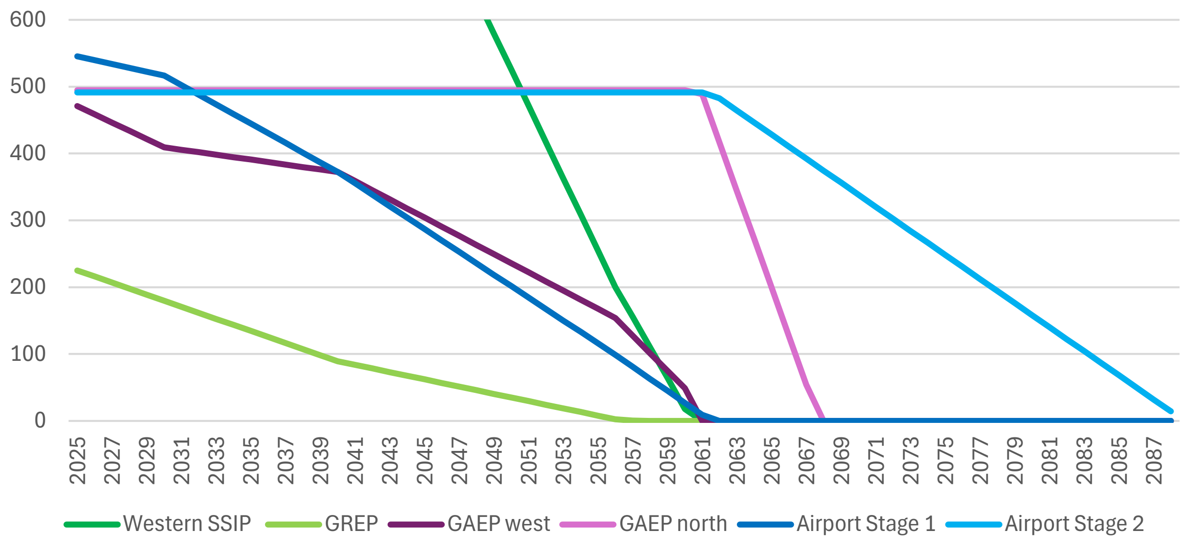
Under scenario 1, land supply in corridor (excluding Avalon Airport) will exhaust in 2069. Without GAEP, it would exhaust instead in 2055. As such, the GAEP precincts provide 14 years of supply to the western/south-western metropolitan corridor.

TABLE 12: SCENARIO 1 FORECAST LAND CONSUMPTION AND SUPPLY

Precinct	Net Developable land in 2023 (ha)	Average Annual Consumption rate (gross) (ha)	Average Annual Consumption rate (NDA) (ha)	Years of supply
Western SSIP	2018	79.1	59.4	34
GREP	225	9.7	7.3	31
GAEP North & West	1015	38.5	24.7	41
GAEP Avalon airport	1037	18.9	17.0	60+

Source: SGS Economics and Planning, 2025

FIGURE 9: TAKE UP OF INDUSTRIAL SUPPLY, SCENARIO 1



Source: SGS Economics and Planning, 2025

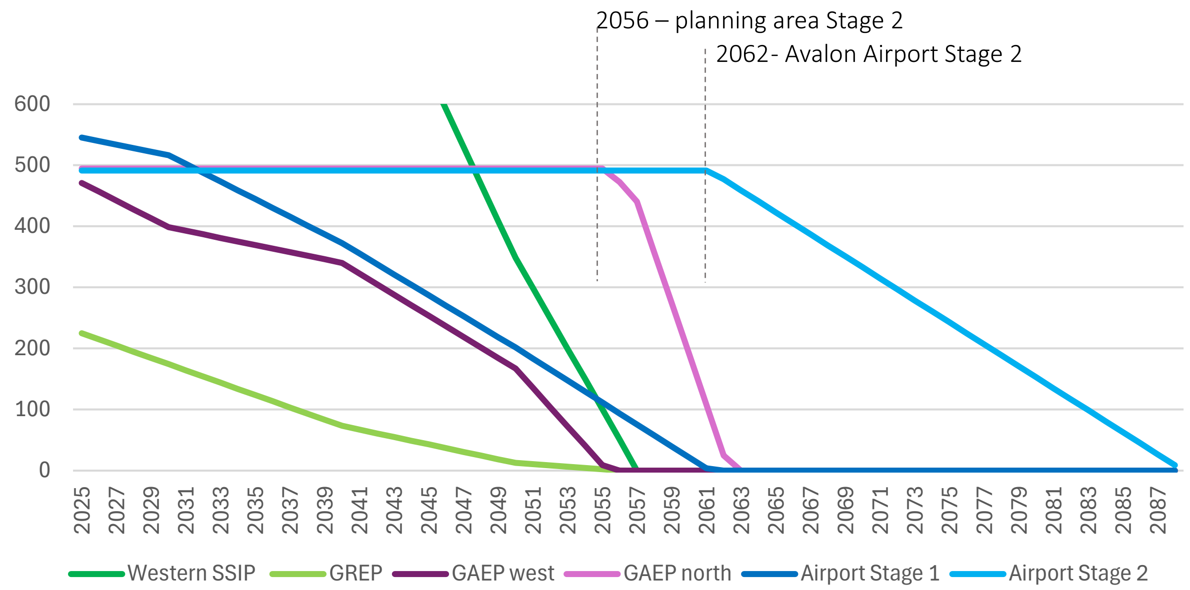
Scenario 2

Under scenario 2, land supply in corridor (excluding Avalon Airport) will exhaust in 2063. Without the GAEP, it would exhaust instead in 2051. As such, the GAEP precincts provide 12 years of supply to the western/south-western metropolitan corridor.

TABLE 13: SCENARIO 2 FORECAST LAND CONSUMPTION AND SUPPLY

Precinct	Net Developable land in 2023 (ha)	Average Annual Consumption rate (gross) (ha)	Average Annual Consumption rate (NDA) (ha)	Years of supply
Western SSIP	2,018	89.7	67.3	30
GREP	225	10.3	7.8	29
GAEP north and west	1,015	43.9	28.8	36
Avalon airport	1,037	18.9	17.0	60+

FIGURE 10: TAKE UP OF INDUSTRIAL SUPPLY, SCENARIO 2



Source: SGS Economics and Planning, 2025

Under both Scenario 1 and 2 the Western SSIP consumes a significant share of corridor demand, notwithstanding a reduction in share over time. This is shown in the rapid exhaustion of the WSSIP in the charts above.

GAEP North is shown to be consumed in a relatively short period as it absorbs the demand from the exhausted WSSIP, GREP, GAEP West and Airport Stage 1. In reality, this is unlikely to hold as it could be anticipated that Avalon Airport might bring Stage 2 forward to take advantage of this demand, and other supply in the corridor may be introduced, thereby slowing down uptake of GAEP North.

Take up estimates are based on the best available assumptions. GAEP North and the Visitor Economy Precinct could be accelerated and come to market earlier if demand warrants, and appropriate infrastructure is able to be provided.

6.6 Key insights

The modelling shows that GAEP West would commence in 2026 and exhaust in 2056. GAEP North is forecast to come online in 2056 and be consumed in a relatively short period as it absorbs the demand from the exhausted WSSIP, GREP, GAEP West and Airport Stage 1.

In practice this development period is likely to shift, for example Avalon Airport might bring Stage 2 forward to take advantage of the available demand (Avalon Airport current suggest Stage 2 commences in 2062). In addition, other industrial land supply in the corridor may be introduced thereby slowing down uptake of GAEP North.

With the commencement of both precincts forecast to occur 30+ years into the future and only a few years apart, in reality, Stage 2 (GAEP North and the Airport) would be developed over the mid to long term, in response to infrastructure provision and market demand.

7. Employment forecasts and job yields

This section models the forecast job yields for the GAEP based on different employment density assumptions, and references these against the forecast industrial employment for Wyndham and Geelong LGAs as a 'sense check'. This highlights the potential significance of the GAEP as a future employment precinct.

7.1 Expected job yields

SGS estimates the GAEP land could be developed at 16.9 employees per hectare, as shown in Table 14. This assumes that there is a range of densities in different precincts and that development in 30 per cent of the planning area will be 'more dense', with the remaining 70 per cent 'less dense'. This reflects the unique opportunity of the precinct to support very large land hungry 'superusers'. Areas of higher density will yield higher levels of jobs per hectare of land. Lower density development will yield lower levels of employment per hectare of land.

Job density is determined by a combination of site coverage (how much of a developable site is covered by buildings) and the intensity of building use by workers (floor area to job ratios). For GAEP West and GAEP North a notional 100 ha of net developable area is utilised to devise an average density as shown in Table 14. The assumptions for the Visitor Economy sub-precinct are shown in Table 15.

The floor area to job ratios used are informed by SGS previous work and the NSW Department of Planning and Environment NSW's 2023 CPA Workspace Ratios, as detailed in Appendix F. It should be noted that there is high likely variability of density outcomes for these land use types, and with technology and changing land use types, job densities in industrial areas may reduce. It is recommended that these ratios be reviewed following user surveys in ten years once actual development has commenced.

TABLE 14: CALCULATING POTENTIAL EMPLOYMENT DENSITY AT GAEP – FROM 100 HA OF DEVELOPABLE LAND

Density	Developable land (ha)	Site coverage	Building floorspace (sqm)	FAJR* (sqm/job)	Job yields	Jobs / dev ha
More dense	Notional 30	0.3	90,000	110	818	27
Less dense	Notional 70	0.25	175,000	200	875	12.5
Total	Notional 100	-	265000	-	1,693	16.9

Source: SGS Economics and Planning, 2025 *the FAJR is informed by the Department of Planning and Environment NSW's 2023 CPA Workspace Ratios.

TABLE 15: JOB DENSITY AND YIELDS IN THE VISITOR ECONOMY SUB-PRECINCT

Density	Land Area (ha)	Developable land (ha) (65%)	Site coverage	Building floorspace (sqm)	FAJR* (sqm/job)	Job yields	Jobs / dev ha
Total (Uniform density)	58	49.3	0.4	197,200	120	1,643	33

Source: SGS Economics and Planning, 2025 *the FAJR is informed by the Department of Planning and Environment NSW's 2023 CPA Workspace Ratios

Table 16 down the results by sub-precinct and varied development density.

TABLE 16: EMPLOYMENT YIELD BY SUB-PRECINCT

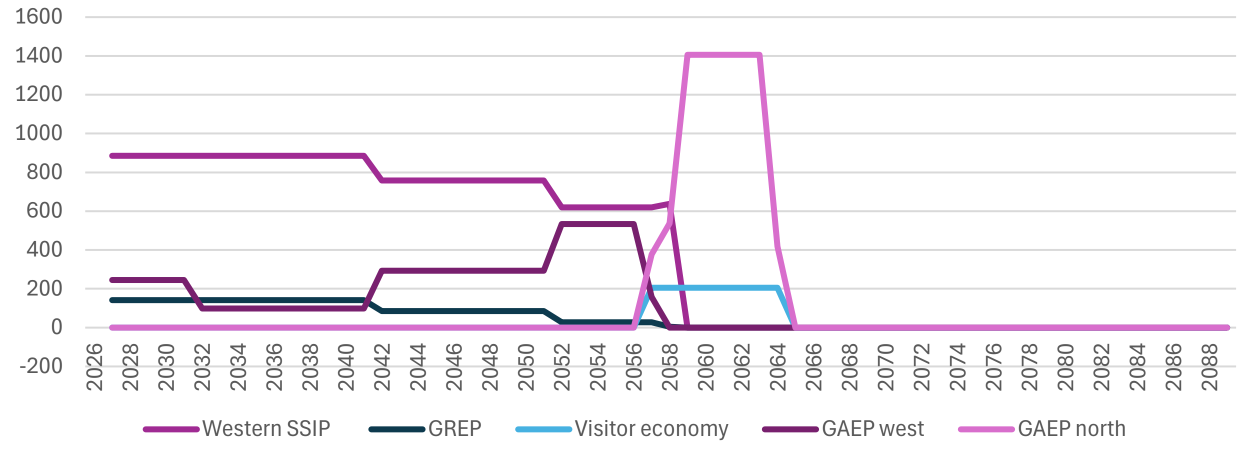
	Jobs in 2026	2026-30	Jobs at end 2030	2031-40	Jobs at end 2040	2041-56	Jobs at end 2056	2057-2063	Jobs at end 2063
GAEP West	0	1,223	1,223	986	2,210	5,750	7,960	0	7,960
GAEP North	0	0	0	0	0	376	376	7,984	8,360
Visitor economy sub-precinct	*0*	*0*	*0*	*0*	*0*	*205*	*205*	*1,438*	*1,643*
Total	0	1,223	1,223	986	2,210	6,331	8,541	9,422	17,963

Source: SGS Economics and Planning, 2023. Note: Land uses and forecasted employment yields are based on the high level economic analysis in this report and do not represent an exhaustive list of all possible land uses.

Applying these job densities suggests that once the planning area is fully developed it will host a total of **17,963 jobs**. Just under half of these jobs are anticipated to be in GAEP West.

Figure 11 shows that as the planning area is developed, employment levels in the precinct will grow until land is exhausted and the total employment yield is met, though of course employment in reality will ebb and flow depending on demand, technological impacts on labour utilisation and the nature of the uses. The chart suggests that by 2062, as the Western SSIP and GREP are exhausted, GAEP West and GAEP North will absorb the growing demand for employment. These job yields represent a 60% growth on the present industrial employment in Greater Geelong and Wyndham, and while this is a sizeable increase, it is an appropriate magnitude for the predicted future growth of the Western corridor. The modelling assumes there is no additional supply of industrial land in the corridor to absorb demand (hence the rapid uptick and then decline in the employment attributed to GAEP North).

FIGURE 11: PLANNING AREA FORECASTED INDUSTRIAL EMPLOYMENT BY YEAR, SCENARIO 2



Source: SGS Economics and Planning, 2025

7.2 Forecast employment in the Wyndham and Greater Geelong LGAs

To put the job yields in the GAEP in their broader context estimates of future industrial employment in the wider area or 'sub-corridor' (in Greater Geelong LGA but close to the Wyndham LGA) have been generated. SGS's Small Area Model (SAM) was used to identify forecast industrial employment for a 40-year period broadly in line with the expected supply of the planning area.

The SAM produces forecast employment at the 1D ANZSIC level for Wyndham and Greater Geelong. A concordance distributed 1D ANZSIC employment into broad land use categories based on 'industrial' and 'non-industrial' employment.

The relevant broad land use categories considered in this analysis are:

- Local service industrial
- Light industrial
- Heavy manufacturing
- Freight and logistics
- Urban services
- Non-industrial

Table 17 details the results of forecasted industrial employment for the region. Across the 40-year period, freight and logistics is anticipated to continue generating the highest share of industrial employment, with a net increase of 12,083 jobs.

The employment forecasts support the supply and demand findings which outline the need for future industrial land that is strategically placed and developed for larger scale industrial activity such as freight and logistics. This includes zoned and serviced land that has larger lot sizes to accommodate industry activity. Consideration of forecasted employment activity is important to the planning framework, outlined in section 8 of the report.

TABLE 17: WYNDHAM AND GEELONG TOTAL INDUSTRIAL EMPLOYMENT

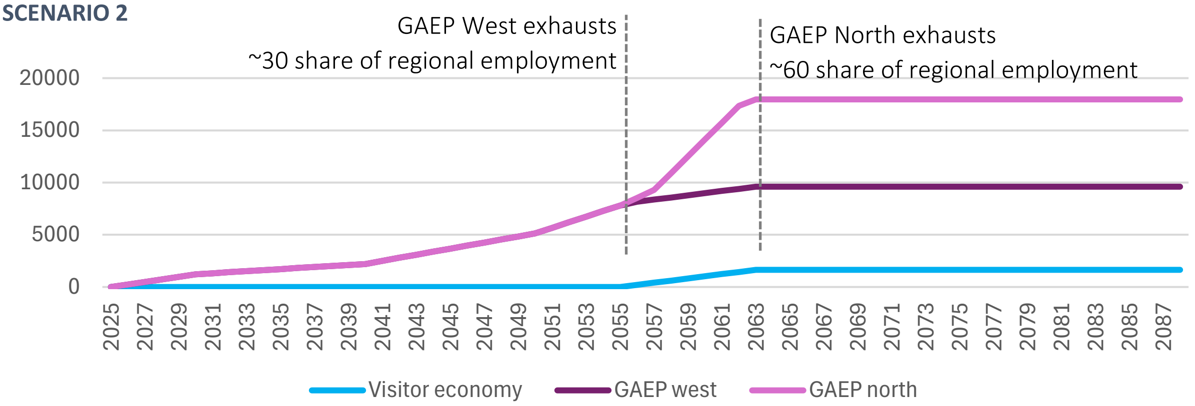
Broad land use category	2021	2041	2051	2061	Net increase (2061-2021)
Local light servicing	12,066	17,537	19,662	21,455	9,389
Light industrial	12,558	16,099	17,353	18,320	5,762
Heavy manufacturing	8,951	8,950	8,963	8,955	4
Freight and logistics	15,421	22,628	25,391	27,504	12,083
Urban services	1,688	3,159	3,194	3,085	1,397
Total industrial jobs	**50,684**	**68,373**	**74,563**	**79,319**	**28,635**

Source: SGS Economics and Planning, 2023

7.3 GAEP's share of corridor employment

Figure 12 shows that as the planning area is developed, employment in the precinct will grow until land is exhausted and the total employment yield is met using the projections for scenario 2. It also shows that by about 2055 GAEP would be home to about 30% of the industrial employment in the sub-corridor (Greater Geelong and Wyndham LGA), while by 2063 it would host approximately 60% (assuming no further expansion of supply in new competitor precincts and/or earlier land release by the Airport).

FIGURE 12: PLANNING AREA FORECASTED INDUSTRIAL EMPLOYMENT BASED ON SUPPLY AND DEMAND ANALYSIS, SCENARIO 2



Source: SGS Economics and Planning, 2023

The transport modelling requires a split in the future jobs at GAEP between 'manufacturing' and 'logistics'. The share to be attributed to these categories has been modelled by reference to the regional employment projections by type shown in Table 17 (the net increase figures for industrial employment in Wyndham and Geelong Region).

The following assumptions were applied:

- The broad land use categories of 'light industrial' and 'heavy manufacturing' were allocated to 'Manufacturing', while logistics (naturally) aligns to 'Logistics'.
- 'Local light servicing' and 'urban services' were not included, as they are more likely be found in smaller precincts outside of GAEP.
- No major distinctions in the shares of employment in these categories is assumed between GAEP West and North (notwithstanding that specialisms might emerge).

Applying these assumptions and as shown in Table 18 manufacturing and logistics jobs could be split 32% and 68% respectively across North and West GAEP. The table applies this split to the estimate of jobs generated above.

TABLE 18: FORECAST MANUFACTURING AND LOGISTICS JOBS IN THE GAEP

Broad category-	Share by category	Future jobs at GAEP
Manufacturing	32%	5,748
Logistics	68%	12,215
TOTAL	**100%**	**17,963**

Source: SGS Economics and Planning, 2025

7.4 Key insights

As the planning area is developed, employment will grow until the land is fully occupied. At the assumed employment densities, being a combination of floor area ratio and floor area per job, the forecasts suggest that once fully developed in 2063 the planning areas will host 17,963 jobs with about one third in the broad category of 'manufacturing' and two-thirds in 'logistics'. Just under half are forecast to be located in GAEP West.

8. SWOT analysis framework and assessment

The strategic assessment of the planning area is summarised using the SWOT analysis framework as shown in Figure 13. This framework forms the basis for the Planning Framework. The implications of the analysis and SWOT framework are summarised in this chapter.

8.1 Strategic implications for the planning area

The strategic work undertaken in this scoping study points to the planning area as a significant employment precinct, which should be preserved for high value, larger industrial land uses.

The planning area benefits from proximity to Avalon Airport, timely access to the Port of Melbourne and Melbourne markets due to the freeway connection, its proximity to the port and opportunity for future rail connection.

The planning area is well located, with large lots, and landowners who are ready to bring the land to market for employment uses. Government policy identified the precinct as a key employment area suited to freight services and logistics; advanced manufacturing; and/or low carbon/renewable industry.

Analysis of macro industry trends suggests opportunities for the planning area include creating a net zero and/or circular economy precinct, a focus on developing local supply chains, leveraging the rise of freight and logistics and the benefits of co-location of knowledge and production, specifically with proximity to Deakin's ManuFutures.

The growing population in the region provides a ready workforce. With a skill level below that of Greater Melbourne overall, some training may be required to ensure the capacity to engage in work as it becomes more technologically driven and requires a more skilled workforce.

Local market analysis has confirmed the opportunity that the planning area presents for future industrial land use, to support business activity and employment in the region, and meet a portion of the overall demand for industrial land.

It is considered that the planning area is more suited to high value, larger (inter)national businesses, especially with its connection to the second port and proximity to Avalon Airport. A key theme in the consultation and analysis is the need for large lots in the region and it is anticipated that there will be a strong early take up rate once the land is released.

Overall, development of GAEP as an industrial precinct suited to high value activity with larger lot sizes would provide a long term supply of regionally significant industrial land in the western/south-western metropolitan corridor. The modelling indicates that the GAEP would extend the supply of industrial land in the corridor, with the planning area providing over 40 years of supply given the 50+ years of supply Avalon Airport provides (assumptions provided by the Airport) and assuming no medium to long term additions to competitor precincts.

8.2 Planning considerations for the planning area

The planning area should be carefully planned to attract businesses that require different lot sizes and to deliver the full suite of infrastructure needs.

- Site constraints, largely environmental, will need to be considered when planning for specific uses within the planning area.
- Development within the planning area should not impact on the safe operation of Avalon Airport and must comply with Civil Aviation Safety Authority's (CASA) regulatory requirements.
- A full suite of infrastructure, utilities and roads will be required. Advanced manufacturing and technology driven industries typically require access to and are significant consumers of electricity.
- Transportation planning needs to cater to business development as congestion and increased travel times are significant barriers.
- Cohesion with the proposed expansion of Avalon Airport, noting the Airport plans to include a campus style business park with a full range of amenities.
- Large buffer allowances would provide for any proposed heavier industrial uses (noting these would need to fall within the Industrial 1 Zone as the Industrial 2 Zone is not being applied.
- Provision of large lot sizes to attract high value industrial uses with Planning Scheme control considerations, including setting minimum subdivision lot sizes as appropriate.
- Emerging sectors adopting new technologies may have specific site requirements.
- Businesses and staff are also more likely to be attracted to this precinct through provision of a full range of amenity and services. It is noted that floorspace caps (or equivalent controls on built form) would need to be set to ensure any non-industrial or commercial uses do not conflict the GAEPs role as an industrial precinct and that the planning area should not directly compete with the regional and sub-regional retail centres identified in the City of Greater Geelong's Retail Strategy 2020-2036.

These findings have informed the development of the Planning Framework.

FIGURE 13: SWOT ANALYSIS FRAMEWORK

Strengths

Transport and access

- Proximity to the M1 Princes Highway, the Port of Melbourne (fast delivery time despite distance) and the Western Interstate Freight Terminal.
- Enhanced connectivity through the proposed airport rail link, proximity to future port, proximity to Lara train station on the Geelong-Melbourne passenger rail line.

Future workforce

- Access to growing workforce in Wyndham and Geelong; some skills matching with likely uses and sustained strength in freight and logistic industrial activity.

Location

- Well located to service the growing south-west corridor (Wyndham to Geelong), surrounding land uses are unlikely to impact on future noise abatement and span of operation hours, proximity to Avalon Airport.

Land ownership and size

- Large land holdings and opportunity for large lots to accommodate 'super users', opportunity to deliver freehold/land for purchase, landowners ready to bring land to market.

Weaknesses

Competition with other precincts

- Competitive precinct analysis indicates the planning area ranks second to the GREP.
- Southwest Quarry will likely service similar industrial activity if/when it comes online in future.
- Co-location of the planning area and the Avalon Airport employment area within the GAEP may create potential competition for development if preferred uses are not clearly defined.

Infrastructure

- Lack of existing established infrastructure (roads, utilities).
- Limited options for fibre connection as it is not within carrier-dark fibre network and is far from the available carrier-neutral networks.
- Lack of clarity regarding timing of potential infrastructure delivery for key regional projects (rail connections etc).

Workforce

- Generally lower skilled workforce might drag higher value development prospects.

Opportunities

Competitive advantage to other precincts

- Located away from sensitive land uses, particularly existing residential land.
- Supply constraints for larger lots to service larger (inter)national businesses in the GREP, the only other large-scale land in Geelong, and in Wyndham.
- Compared to Southwest Quarry, the planning area is more suited to high value, larger (inter)national businesses especially in connection to the port.
- Capture demand currently absorbed by the Melbourne Metropolitan Market.

Industrial trends

- Growth in circular economy and associated downstream product innovation, the rise of freight and logistics.
- Co-location of knowledge and production (for example proximity to Deakin's ManuFutures).

Constraints

Environmental

- Barriers to development, include flood risk, bushfire risk, Ramsar wetlands and nationally significant biodiversity.
- Ramsar wetlands in surrounding area and airport buffer requirements may impact on the GAEP's ability to implement stormwater and greening objectives.
- Rural living land west of Avalon Road and the north side of the Princes Highway may require sufficient buffer distances for some types of industrial activity.

Infrastructure

- Limited government funding available to support enabling infrastructure.
- Potential easement for Viva Energy Australia future jet fuel Pipeline assets from BOPL Pipeline to service Avalon Airport may impact on planning area.

9. Planning Framework

The Planning Framework for the planning area proposes options for future land use, buffer considerations and infrastructure requirements, informed by the analysis from the preceding sections. This framework draws on current and potential synergies with Avalon Airport, to support the broader GAEP area.

9.1 Vision for the planning area

The employment vision statement for the planning is:

> Located within the Greater Avalon Employment Precinct, the planning area is a major employment, enterprise and industrial precinct. It provides large sites for strategic industrial activities suited to the site's context, supporting freight and distribution functions, advanced manufacturing and industries at the cutting edge of technology. These functions benefit from fast transport access to metropolitan Melbourne and the major urban and port centre of Geelong.
>
> The planning area's activities support and complement Avalon Airport and the industrial and commercial enterprises located on the airport site. Through the staged development of the GAEP West and GAEP North the area continues to meet the long term demand for industrial land, supported by the delivery of strategic infrastructure projects. The Visitor Economy sub-precinct's tourism, accommodation and retail and commercial uses support the industrial activity occurring in the GAEP, along with the airport activities.

The planning area is proposed to be divided into two distinct areas, as shown on Figure 14:

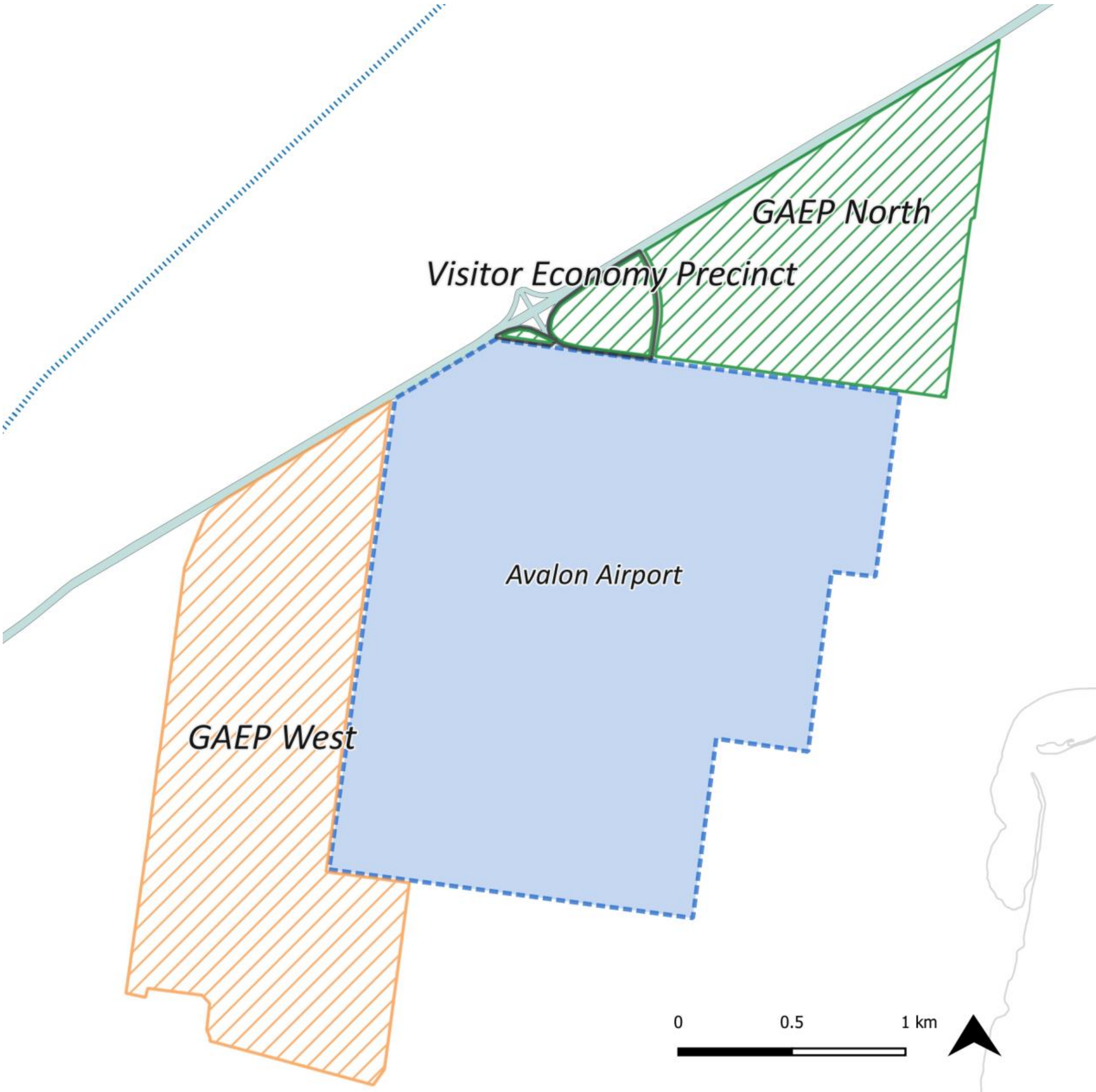
- GAEP West
- GAEP North, including the Visitor Economy sub-precinct.

The VPA has advised that the planning and rezoning of the GAEP will occur in two stages:

- Stage 1:
  - Insert GAEP Framework Plan as Policy in Greater Geelong Planning Scheme
  - Rezone **GAEP West** to Industrial 1 Zone
  - Apply Development Plan Overlay to GAEP West
- Stage 2:
  - Rezone **GAEP North**.

The staged re-zoning reflects the need to stage the supply of industrial land in the GAEP. This can help direct infrastructure provision and development activity, in this case into GAEP West in the first instance. Over time, it is anticipated that the delivery of key planned infrastructure projects will increase the demand for industrial land in the western/south-western metropolitan corridor, creating the demand for additional land supply and the rezoning of GAEP North. The Visitor Economy sub-precinct sits within GAEP North and would be rezoned at the same time as the rest of GAEP North (Stage 2).

FIGURE 14: PLANNING FRAMEWORK MAP



Source: SGS Economics and Planning, 2025

When fully developed it is expected the planning area will host almost 18,000 jobs though it is likely to continue changing and intensifying over time, even after most of the land is developed. The majority of these jobs are expected to be in freight and logistics activities, warehousing and distribution and advanced manufacturing – with the potential to serve new sectors of advantage in the medium and long term.

The land uses in the planning area will focus on meeting the industrial activity and employment needs of the broader region, including the City of Greater Geelong, Wyndham LGA, other parts of western Melbourne and further afield to the Golden Plains and Melton municipalities.

A portion of the planning area is also anticipated to service freight and logistics needs, due to the proximity to Avalon Airport and the area's relatively unconstrained and highly accessible location on the Princes Highway. In contrast, Avalon Airport is anticipated to develop with a greater mix of uses, including specialised business parks, plus a greater focus on recreation, retail and commercial uses, as well as light industry. Avalon airport will support air commerce, providing efficient connectivity for suppliers, customers, and employment partners.

The GAEP should be imagined as 'national transport and logistics precinct', forming a connection between the port of Geelong, the Geelong Ring Road Airport Precinct and Avalon Airport (as suggested in the G21 Economic Development Strategy), including an associated deep spread of industrial and economic activity. As such, the GAEP can be a thriving economic centre, supported by specialised sub-precincts. In the very long term (30-40 years), the GAEP, incorporating Avalon Airport and the planning area, could be more integrated with more multi-use precincts in a wider area (approximating an 'aerotropolis' concept). A range of economic activities in a wider area with its own place character might be anchored by Avalon Airport.

Two key considerations arise from this long-term perspective:

- The need to protect transport corridors for enhanced connectivity within the precinct and to nearby residential areas within a wider planning area, thereby safeguarding opportunities for enhanced integration.
- Careful planning in surrounding areas to 'land bank' for the future, enabling a greater complexity of uses in different sub-precincts.

Synergies with Avalon Airport are informed by the proposed land uses outlined in the Avalon Airport Master Plan 2015, noting that this Master Plan will be updated in the near future.

9.2 Opportunities and constraints

Section 8 detailed the site's opportunities and constraints, covering ownership and environmental context, strategic context, regional population and employment trends, emerging macro industry and market trends, and supply-demand trends across competitor precincts.

Based on this assessment, the planning area is a prime location for industrial land uses. It presents a unique opportunity for businesses to operate on larger sites close to a growing labour force. Further, future connectivity to the GAEP will be enhanced by the proposed airport rail link, along with the significant infrastructure planned for the broader area. The precinct's location largely provides sufficient buffer distances from sensitive land uses (particularly existing residential land).

The need to coordinate the delivery of essential infrastructure across the precinct, in collaboration with Avalon Airport, is a key barrier to development. It will also be necessary to coordinate the land owners within the planning area. Involving landowners and Avalon Airport in the planning area development process will be critical for holistically coordinating future land uses, infrastructure and access requirements across the GAEP (the planning area and the Avalon Airport Master Plan area).

Table 19 outlines the key opportunities and constraints specific to each sub-precinct encompassing the planning area.

TABLE 19: OPPORTUNITIES AND CONSTRAINTS BY SUB-PRECINCT

Sub-Precinct	Constraints	Opportunities
A. GAEP West	▪ Environmental constraints ▪ Residential interface along Princes Highway and Avalon Road ▪ Salt production (former use)	▪ Highway frontage ▪ Opportunity for coordination between two large landowners (MAB and Livv) ▪ Geelong Port connection ▪ Fewer sensitive uses nearby in the southern part of the precinct – potential for larger lots and heavier industry uses
B. GAEP North (including the Visitor Economy sub-precinct)	▪ Environmental constraints ▪ Potential for buildings to be considered a risk for windshear and turbulence (current motor sports site is within 1200m of runway)	▪ Future Avalon Airport rail link ▪ Highway frontage ▪ Fragmented ownership – suitable for smaller local operators ▪ The proposed rail link divides this precinct. Potential to enhance accessibility. ▪ Existing Geelong Motor Sports Complex

Source: SGS Economics and Planning, 2023. Note that 'environmental constraints' refers to significant vegetation and biodiversity, heritage, bushfire and flooding constraints. These will be subject to further assessment by the VPA.

9.3 Land use recommendations

Table 20 outlines the impact potential and encouraged land uses for each GAEP sub-precinct. Land uses have been assigned to develop specialities in the sub-precincts and manage sensitive interfaces where applicable.

To support the development of GAEP North and West as industrial employment precincts, the following should be considered:

- Provision of 'Worker service hubs' to provide employees with convenient access (walking or via other active transport modes such as e-scooter) to food outlets, retail uses and potentially other services such as gyms. They should be designed to create an inviting urban environment, for example, through the provision of parklets and street furniture.

- Incorporation of 'Gateway treatments' access points to the GAEP from the Princess Freeway (via a service road), using urban design treatments such as tree planting to improve the amenity of the gateways into the precincts.
- That views of the surrounding environment are enhanced, and visual impacts of development in the GAEP are minimized in the 'sensitive interface' areas, in recognition of the areas of environmental significance and Aboriginal cultural heritage that surround the site.

TABLE 20: LAND USE RECOMMENDATIONS BY SUB-PRECINCT

Sub-Precinct	Encouraged land uses and lot sizes
A. GAEP West	2-15 ha lot sizes Low impact uses: ▪ Large scale manufacturing ▪ Freight and logistics, including air related ▪ Warehousing and distribution ▪ Commercial (not large format retail/restricted retail) 5-20 ha lot sizes High impact uses: ▪ Heavier and higher impact industry ▪ Large scale and advanced manufacturing such as energy/ fuel/ circular economy activities
B. GAEP North	1-15 ha lot sizes Low to moderate impact uses: ▪ Niche and advanced manufacturing ▪ Technology and engineering SMEs ▪ Warehousing and distribution ▪ Freight and logistics and air related ▪ Commercial Not large format retail/restricted retail
C. Visitor Economy sub-precinct	Small lot development (less than 1ha) Low impact uses: ▪ Tourism activities (e.g. airport related) ▪ Accommodation (residential hotel only) ▪ Small-scale retail and commercial (not large format retail / restricted retail) ▪ Complementary worker support services

Sub-Precinct	Encouraged land uses and lot sizes
Worker Service Hubs (all precincts)	Shopfront-style development (less than 1000m^2 total) Complementary support uses: ▪ Convenience and takeaway food ▪ Limited business support services

Source: SGS Economics and Planning, 2023

9.4 Planning and infrastructure considerations

The following planning, environmental and infrastructure considerations were identified through the scoping study. These elements will need to be further considered in the development of the planning area.

Retail floor space caps

As discussed in section 8.2, floor space for retail uses should be limited to avoid competing with other retail centres consistent with directions in the City of Greater Geelong's Retail Strategy 2020-2036.

That strategy uses a retail hierarchy with "Neighbourhood Centres" defined as having from 2,000m^2 to 15,000m^2 of floor space and "Local Centres" up to 5,000m^2 of floor space. These are precinct totals. The Strategy also supports the application of floor space caps for shops within the Commercial 1 Zone using the schedule to the zone, which allows application of a per-premises size cap. This cap triggers a requirement for a permit, which allows assessment of whether larger development is appropriate, but it does not prohibit development exceeding the cap. The strategy supports using this mechanism to apply per-premises caps of 500 to 1000m^2 for many smaller centres. For comparison, conventional supermarkets typically range from 1500m^2 to 3500m^2.

Table 21 shows floor space caps for various zones that could apply in industrial precincts such as the GAEP.

TABLE 21: FLOOR SPACE CAPS AND CONDITIONS FOR KEY RETAIL USES

Zone	Supermarket	Restricted Retail Large format retail (for example Bunnings and Officeworks).	Shop Other than supermarket and restricted retail. See note.
Commercial 2	None, though permit required if over 1800m^2. Must also be adjacent to road in Transport Zone 2 or 3.	None (use does not need permit)	None, though permit required if not adjacent to a supermarket or if total adjacent to supermarket is over 500m^2.
Industrial 1	Prohibited	None (though permit is required)	Prohibited
Industrial 2	Prohibited	Prohibited	Prohibited
Industrial 3	Prohibited (as condition requires it to be within metropolitan Melbourne).	None (though permit is required)	Prohibited if not adjacent to a supermarket – which are prohibited, see left- or if total adjacent to supermarket is over 500 m^2.
Note: this table does not address all forms of retail premises, or some exemptions for limited forms of shop such as convenience shops, adult sex product shops, and sex services premises.			

The potential zones that might apply in the GAEP would restrict the possibilities for some forms of retail, but allow some scope for restricted retail, in particular. It is also noted that the above table does not address all forms of retail premises, with some types of retail (including landscape gardening supplies and motor vehicle sales) not nested within the above categories.

Overlay options

A Development Plan Overlay could be applied across the planning area to ensure a holistic precinct-based planning approach for developing the relatively specialised sub-precincts. Such an overlay could be used to:

- Coordinate the master planning of the precincts including major distributor and connecting roads.
- Include additional built form controls – including runway alignments.
- Provide subdivision guidelines e.g. minimum lot sizes to maintain viable parcels for the desired forms of industry (guided by those indicated in Table 20).
- Provide for notice exemptions.

The Airport Environs Overlay (unusually for an overlay) can apply additional use controls to manage the relationship with Avalon Airport. It also imposes requirements regarding construction standards to manage noise. The AEO does not, by itself, provide for built form limitations such as height limits; if the airport use necessitates this, these can be applied with a Design and Development Overlay.

A Development Plan Overlay could be used to apply retail floor caps to close some of these gaps to avoid the development competing with other centres. The schedule to the overlay could require any approved development plan to limit floor area for retail development to 1000m^2 for any given site. This would preclude conventional forms of restricted retail. Supermarkets, if proposed, would be limited to smaller convenience or "metro" style models. (Supermarkets can already only occur in the Commercial 2 Zone, adjacent to roads in the Transport Zone 2 or 3).

This approach can also be used to constrain the use of the worker service hubs, although in practice these should be limited in area to not more than 1000m^2 total area to ensure that these can only support shopfront style food and drink and support services.

Buffer considerations

Any new land use and development must be consistent with the buffer requirements of relevant legislation and Clause 53.10 of the Victoria Planning Provisions. This is particularly of concern for industrial land uses, where different types of activity have varying levels of impact on sensitive land uses, such as residential.

Recommended separation distances for industrial land uses are set out in Environment Protection Authority's Publication 1949: Separation Distance Guideline. Land uses must be consistent with the recommended buffer distances within this guideline.

Separation distances are set out in Clause 53.10 of the Victoria Planning Provisions, which may trigger a referral requirement if certain buffers are not met.

Further detailed investigation will be undertaken in consultation with the EPA in the preparation of the planning scheme amendment.

Aviation safety requirements

The National Airports Safeguarding Framework (NASF)[10] is designed to ensure that airports are not constrained by incompatible development. The guidelines present some referral requirements for the precinct's future development, as well as obstacle and height limitations based on runway alignments. Key considerations include:

- Potential for off airport buildings to be considered a risk for windshear and turbulence (current motor sports site is within 1200m of runway).
- Controlled activity approval may be required for construction of a building or other structure and activities causing non-structural intrusions into the protected airspace of artificial light, reflected sunlight, air turbulence, smoke, dust, steam or other gases or particulate matter.
- New development subject to assessment for bird strike: food processing, organic waste, putrescible waste facility considered incompatible within 3km; food storage warehouse is low risk, requires

[10] https://www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation/aviation-safety/aviation-environmental-issues/national-airports-safeguarding-framework/national-airports-safeguarding-framework-principles-and-guidelines

monitoring within 3km; warehouse (non-food) is very low risk, requires monitoring within 3km; non putrescible waste landfill or transfer station is moderate, action: 'mitigate'.

- Lighting within 6km of the airport may require referral to CASA.

Further, Avalon Airport will oversee the introduction or be in charge of introducing an Airport Environs Overlay, for ensuring compatible land uses in proximity to the airport's operations. The AEO does not, by itself, provide for built form limitations such as height limits. If obstacle limitation requirements were plausibly likely to be encroached upon, height limits could be applied with a Design and Development Overlay to supplement the above requirements and improve their discoverability.

Environmental and heritage considerations

The preceding analysis has noted the presence of significant vegetation and biodiversity, significant Ramsar wetland ecology, creeks, saltmarsh areas, areas of Aboriginal cultural heritage, bushfire risk, and flooding risk on the site. Due to these environmental constraints, it is assumed that 50-85% of land is suitable for development. Further assessment of these considerations is being undertaken by the VPA.

Infrastructure considerations

As the planning area is currently undeveloped agricultural land, with no existing infrastructure, the following infrastructure requirements will need to be resolved as part of the development of the planning area:

- Utilities, including electricity, gas, water and sewerage, and drainage management. VPA and Council IWM studies will inform the water, sewerage, drainage requirements.
- Vehicle access to and a road network within the northern and western precincts to accommodate trucks and other vehicles (freight and employee access). This should include secure internal road connections to Avalon Airport to access air freight and cargo activities, parking and the proposed rail link at Avalon Airport, as show in the Avalon Airport Master Plan. It should also consider freight connections to the port in Geelong, to Melbourne airport, the Port of Melbourne and the planned Bay West Port.
- Internal public and active transport network, connecting employees to the airport and worker service hubs.
- Carrier grade dark fibre network across the precinct.
- Management of gas and oil pipeline network (APA gas pipelines, VIVA Energy White Oil & Black Oil pipelines).

When it comes to the subdivision of lots within the planning area, consideration should be given to the location of utilities and major pipeline infrastructure.

Appendix A: Document Review

The G21 Economic Development Strategy (2013)

The strategy of the G21 region (Greater Geelong, Queenscliff, Colac Otway, Surf Coast, and Golden Plains) outlines the proposed investments and necessary developments to support the growth in population and employment. This document focuses on Geelong, as 75% of the region's population lived within the Greater Geelong municipality (at time of publishing).

TABLE 22: FORECAST POPULATION GROWTH IN G21

Local Government Area	2011 Population	Planned Additional Population	Total
City of Greater Geelong	223,047	168,531	388,599
Surf Coast Shire	26,873	22,443	48,616
Golden Plains Shire	19,014	14,603	33,228
Colac Otway Shire	22,108	5377	27,474
Borough of Queenscliffe	3306	-	3306
TOTAL	**294,348**	**210,954**	**505,302**

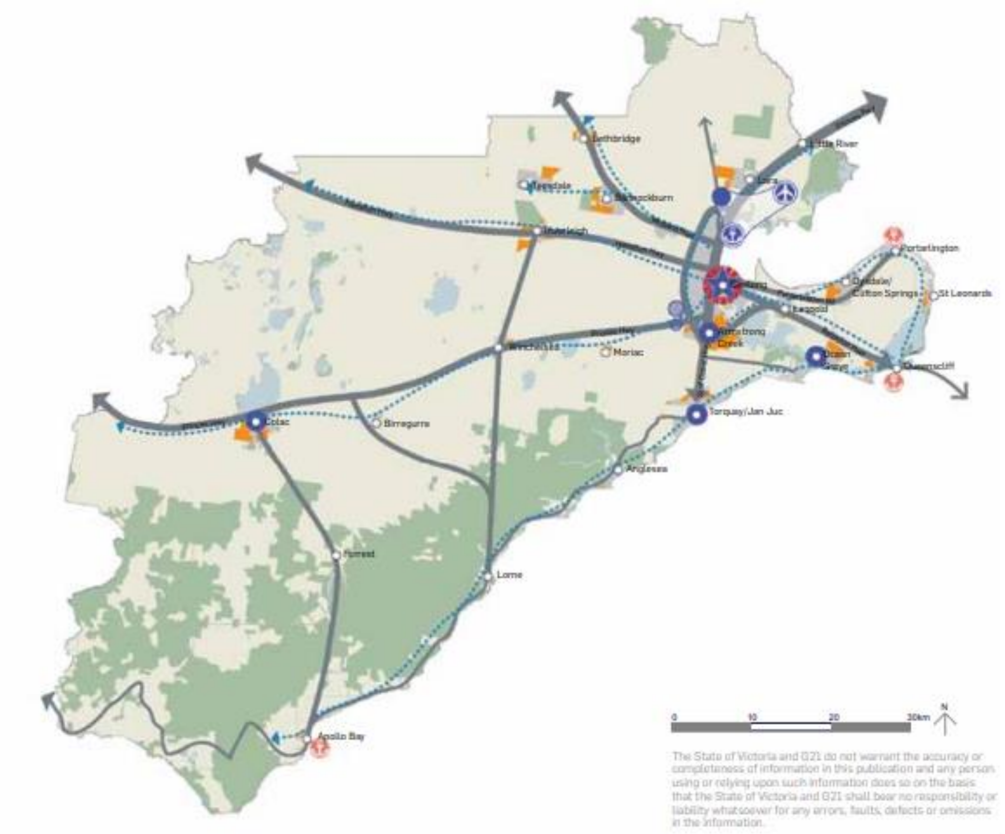
Although these population growth forecasts are now largely out of date, made almost 10 years before the effects of COVID-19, the planned growth in population shows the region's priority for growth and the relative sizes of its city and town centres.

For employment, the strategy includes the following sectors as its areas of focus:

- education, research, and health with a focus on Deakin University and primary health providers
- services, freight, and logistics based around Geelong Port, Avalon Airport, and the GREP
- agriculture and food processing
- advanced manufacturing
- tourism
- the emerging low carbon/sustainability sector as identified in the Low Carbon Growth Plan for Geelong (Climate Works 2011).

The GAEP fits perfectly into this employment strategy, as the precinct could support many activities in freight, manufacturing, and food processing. A relevant key piece of infrastructure development is the national transport and logistics precinct, forming a connection between the port of Geelong and Avalon Airport, to integrate the transport modes and increase efficiency in freight logistics.

FIGURE 15: G21 MAJOR ECONOMIC DIRECTIONS



An efficient and equitable public transport, road and freight network leveraged off existing infrastructure
As the region grows, pedestrian, cycling, public transport, freight and car transport options are needed to match growth. Medium-term growth is supported by initiatives already implemented or committed such as Regional Rail Link and the duplication of the Princes Highway to Colac. Further investigations are needed to identify transport infrastructure and service solutions.

Providing infrastructure and services for planned growth areas and infill development
Given the number of growth fronts across the region, a sequencing plan will need to be developed to ensure the most cost effective ways to deliver community and physical infrastructure and services to support planned growth.

Development of a national transport and logistics precinct
Focus on developing the roles of Avalon Airport, Geelong Port and the GREP as key national and regional economic assets, including a potential intermodal facility along with efficient connections between them.

Strengthening Central Geelong
Continue to develop Central Geelong as a major regional city and Victoria's second city by supporting growth in the education, health and services sector, increasing the number of people living in the city and delivering key outcomes such as the convention centre, Yarra Street Pier, Cultural Precinct and Vision II initiatives.

Land and infrastructure for existing, and

future employment nodes
Needs to be provided across the region to enable people to work within close proximity of home, to promote economic growth and to support the development of agriculture and tourism.

The rollout of the NBN
Constantly growing new technology over the next 40 years within the region is essential to support the current functions and growth of the education, health and services sector in addition to other businesses and residents.

Building on the region's capability in education, knowledge and research
Support the growth of Deakin University, The Gordon, Barwon Health and other major education and health service providers and research organisations such as CSIRO.

Maintaining and improving natural infrastructure
To build landscape resilience and the environmental condition of the region's parks and reserves.

Efficient and cost effective roll out of water infrastructure and services (not shown on map)
Use of recycled water for irrigation and intensive agriculture will strengthen agribusiness in the region. This, as well as increased use of other alternative water sources, such as rainwater and stormwater, will provide environmental and liveability benefits and make our communities more resilient to future uncertainties such as climate change.

Develop and build new renewable energy sources (not shown on map)
Based on the region's strengths in geothermal power and wind energy.

Avalon Corridor Strategy (2021)

The Avalon Corridor is a section of land of around 30,000 hectares, between Geelong and Melbourne. The corridor is in a sweet spot for access to both Melbourne and Geelong, and contains some key development sites for planned infrastructure, such as the Bay West Port in Plan Melbourne, or the Melbourne Water Western Treatment Plant.

The purpose of the Avalon Corridor Strategy is to enhance the economic capabilities of the region, whilst maintaining a supply of greenfield land between Melbourne and Geelong. The areas of development in focus for the strategy are those of industry and environmental sustainability, and a clear directive to limit the amount of residential land in the corridor.

The ACS suggests that there are no direct synergies between air and sea freight, as the types of goods they typically handle do not overlap. Infrastructure Victoria suggests that there is no justification as to why the Airport should be near the Bay West Port.

The ACS therefore envisions Avalon Airport as a passenger-centred Airport, as Geelong has seen some of the highest population growth in Victoria since the beginning of COVID-19 pandemics. In order to increase Avalon's capacity for passengers, upgrades to road networks for the safety of transport to and from the Airport, as well as new parking arrangements near the terminals.

Impacting all of these development plans are principles relating to Water and Biodiversity Sensitive Urban Design. The Avalon corridor sits in a region with ecologically significant wetlands and grasslands, as well as different waterways, all of which need to be protected and maintained to uphold the biodiversity of the region.

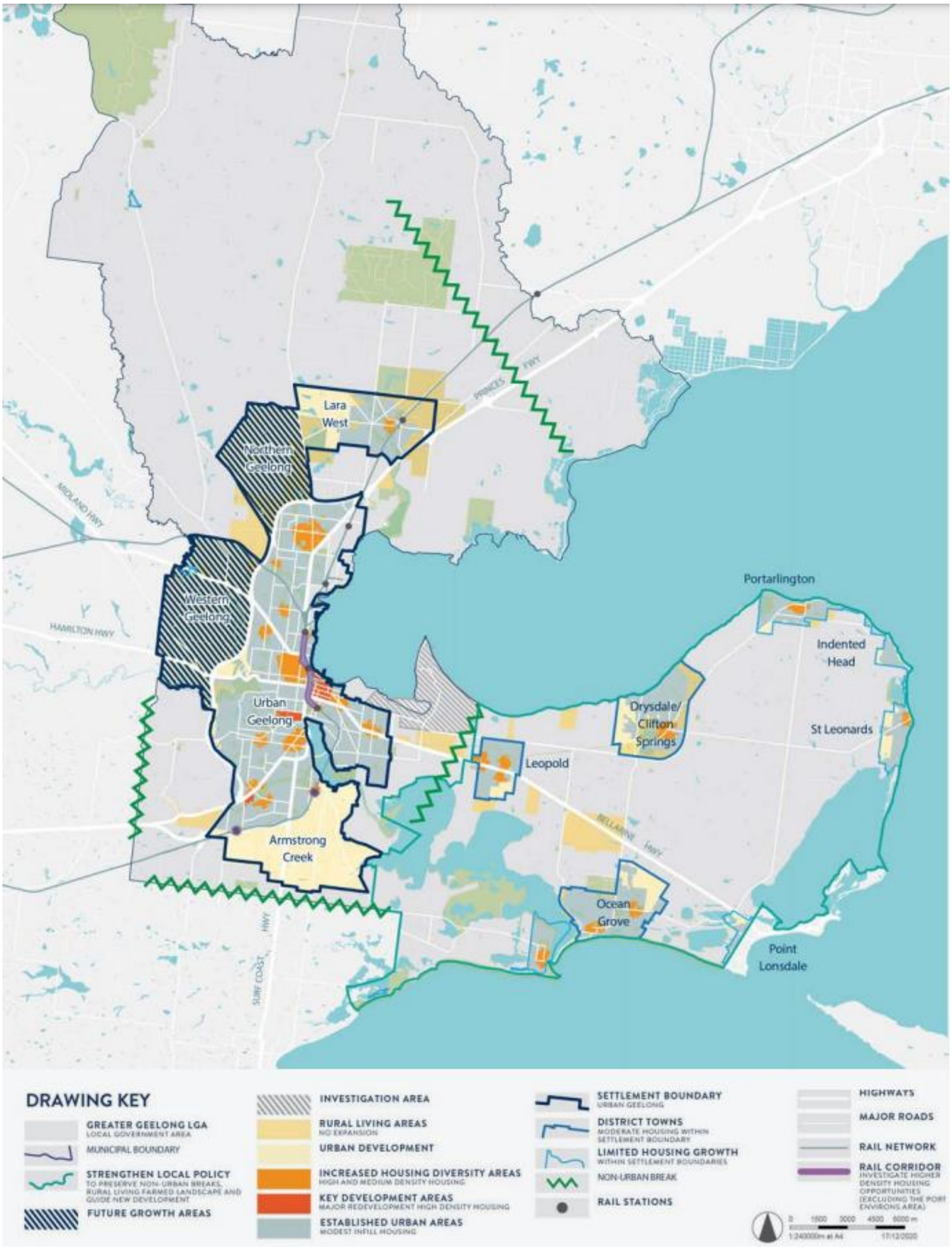
Further restrictions can be found in the flood and bushfire prone areas of the Corridor, though mostly these can be combatted through design choices of individual precincts.

Geelong Settlement Strategy (2020)

The GSS is a document to address the high growth of the City of Greater Geelong, and make sure there are enough houses to allow the city to continue its strong growth of the previous five years. Maintaining this high land supply, as well as the characteristics and qualities of Geelong that make it a desirable home.

At the time of writing the report, the city had 25 years of land supply already identified in new growth areas, and infill of underutilised urban areas considered as an option for not only extending this supply, but also in providing a diversified housing stock that can appeal to more people and different uses.

FIGURE 16: GEELONG SETTLEMENT STRATEGY OVERVIEW



Source: Geelong Settlement Strategy (2020)

The suggested growth directions for Geelong are to the North and West, as shown above. These growth areas were predicted to hold a further 34,000 residents in the future. Geelong is already Victoria's second largest city, and with its continued growth through the COVID-19 pandemics, while Melbourne's growth stalled, the need for population services in Geelong is greater than ever.

Avalon Airport Master Plan (2015)

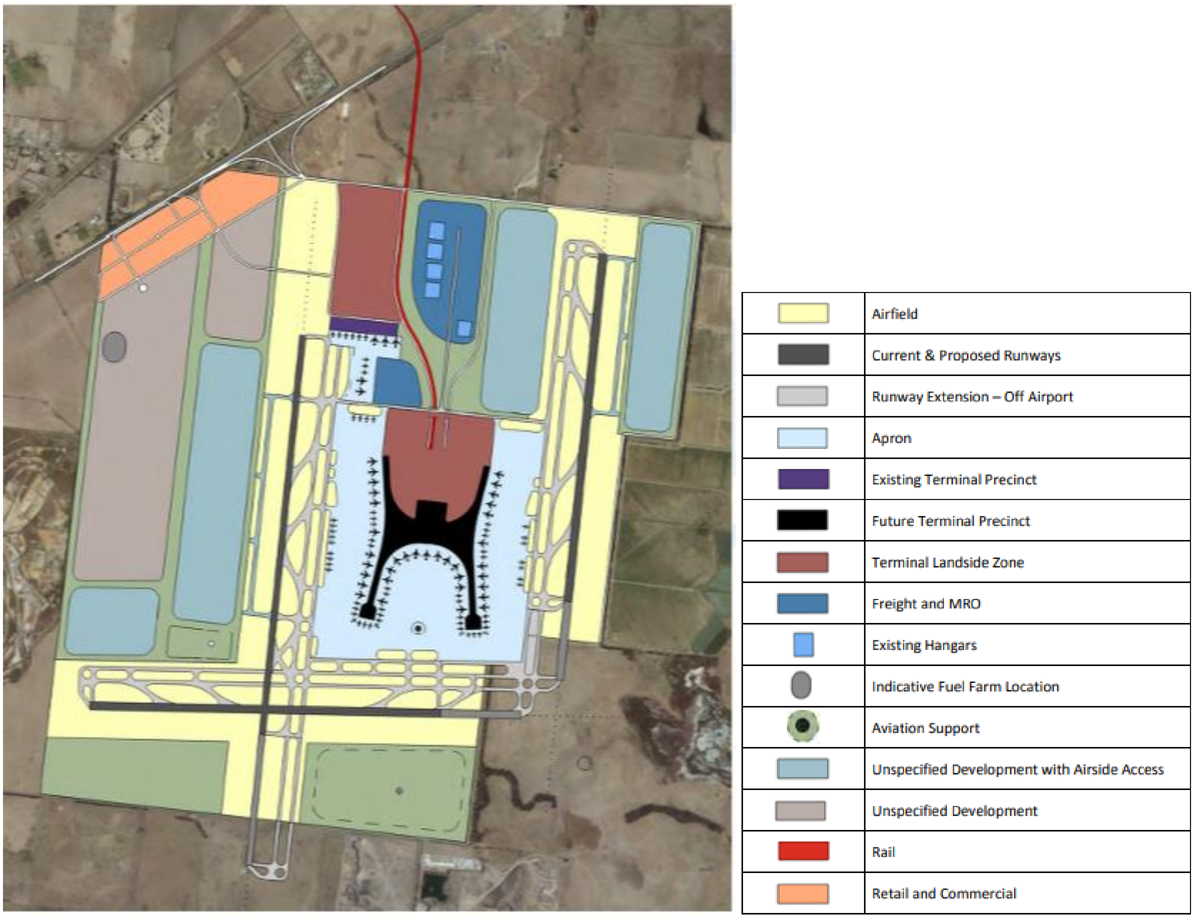
The AAMP is a document produced by Avalon Airport Australia (AAA). AAA is required, through its lease, to have a plan for development over a 20-year period at all times. AAA outlines several development objectives in its plan:

- Maintain the safe, secure, and efficient movement of passengers, freight, and aircraft at all times.
- Establish and maintain a reputation as an efficient and delay-free Airport by enhancing the flow of passengers, freight, and aircraft through the Airport.
- Ensure Airport capacity is increased and delivered on-time to accommodate forecast demands; Strengthen the Airport's role as a major driver of economic activity in the Geelong, Melbourne, and regional Victoria region.
- Realise commercial, retail, and industrial development opportunities that are compatible with on-site aviation activity to support economic development and employment creation in Victoria.
- Provide high quality and essential aviation services for the benefit of airlines, community members and businesses at reasonable cost.
- Maintain an adequate and sustained return on investment for shareholders to support continuing investment in Airport facilities.
- Improve the integration of the Airport with the surrounding community.
- Maintaining the curfew free status of the Airport.

The AAA see the future of the Airport in both freight and passenger transport. Expansion into more runways, larger terminals, and further facilities for plane storage and navigation are all part of the passenger side developments. Freight terminal development includes a plan for a potential dedicated facility to support and expand upon the existing freight transfer station.

The Avalon Airport Master Plan also includes potential developments in retail, industrial activity, and service distribution. Commercial and retail facilities inside the terminal could provide an opportunity to passengers on holiday. A business park nearby offers commercial/office or light industrial land for businesses to utilise, and factory outlet/bulky goods retail is a prime candidate for future investment if the freight centre continues its development.

FIGURE 17: AVALON AIRPORT MASTER PLAN (2015)



Source: Avalon Airport Master Plan 2015

Northern and Western Geelong Growth Area Framework Plan (2020)

The NWGGA is the largest Urban Growth project in Regional Victoria. With more than 110,000 new Geelong residents in the project's sights, there will need to be a comparable increase in employment opportunities to be able to support this massive growth in population.

In the NWGGA Framework Plan, there are four unique actions listed that inform how the council means to meet this job demand. These actions are:

1. Use of employment precincts to provide for a wide range of industrial and commercial services, that will support the creation of new neighbourhoods and local job creation.
2. Efficient integrated transport connections to the freeway and regional highway network.
3. Use of clever urban design in the Precinct Structure Plans for employment precincts, to minimise the impacts on surrounding neighbourhoods.
4. Use of existing rural land for transition into employment land over the long term.

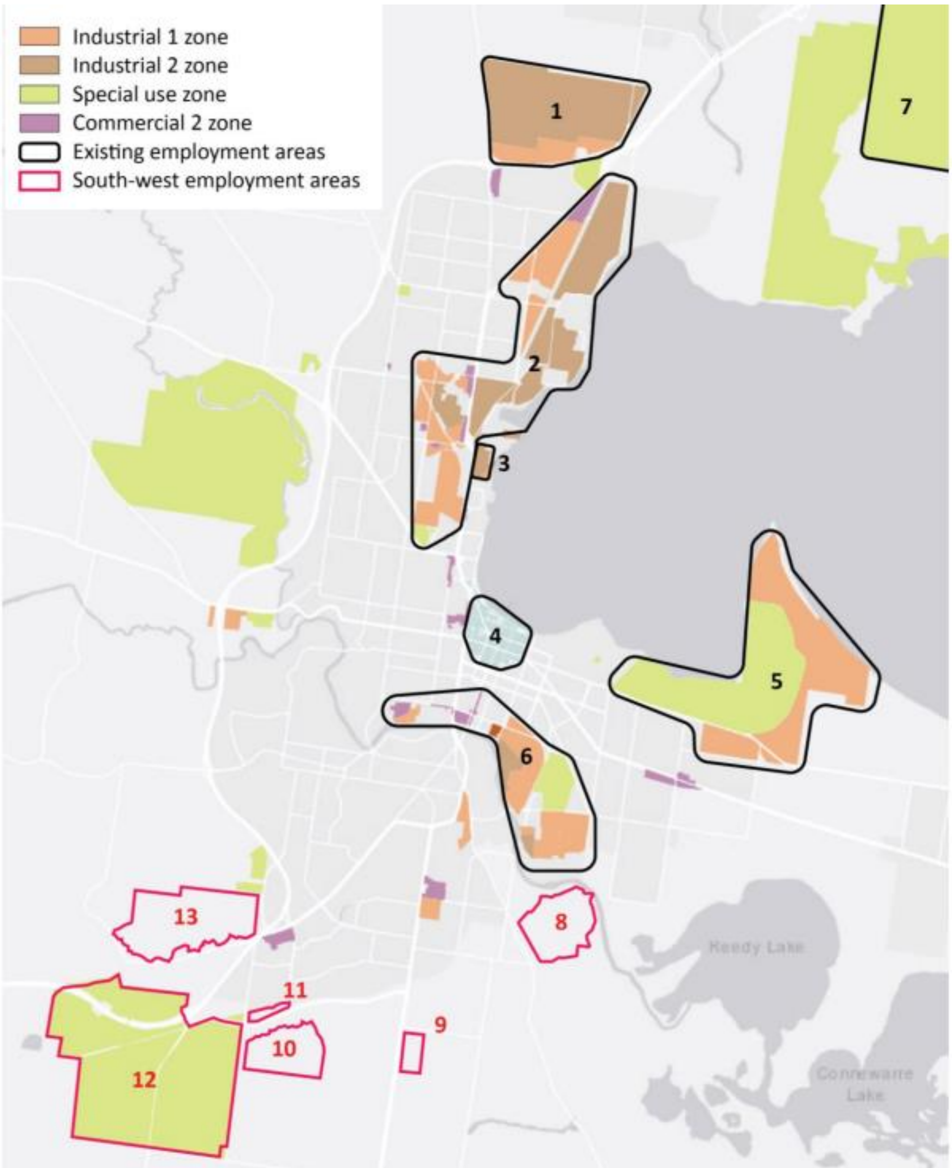
The Framework plan suggests that the NWGGA will support round 35,500 jobs. The Framework plan lists health and education, retail, business, and office-based jobs as its primary offerings, which leaves a significant gap for traditional industrial work in the employment profile of the population.

For Geelong to supply work for this massive growth in population, there must be significant employment opportunities outside of the NWGGA, which goes above and beyond the growth of the rest of Geelong. Industrially focussed, highly accessible employment hubs are likely the best way to meet this demand.

South West Employment Land Review (2022)

The South West Employment Land Review is a document prepared for the City of Greater Geelong in relation to industrial and commercial zoned land. The southwest of Geelong includes suburbs of Armstrong Creek, Waurn Ponds, Marshall and a future employment precinct called Western Industrial Precinct. The major employment precincts considered in this report are shown in Figure 18.

FIGURE 18: STRATEGIC CONTEXT OF MAJOR EMPLOYMENT PRECINCTS IN GEELONG



Source: HillPDA, 2022

The sites in the south west employment area include NEIP (8), Armstrong creek town centre (9), Western industrial precinct (10), Waurn ponds train station precinct (11), Boral site (12) and Geelong future economy precinct (13).

This report forecasts 70 years of employment land supply, assuming continued consumption rates of 23 hectares per annum as outlined in the 2018 Greater Geelong Land Supply Report. Considering only industrially zoned land (IN1Z, IN2Z and IN3Z) and excluding future precincts of Avalon, NEIP and WIP, the municipality has approximately 13 years of zoned land supply. However, both Avalon Airport and NEIP are considered firm development proposals which when included into the supply analysis result in 63 years zoned land supply.

South West Geelong's subregion target was outlined to be a provision of 245 hectares of employment land (net developable area) for a 2051 time horizon. This results in demand for 170 hectares of additional employment land in the region, in addition to the NEIP which is estimated to provide 76 hectares. Currently, the WIP is nominated as a future employment area however it cannot fully deliver employment needs as estimated in the report. If the Boral site is included, adequate employment land can be provided. The provision of this land is considered a priority in the short-medium term to service the growing population and policy to provide jobs under the Armstrong Creek Framework Plan.

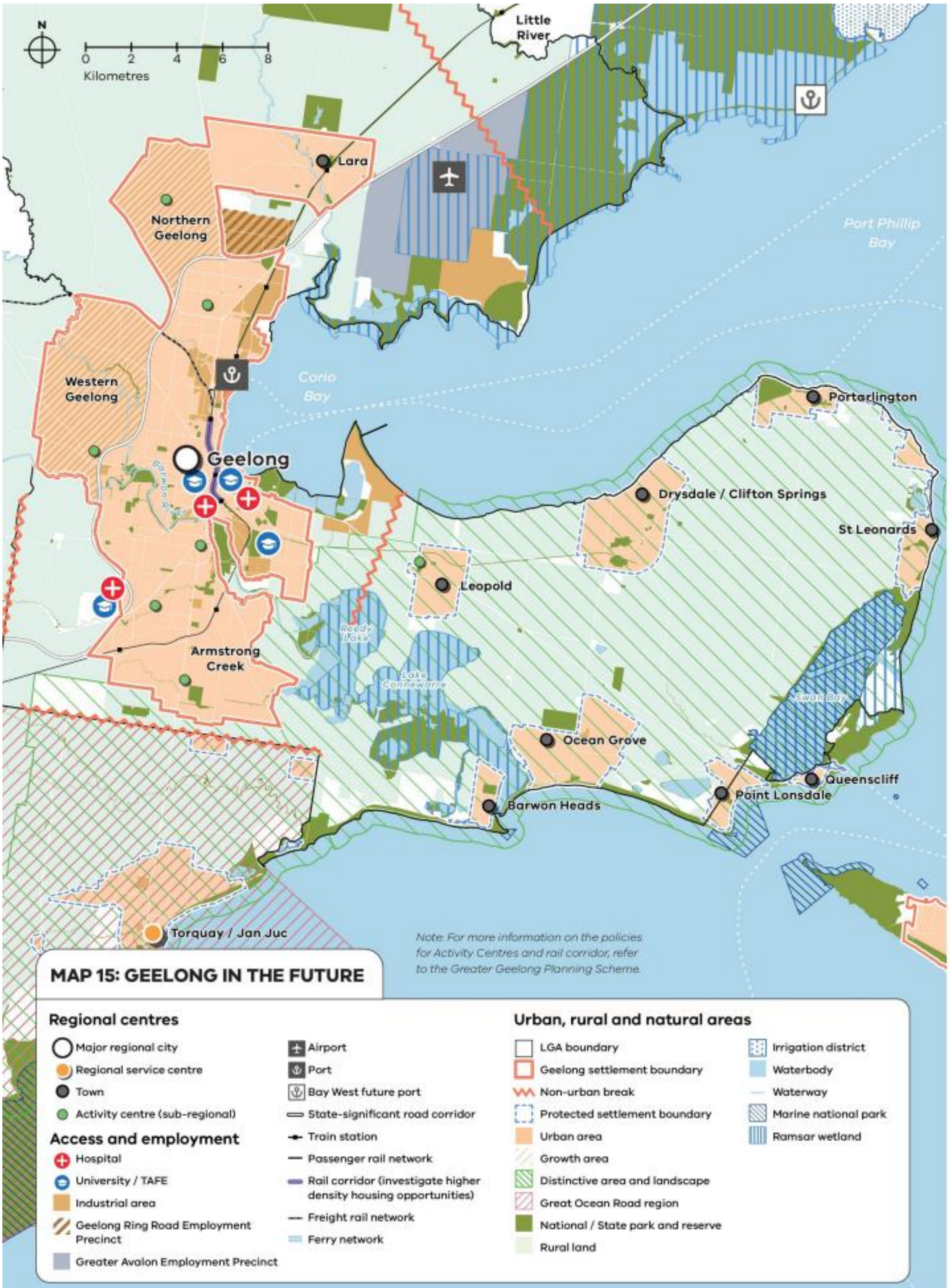
Victorian Government's Economic Growth Statement (2024)

The Victorian Government's **Economic Growth Statement** (2024) identifies Avalon as one of several regional greenfield locations to provide employment land and enable regional employment. The Statement also identifies the role Avalon Airport plays in connecting 'people and Victorian-made goods with markets around the world'.

Plan for Victoria (2025)

Plan for Victoria recognises the GAEP as a key asset in the Geelong region into the future. Plan for Victoria identifies the GAEP at Map 15, as shown below.

FIGURE 19: GEELONG IN THE FUTURE AS IN PLAN FOR VICTORIA



Source: Plan for Victoria 2025

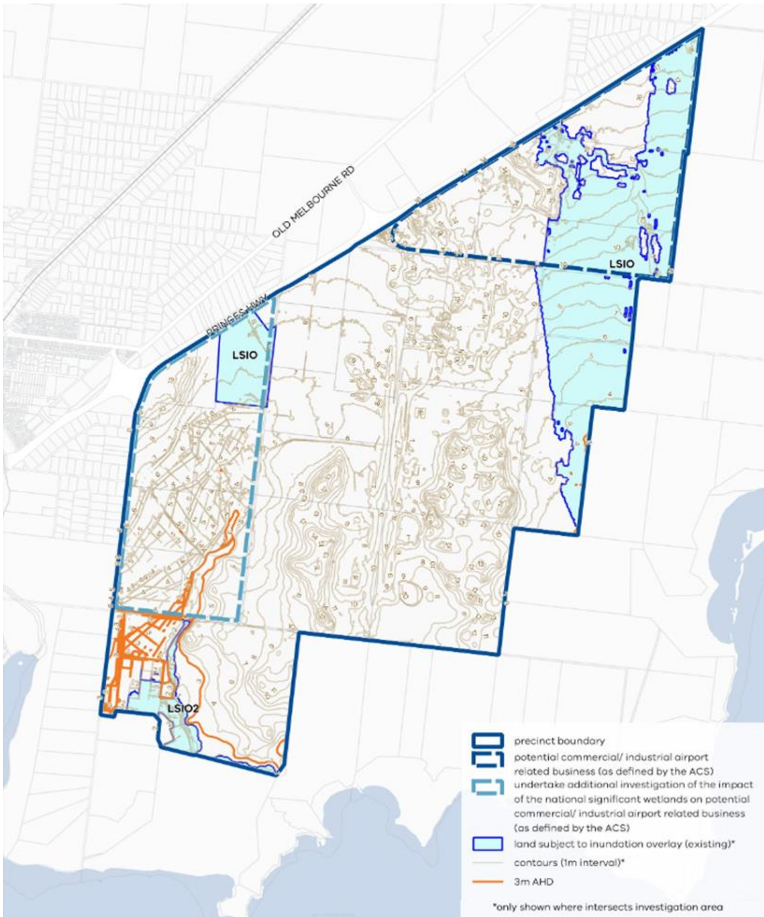
Appendix B: Site Analysis

Water

The planning area is subject to riverine flooding, flooding inundation and sea level rise. This substantial movement of water will be a key constraint to both land use and development. The cost of associated infrastructure, particularly fill, will require consideration.

The drainage assets of the site also provide opportunities to deliver water and biodiversity sensitive urban design outcomes that provide higher amenity to users of the precinct. The detailed design of these spaces and how development interfaces with them will be an important discussion point for securing great outcomes for the precinct as part of the planning scheme amendment.

It is noted that the LSIO will be updated as per updated flood mapping from the Corangamite Catchment Management Authority (CCMA).



Source: VPA 2023

The CCMA has advised that the planning scheme amendment should:

- maintain the ecological character of Ramsar wetlands.
- protect natural resources and maintain ecological processes and genetic diversity.
- protect and ensure the long-term future of terrestrial and aquatic habitat for native plants and animals, including shorebird feeding areas and roosts and species and communities listed under the Fauna and Flora Guarantee Act 1988.
- encourage ecological restoration, regeneration and revegetation with indigenous species within the site and in adjoining areas.
- maintain the function of the wetland or habitat area as part of the broader natural system, including maintenance of natural flows and flooding regimes.
- prevent further loss of wetland habitat.

Vegetation and Biodiversity

The precinct contains biodiversity of up to national significance. Biodiversity forms a primary consideration for precinct planning. Both the ACS and the Minister for Planning's appointment of the VPA as Planning Authority identified the importance of environmental assets in the area.

Environmental assets have been identified by completed biodiversity assessments which include both the desktop flora and fauna assessment that informed the ACS and detailed assessments undertaken by landowners. These are:

- Various EVC patches across the west area of precinct and notably:
  - EVC 9 Coastal Saltmarsh, which is patch-worked north of Dandos Road and more extensive south west of Dandos Road
  - EVC 132 Plains Grassland
  - EVC 163 Coastal Tussock Grassland
  - EVC 647 Plains Sedgy Grasslands

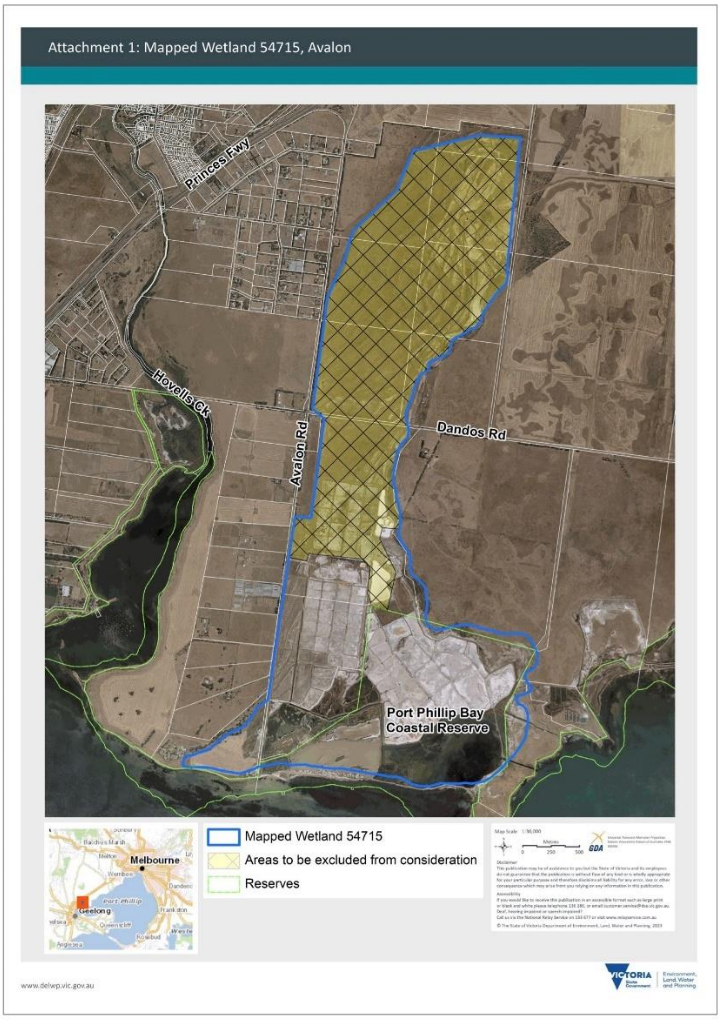
  The precinct must appropriately plan to protect and enhance the overall habitat and environmental value while balancing urban development and amenity in the area.

Wetlands

- Ramsar wetlands are those which are protected under the Ramsar convention, and which contain representative, rare or unique wetlands, or those which are important for conserving biological diversity. The Ramsar wetland around Avalon is an important habitat for migratory birds.
- ESO2 affected land (southern edge of the precinct) which relates to High Value Wetlands and Associated Habitat Protection of state to national significance. The ESO2 extends to the coastline.
- Nationally Important Wetlands, which extend north of the ESO2 but are not currently protected an ESO. The ACS acknowledges the need to undertake investigations to understand the impact of these wetlands on a potential industrial/commercial precinct.

- ESO4 affected land (gateway site and one parcel of land north of Dandos Road) which relates to Western Grassland Reserves strategically protected as part of Metropolitan Melbourne's Urban Growth Boundary (UGB) changes in 2010 via Amendment VC68. These sites form part of the State Government conducted strategic impact assessment (including Commonwealth Government agreements under the Environment Protection and Biodiversity Conservation Act) associated with this process.
- A range of state and nationally significant species were recorded on the site (two parcels in the south west area of the precinct).
- A portion of Mapped Wetland 54715 (as shown below) was excluded from the consideration under the Native Vegetation Regulations. This portion as a man-made wetland that contributes to current birdlife and ecological habitats will need to be assessed from drainage and ecological perspectives.

FIGURE 20: MAPPED WETLANDS 54715, AVALON



Source: VPA 2023

The precinct must appropriately plan to protect and enhance the overall habitat and environmental value while balancing urban development and amenity in the area.

Utilities

The precinct is traversed by multiple water, oil, gas and telecommunications infrastructure assets that predominantly run parallel with the Princes Freeway reserve, including:

- APA gas pipelines, VIVA Energy White Oil & Black Oil pipelines
- Optus and Telstra telecommunications cables
- High Voltage electrical cables

The function and location of utilities will play an important role in shaping the future urban structure, and **effectively planning for appropriate interfaces with these assets will be a major consideration of planning for the planning scheme amendment.**

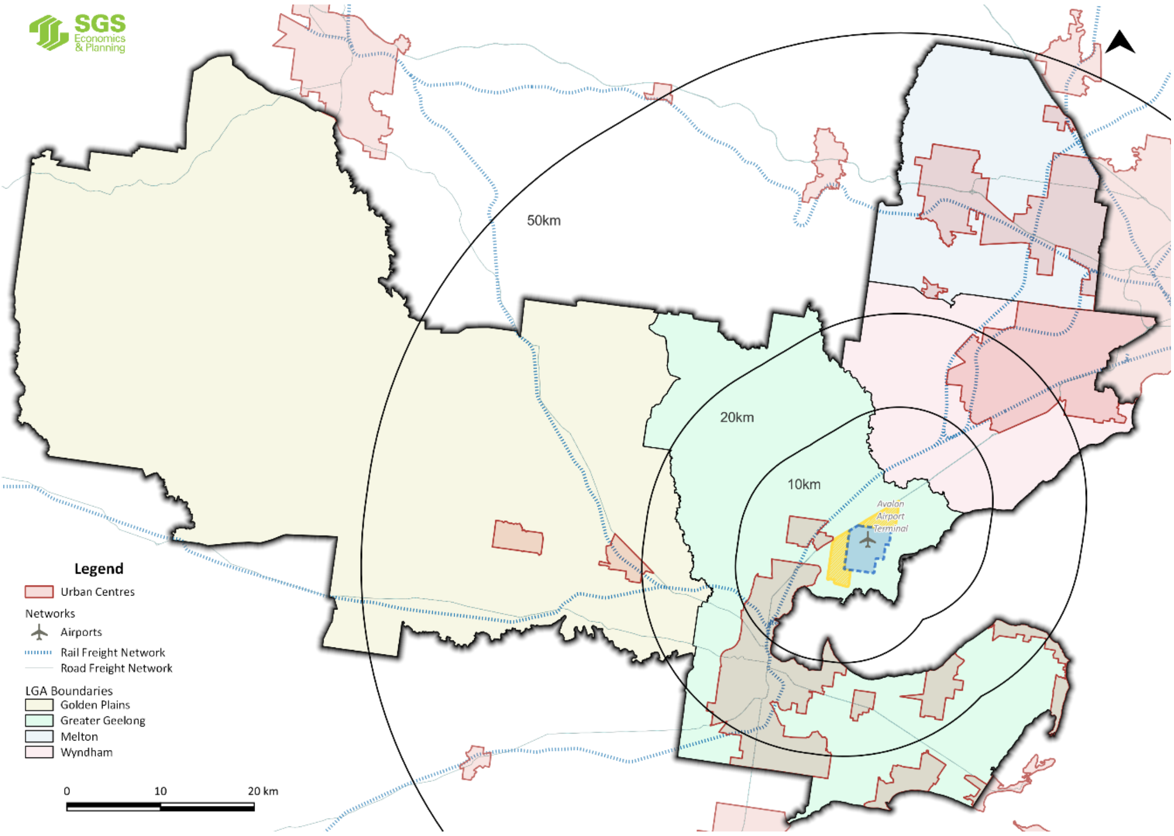
Water and sewerage are managed by Barwon Water, who have assets located nearby in the vicinity of the precinct.

Appendix C: Regional population, employment and labour force

The region

The GAEP will be a regionally significant employment precinct. Future population growth, the skill levels of working residents and the current industry character and strengths of the region will all influence the precinct prospects. For the purposes of this section, the region is defined as Golden Plains, Greater Geelong, Melton and Wyndham local government areas (Figure 21).

FIGURE 21: STUDY REGION



Source: SGS Economics and Planning, 2023

Population and dwellings

The study region experienced a 32 per cent increase in population over the 5 years from 2016 to 2021, up from 607,659 to 800 200. The age bracket with the highest growth was that aged 65 and above, with a 74 per cent increase in that cohort, though the largest absolute increases were in the working age cohorts aged 26 to 64. The total population growth in the region (32 percent) was over three times that of Greater Melbourne and Rest of Victoria (both 10 per cent) in the same time period (see Table 23.

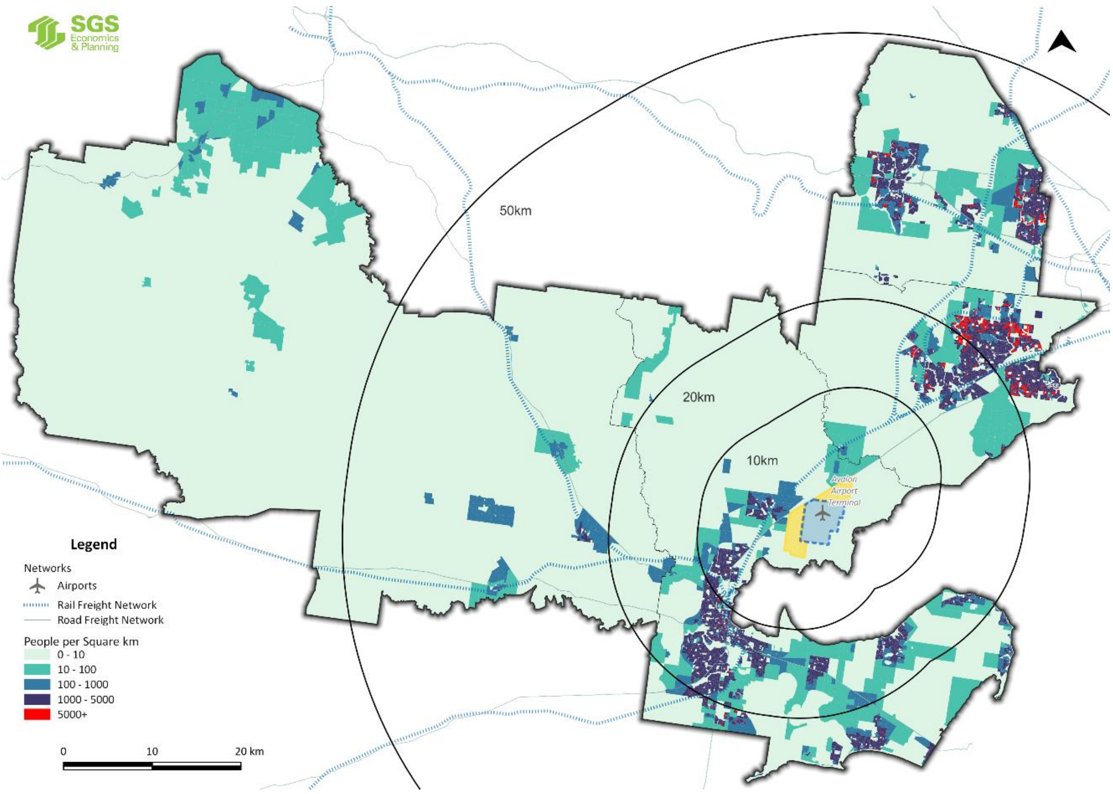
TABLE 23: POPULATION INCREASE FROM 2016-2021

Region	0-14	15-25	26-64	65+	Total
Study region	(36,662) 27%	(15,702) 21%	(85,386) 26%	(54,791) 74%	(192,541) 32%
Rest of Victoria	(71,883) 6%	(860) 2%	(64,326) 9%	(59,514) 20%	(142,773) 10%
Greater Melbourne	(16,261) 9%	(2,672) 0%	(249,214) 10%	(110,545) 18%	(432,502) 10%

Source: ABS Census, 2021

The population distribution in the region is shown in Figure 22 and highlights the location of the GAEP in between the urban areas of south-west Melbourne and northern Geelong. The settlement of Lara is immediately to the west.

FIGURE 22: POPULATION AND SETTLEMENT IN THE REGION 2021



Source: SGS Economics and Planning, 2023

Over the next 20 years, the region's population is forecast to increase by 71 per cent, from a total population of 800,000 in 2021 to 1.3 million in 2041. This is well above the forecast change for Greater Melbourne and the Rest of Victoria (as shown in Table 24).[11]

TABLE 24: FORCASTED PERCENTAGE POPULATION INCREASE FROM 2021-2041

Region	0-14	15-25	26-64	65+	Total
Study region	75% (127,500)	55% (50,783)	62% (254,363)	120% (114,318)	71% (546,964)
Greater Melbourne	27% (287,007)	46% (237,405)	34% (905,301)	62% (457,562)	38% (1,887,275)
Rest of Victoria	9% (29,171)	26% (34,363)	16% (123,971)	48% (169,3335)	23% (356,840)

Source: SGS Economics and Planning, 2023. ABS Census, 2021

To sustain this population growth additional dwellings will be required in the region. From 2016 to 2021, the region saw a 23 per cent increase in dwellings. Again, this growth in dwellings is larger than Greater Melbourne and Rest of Victoria which had per centage increase of 12 and 9 per cent respectively.

DWELLINGS ARE FORECASTED TO INCREASE BY 219,300 DWELLINGS OR 75 PER CENT OVER THE NEXT 20 YEARS (2021-2041) IN THE STUDY REGION. THIS IS AROUND THREE TIMES THE TOTAL DWELLING INCREASE EXPECTED IN BOTH GREATER MELBOURNE AND REST OF VICTORIA (AS SHOWN IN

[11] Greater Melbourne data includes Melton and Wyndham. Rest of Victoria data includes Golden Plains and Greater Geelong.

Table 25).

The recently released Plan for Victoria identifies a target for housing ‘capacity’ of 128,600 new homes (77,500 in non-greenfield and 51,100 in greenfield areas) for Greater Geelong over the next thirty years. Capacity may be different from likely realised supply.

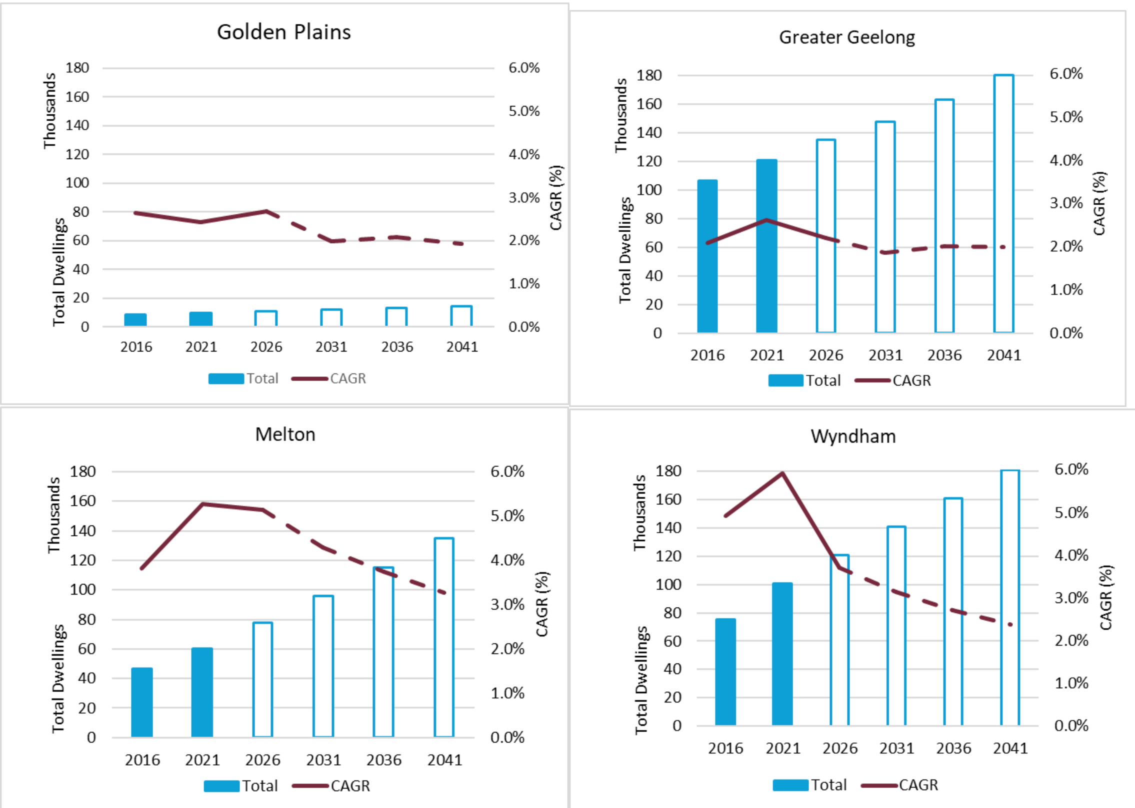
TABLE 25: HISTORIC AND FORECASTED DWELLING GROWTH, STUDY REGION VS GREATER MELBOURNE AND REST OF VICTORIA

Region	Historic total change (2016-2021)	Historic per centage change (2016-2021)	Forecasted total change (2021-2041)	Forecast per centage change (2021-2041)
Study region	54,400	23%	219,300	75%
Greater Melbourne	226,000	12%	567,600	29%
Rest of Victoria	59,300	9%	201,000	26%

Source: ABS Census, 2021. SGS Economics and Planning 2023

Figure 23 presents the regional analysis by LGA to give an indication of the forecast contribution of each LGA to the increase in dwelling stock, as a proportion of the Study region.

FIGURE 23: TOTAL DWELLING AND AVERAGE ANNUAL GROWTH RATE OF DWELLINGS



Source: SGS Economics and Planning, 2023

Labour force analysis

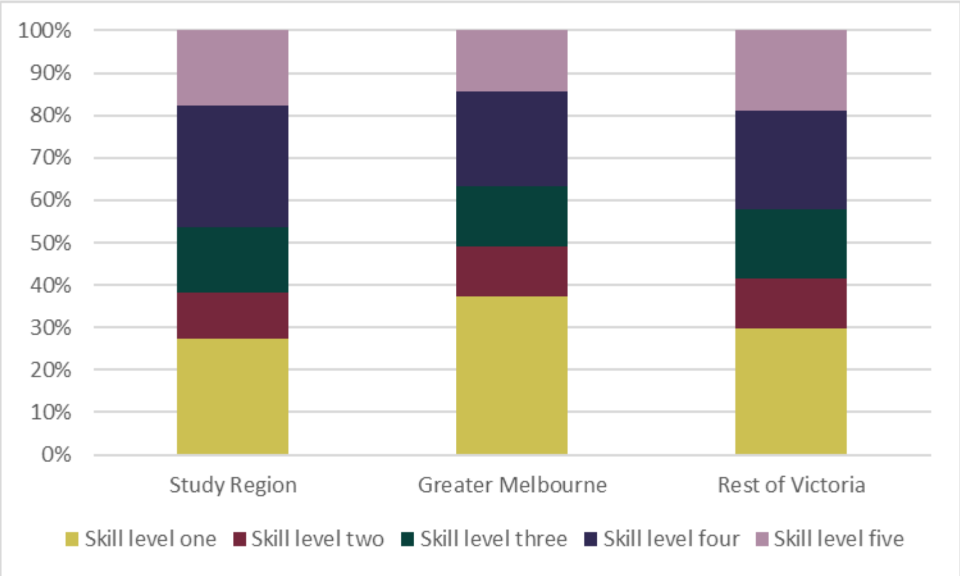
To understand the readiness of the current workforce, the proportion of each skill level amongst working residents was calculated. "Skill level" is an ABS measurement that defines jobs as a function of range and complexity related to the tasks within an occupation. It is measured operationally by:

- Level or amount of formal education and training
- Amount of previous experience in related occupation, and
- Amount of on-the-job training

Skill level 1 is the highest qualification and relates to occupations with a bachelor degree or higher, or at least 5 years of relevant experience as an equivalence. Skill level 5 is the lowest qualification with may require no formal qualification or on-the-job training.

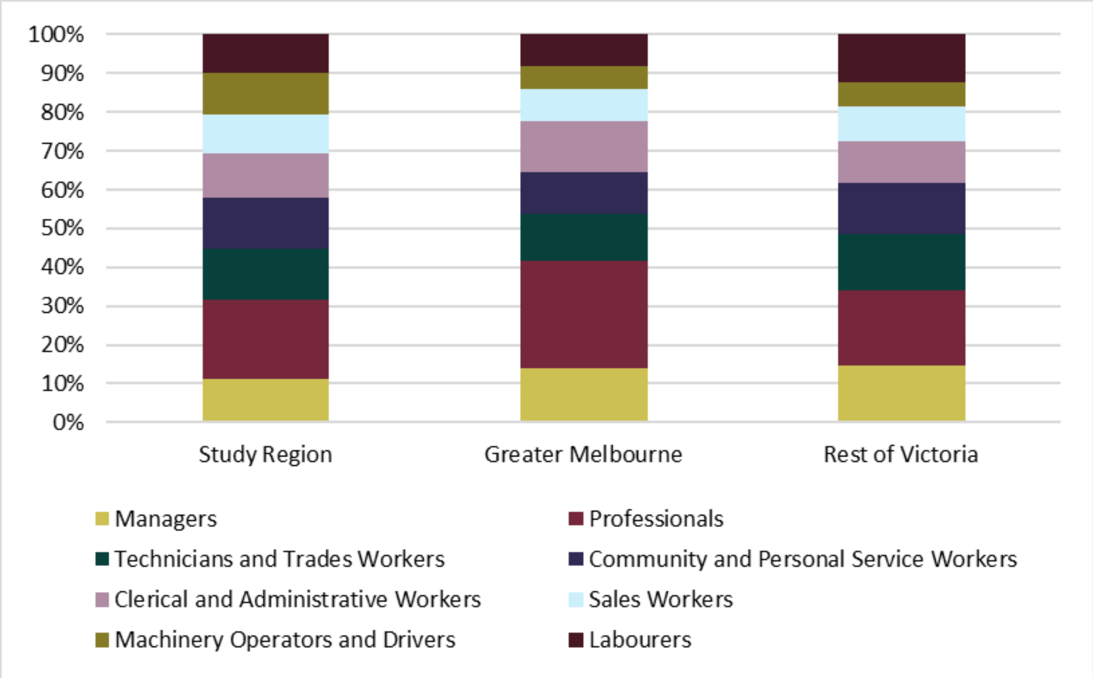
Figure 24 presents the skill level of the study region's labour market in 2021 in comparison to Greater Melbourne and Rest of Victoria. Figure 25 expands on this by exploring total employment within occupation types.

FIGURE 24: LABOUR MARKET QUALIFICATION



Source: SGS Economics and Planning, 2023

FIGURE 25: EMPLOYMENT BY OCCUPATION TYPE



Source: ABS Census, 2021

Lastly, analysis of the participation rate by gender is shown in Table 26.

TABLE 26: GENDER PARTICIPATION IN THE WORKFORCE

Region	Employed, full time		Employed, part time		Away from work	
	Male	Female	Male	Female	Male	Female
Study region	63%	37%	34%	66%	43%	57%
Greater Melbourne	62%	38%	36%	64%	39%	61%
Rest of Victoria	65%	35%	32%	68%	39%	61%

Source: ABS Census, 2021

The data highlights that the region overall has a similar skills profile to the 'rest of Victoria' – though with a higher share in the three lower skills categories.

The region has a comparatively higher shares of working residents in lower skilled service and manual occupations (community and personal service, clerical and administrative and sales workers, and machinery operators and drivers).

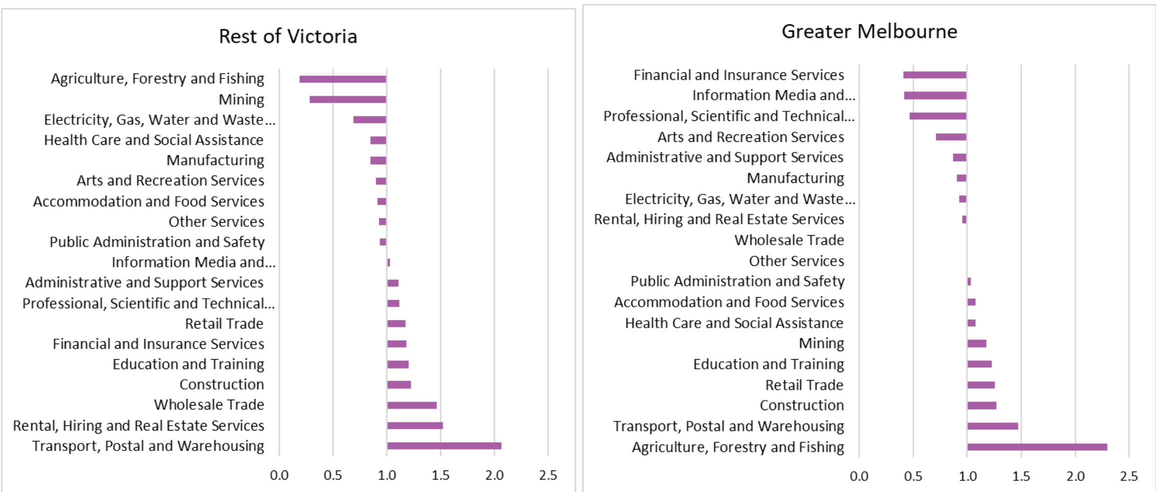
In relation to gender there is a solid- and comparable level- of female participation in the workforce in the study region compared to Melbourne and the rest of Victoria. Given the previous datasets it is likely female participation is concentrated in lower skilled occupations, particularly compared to Greater Melbourne as a whole.

Comparative advantages across all industries

To understand the study region's competitive strengths and weaknesses, a location quotient (LQ) analysis was completed. The LQ score for a sector is given by the share of employment for that sector in the region divided by its proportional representation in a relevant comparator region. The comparator regions for this analysis are Greater Melbourne and the Rest of Victoria. An LQ score of greater than 1.0 signifies that the sector in question is a speciality in the region (relative to Greater Melbourne/Rest of Victoria). All regions will have some sectors with LQ scores greater than 1.0 and some less than 1.0.

Over-representation (a score greater than 1.0) may suggest that these industries have a comparative (can produce products at a lower cost) or competitive (differentiation from a competitor) advantage, and the LGAs may be 'exporting' from these sectors to other regions. This includes *exporting* services to tourists that might visit the areas.

FIGURE 26: LQ SCORES OF ALL INDUSTRIES, REGION OF INTEREST COMPARED TO REST OF VIC AND GREATER MELBOURNE



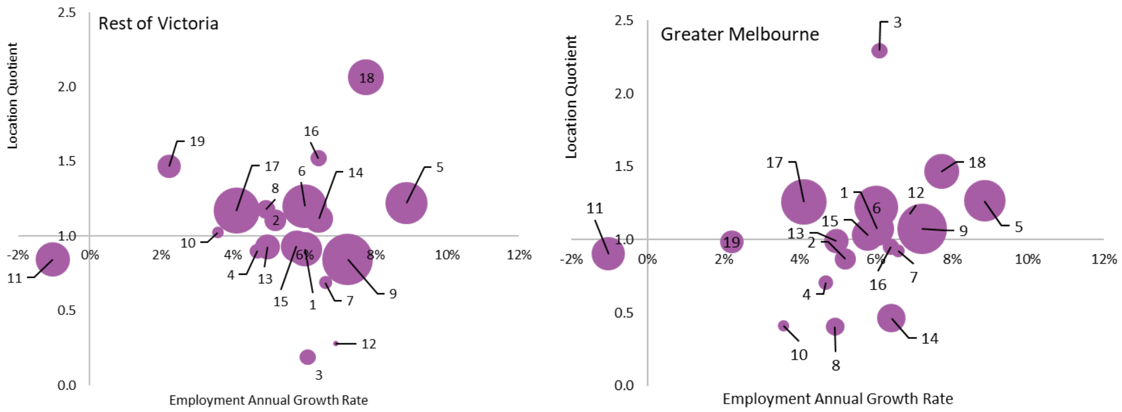
Source: SGS Economics and Planning, 2023

Figure 26 breaks down the LQ score for the four LGAs (study region). Compared to the Rest of Victoria, the study region has apparent comparative strengths in transport, postal and warehousing. Other marginal advantages include wholesale trade, and, rental, hiring and real estate services. When compared to Greater Melbourne, the study region has a competitive advantage in accommodation and food services with marginal advantages in electricity, gas, water and waste, wholesale trade and public administration and safety.

Figure 27 expands on the LQ analysis. The vertical axis indicates the LQ score, with the horizontal axis showing the growth rate in employment in the study region. The quadrants formed in the chart by lines calibrated to an LQ of 1.0 and an industry growth rate of 0 per cent per annum (in employment terms) create a lens for judging the strategic value of sectors. The size of the bubbles corresponds with the employment size of each sector in the region.

The top right-hand quadrant shows both strongly growing sectors and where the region has a specialisation or implied competitive advantage. On the face of things, these sectors reflect the region's strengths and best prospects. The bottom right shows emerging sectors growing in advantage but have yet to reach a comparative advantage in the study region. The top left shows industries with a local strength but declining employment. The bottom left quadrant shows industries with no advantage and declining employment.

FIGURE 27: LQ SCORES FOR ALL INDUSTRIES IN THE REGION OF INTEREST, AGAINST REST OF VIC AND GREATER MELBOURNE



ANZSIC Employment Industry Legend

1 Accommodation and Food Services
2 Administrative and Support Services
3 Agriculture, Forestry and Fishing
4 Arts and Recreation Services
5 Construction
6 Education and Training
7 Electricity, Gas, Water and Waste Services
8 Financial and Insurance Services
9 Health Care and Social Assistance
10 Information Media and Telecommunications
11 Manufacturing
12 Mining
13 Other Services
14 Professional, Scientific and Technical Services
15 Public Administration and Safety
16 Rental, Hiring and Real Estate Services
17 Retail Trade
18 Transport, Postal and Warehousing
19 Wholesale Trade

Source: SGS Economics and Planning, 2023

The overwhelming observation is that employment in the region is growing significantly with most circles on the right-hand side of the diagram. Employment growth is significantly though not wholly related to population growth associated with greenfield development in Wyndham in south western Melbourne and Armstrong Creek and Geelong generally.

For the region, against the rest of Victoria there are only a few sectors of apparent competitive advantage (Wholesale Trade and Transport, Postal and Warehousing are amongst these). Against Greater Melbourne the region shows an apparent competitive advantage particularly in:

- transport, postal and warehousing and wholesale trade (reflecting the strong role of these sectors in the region's industrial areas with good access to transport and distribution networks)
- construction (reflecting the general residential and infrastructure growth requiring building and construction activity)
- health care and social assistance (reflecting population growth and the need for 'population serving' activities)
- mining (likely reflecting residual quarries in the region)
- education and training (in particular their role as 'population serving' activities)
- accommodation and food services (influenced by Geelong and the region's 'holiday' economy)
- retail trade (reflecting its role serving a growing population)
- rental, hiring and real estate (again reflecting housing and industrial property growth).

Manufacturing employment in the region has marginally declined and surprisingly is not a 'strength' relative to the rest of Victoria as a whole, though it is compared to metro Melbourne. Table 27 summarizes the findings across the quadrants.

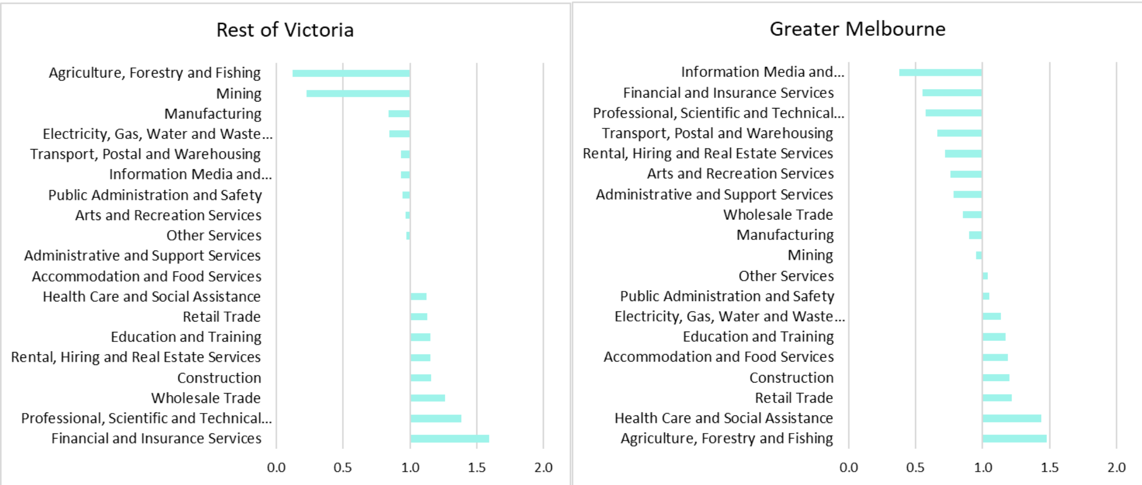
TABLE 27: LQ ANALYSIS FINDINGS

Finding	Rest of Victoria	Greater Melbourne
Expanding sectors with a traditional strength	Transport, postal and warehousing; construction; professional, scientific and technical services; education and training; retail trade; financial and insurance services; wholesale trade	Transport, postal and warehousing; construction; health care and social assistance; mining; education and training; accommodation and food services; retail trade; rental, hiring and real estate; wholesale trade
Emerging sectors	Health care and social assistance; electricity, gas, water and waste services; mining; agriculture, forestry and fishing; public administration and safety; arts and recreation	Professional, scientific and technical services; financial and insurance services; arts and recreation services; information, media and telecommunications
Industries with a traditional strength but declining in prominence	Manufacturing	Manufacturing

Source: SGS Economics and Planning, 2023

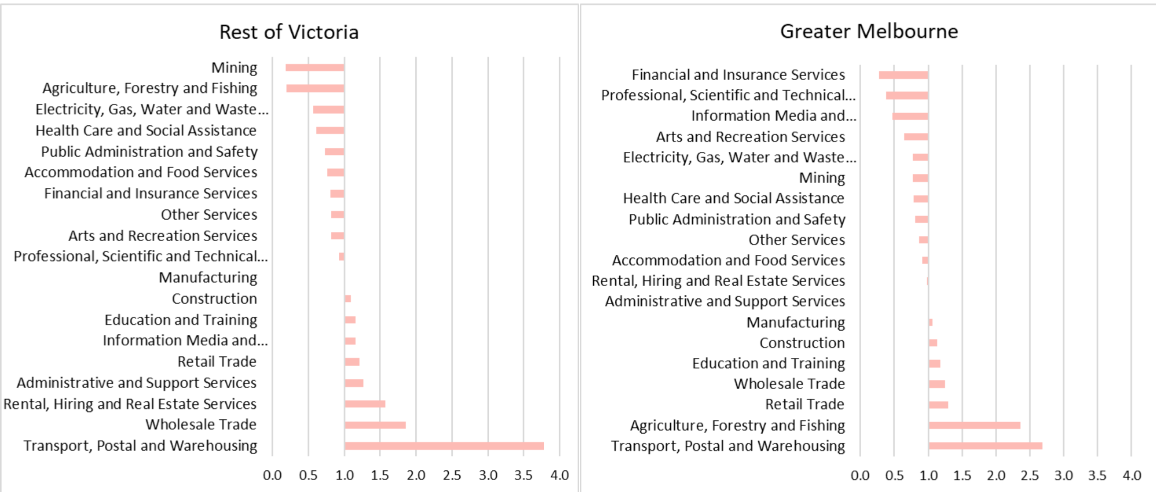
Figure 28 and Figure 29 outline the LQ scores at a local government level for Greater Geelong and Wyndham. In Geelong, it is evident that consistent comparative strengths relative to Greater Melbourne and Rest of Victoria include health care and social assistance, construction, education and training as well as retail trade. Wyndham has a strong comparative advantage in transport, postal and warehousing and this sector is expected to continue expanding with additional demand for industrial floorspace. Wyndham's additional comparative advantages that are consistent across the geographies include retail trade, wholesale trade, education and training as well as construction. Manufacturing is not a relative strength in either council area, relative to the comparator regions, but with new industrial land development opportunities including GAEP manufacturing activity will continue to be attracted to the region.

FIGURE 28: GREATER GEELONG



Source: SGS Economics and Planning, 2023

FIGURE 29: WYNDHAM

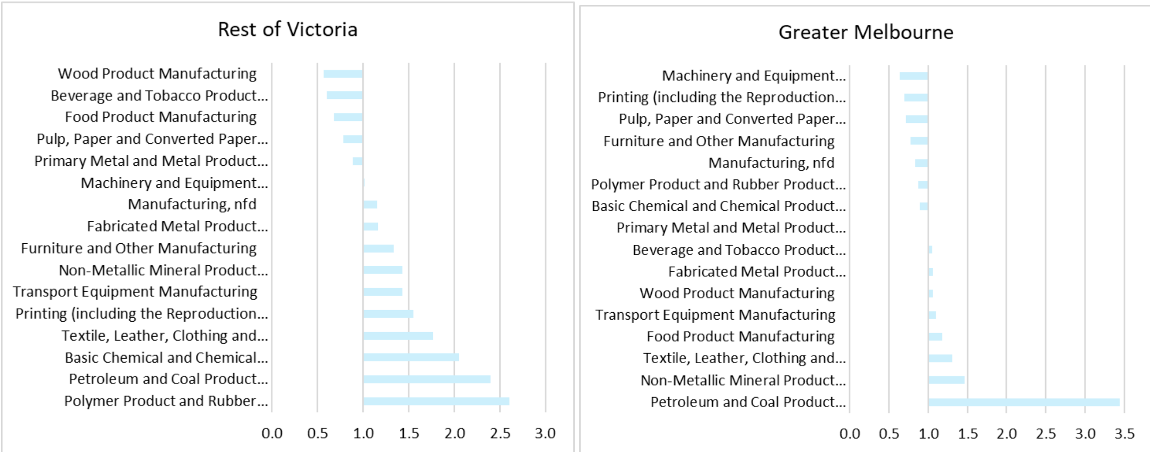


Source: SGS Economics and Planning, 2023

Comparative advantages in manufacturing

The LQ analysis was repeated focusing on manufacturing categories at a finer grained, 2-digit level. Figure 30 breaks down the scores against each comparison region.

FIGURE 30: LQ SCORES OF MANUFACTURING, REST OF VIC AND GREATER MELBOURNE

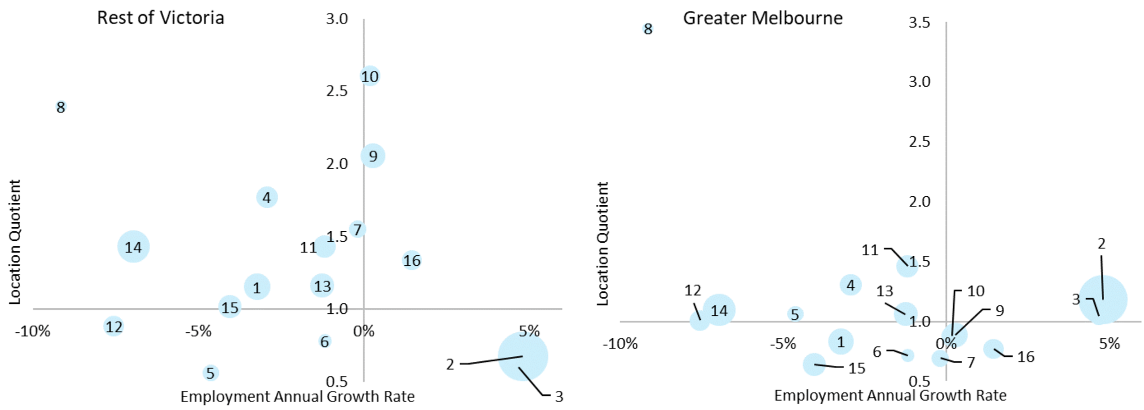


Source: SGS Economics and Planning, 2023

Compared to the Rest of Victoria, the study region has apparent comparative strength in polymer and rubber production, petroleum and coal manufacturing, basic chemical and chemical product manufacturing, textile, leather, clothing, and footwear production as well as printing. When compared to Greater Melbourne, the study region has a competitive advantage in petroleum and coal manufacturing and marginal advantages in non-metallic, mineral production, textile, leather, clothing and footwear production and food product manufacturing.

As above, Figure 31 expands on the LQ analysis. The vertical axis indicates the LQ score, the horizontal axis shows the growth rate in employment in the study region. Growth indicates a growing advantage.

FIGURE 31: LQ SCORES OF MANUFACTURING, REST OF VIC AND GREATER MELBOURNE



1 Manufacturing, nfd
2 Food product manufacturing
3 Beverage and tobacco product manufacturing
4 Textile, leather, clothing and footwear manufacturing
5 Wood product manufacturing
6 Pulp, paper and converted paper product manufactruing
7 Printing
8 Petroleum and coal product manufacturing
9 Basic chemical and chemical product manufacturing
10 Polymer prodcut and rubber product manufacturing
11 Non-metallic mineral product manufacturing
12 Primary metal and metal product manufacturing
13 Fabricated metal product manufacturing
14 Transport equipment manufacturing
15 Machinery equipment manufacturing
16 Furniture and other manufacturing

Source: SGS Economics and Planning, 2023

The petroleum refining in the region dominates this data in terms of the regional manufacturing speciality, but it is declining in importance. The 'heavy' and traditional manufacturing sectors are generally similar. Noticeably, food product and beverage manufacturing are growing as well as emerging as specialities. Table 28 summarises the findings across the quadrants.

TABLE 28: LQ ANALYSIS FINDINGS

Finding	Rest of Victoria	Greater Melbourne
Expanding sectors with a traditional strength	Polymer product and rubber product; basic chemical and chemical product; furniture and other	Food product; beverage and tobacco
Emerging sectors	Food and product; beverage and tobacco product	Basic chemical and chemical product; furniture and other
Industries with a traditional strength but declining in prominence	Textile, leather, clothing and footwear; petroleum and coal; transport equipment; non-metallic mineral; fabricated metal; manufacturing	Petroleum and coal; non-metallic mineral; textile, leather, clothing and footwear; wood product
Industries without a comparative advantage and declining	Primary metal and metal product; wood product, pulp, paper and converted paper product	Manufacturing; machinery equipment, pulp, paper and converted paper; machinery equipment

Source: SGS Economics and Planning, 2023

Appendix D: Competitor Precincts

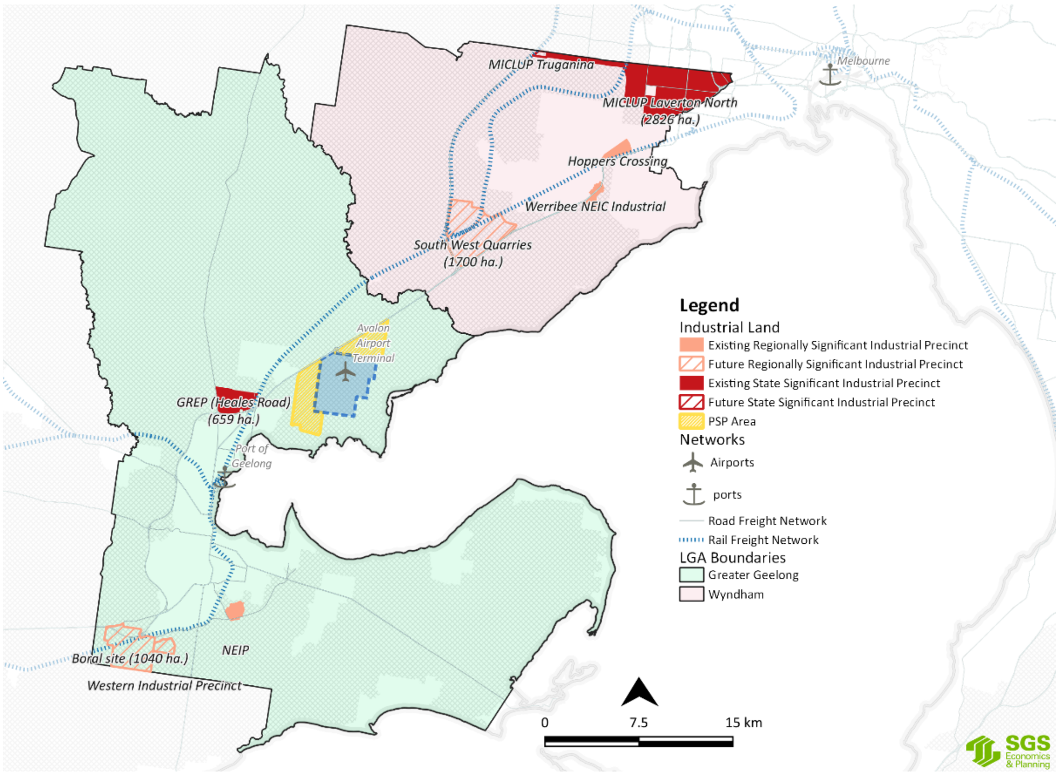
To understand the impact of GAEP on industrial land supply and demand, its position in the market must first be understood. GAEP, due to its location and strategic significance (identified in policy and strategy documents), is likely to be of regional and state-wide significance, acknowledged by its inclusion as a priority precinct in Plan for Victoria.

The selection of competitor precincts for the industrial land supply analysis is therefore limited to precincts with a regional and/or state wide significant role in the Wyndham-Geelong corridor, which has been identified as the submarket within which GAEP will compete. Recognising the GAEP's potential future strategic significance in the broader western Melbourne region the Western SSIP land consumption rates have also been considered in the take-up scenarios developed in the report.

A key feature of precincts with regional and/or state wide significance is their ability to accommodate high value commercial and industrial uses, which typically require larger lot sizes and supportive infrastructure and amenities.

The seven significant precincts identified for this analysis are shown below in Figure 32, and listed by LGA as follows.

FIGURE 32: SIGNIFICANT PRECINCTS



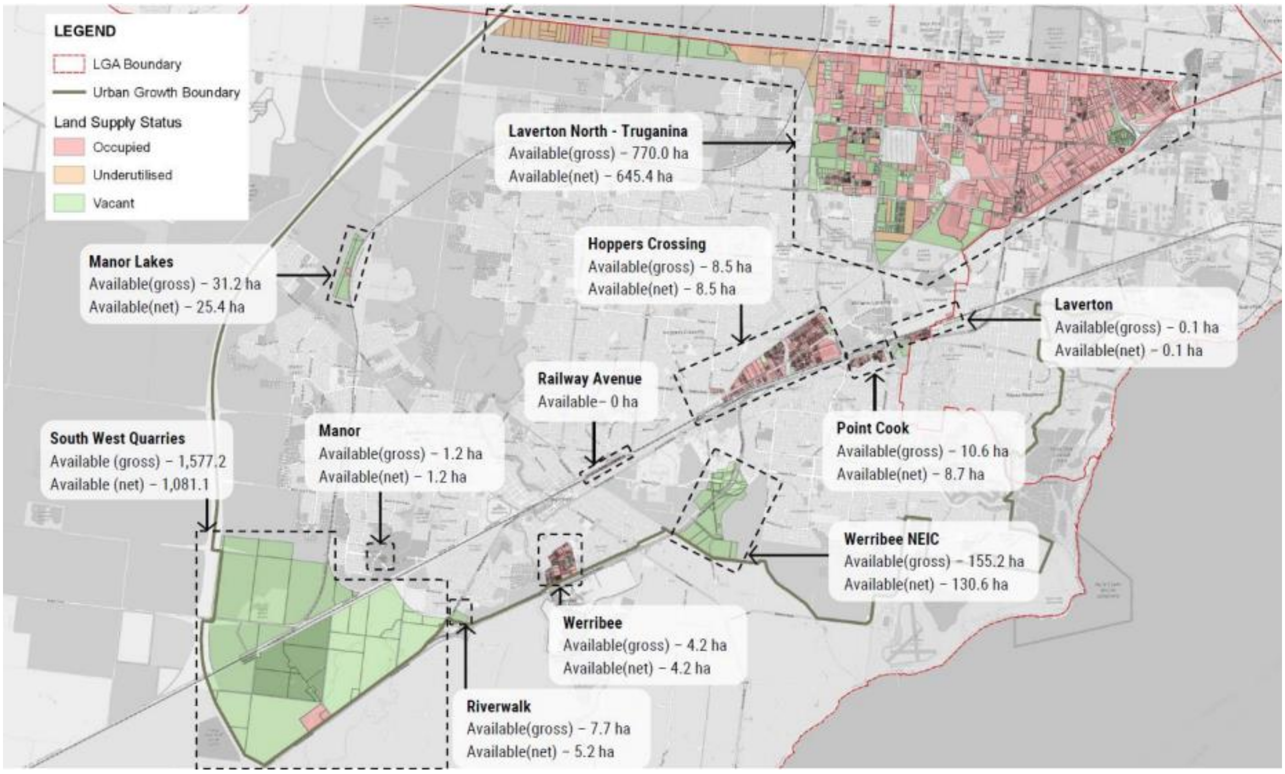
Source: SGS Economics and Planning, 2023

Wyndham

Wyndham is well connected to an efficient transport network that caters for high frequency freight movement, establishing itself as a major logistics hub within Victoria. Within Wyndham there are several strategically located industrial precincts with excellent connection to air, seaports, road and rail. Part of the Western State Significant Industrial Precinct (SSIP) is within Wyndham (the remainder is in the Melton LGA and has been considered in the analysis of historic take up rates). It is currently the largest and most active SSIP in terms of land consumption.

An overview of the LGA industrial land supply is shown in Figure 33.

FIGURE 33: INDUSTRIAL PRECINCTS IN WYNDHAM LGA



Source: Wyndham Industrial Land-Use Strategy, 2022

For this analysis, we have identified the following four key industrial precincts:

- **Laverton North Truganina**: as a portion of the State significant industrial precinct (SSIP)
- **Hoppers Crossing**: Regionally significant industrial precinct (RSIP)
- **Werribee NEIC:** Future RSIP
- **Southwest Quarry**: Future RSIP

Table 29 provides more detail on the context of these neighbouring precincts.

TABLE 29: WYNDHAM COMPETITOR PRECINCTS

Precinct	Issues	Future directions from strategy
Laverton North Truganina (as a portion of the WSSIP)	Limited extension, likely to be exhausted in the medium term, and underutilised areas including some non-industrial use.	Preference for smaller strategic industries due to proximity of residential area and train station. Office and retail uses should be limited.
Hoppers Crossing	Existing operational conflicts between industrial uses and sensitive non-industrial uses (including dust and noise), highly desired location for businesses, and high level of traffic congestion.	Recognise this precinct as a RSIP in accordance with MICLUP.
Werribee NEIC	Zoned as UGZ, owned by State Government and yet to be released to market, forms part of East Werribee Employment Precinct PSP.	PSP complete, plans focused on research and development. University, professional and technical services. 110 ha considered the focus for advanced manufacturing.
Southwest Quarry	Zoned as UGS, and PSP yet to be prepared.	Ensure PSP aligns with RSIP of MICLUP, maximise potential to contribute to medium-long term supply of industrial land noting excellent future transport links.

Source: Wyndham Industrial Land-Use Strategy, 2022

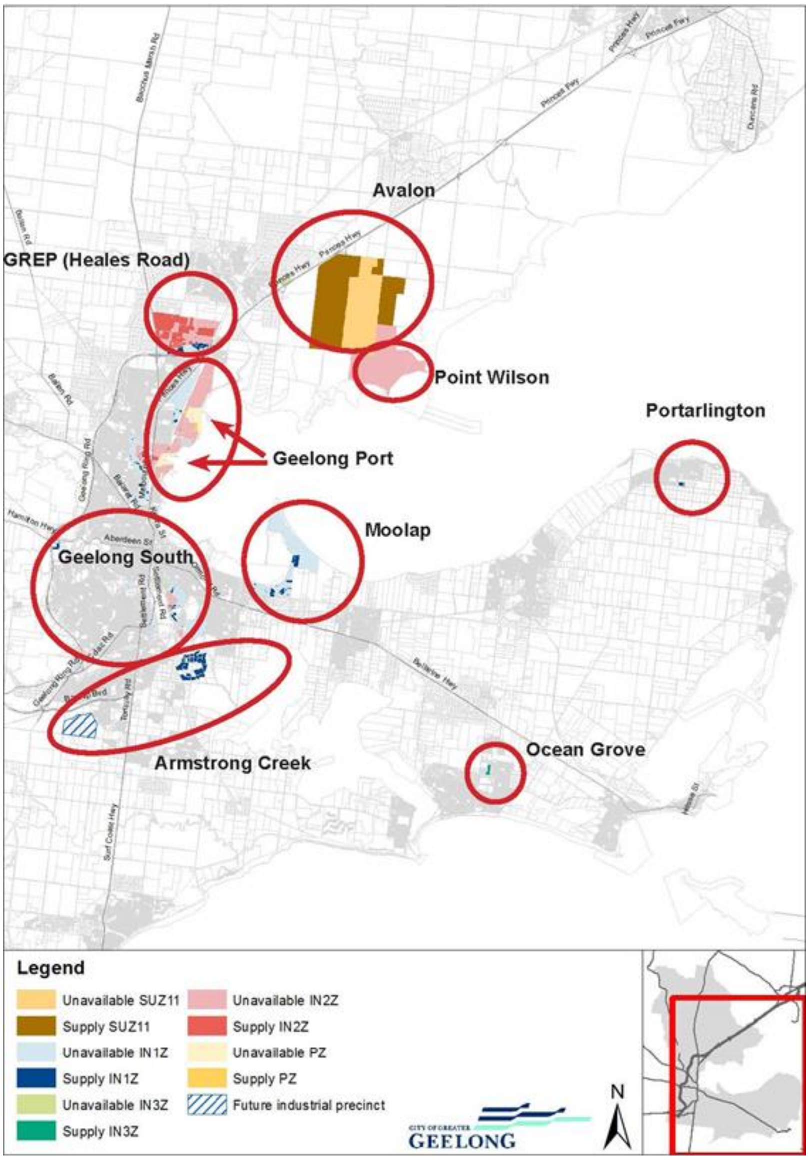
Of these surrounding industrial precincts in Wyndham, only Laverton North Truganina, and the Western SSIP overall, is considered a 'competitor' for the GAEP. That is, the type of land provided in these precincts would appeal to the same users.

Geelong

Geelong has a high substitutability of industrial activity across its individual precincts, meaning that most of the precincts are not specialised to specific forms of industrial activity. The preponderance of smaller lots in most of these precincts are better suited to local service activities and small-scale light industry enterprises. GREP is an exception to this, as it includes generally larger sites.

Figure 34 outlines the industrial precincts across the LGA, including the GAEP (labelled Avalon) precinct.

FIGURE 34: GEELONG INDUSTRIAL PRECINCTS



Source: Geelong Industrial land supply report, 2018

There are two key industrial precincts which will service larger high value industrial uses, and these are considered possible direct competitors or comparators to GAEP.

These precincts are:

- **Armstrong Creek:** Approved **North East Industrial Precinct (NEIP)** and a future **Western Industrial precinct (WIP)** which includes the additional future **Boral site**.
- **Geelong Ring Road Employment Precinct (GREP):** Existing industrial precinct of 491 hectares.

Table 30 provides more detail on the competitor precincts in Geelong.

TABLE 30: GEELONG COMPETITOR PRECINCTS

Precinct	Precinct specific limitations	Future directions
North East Industrial Precinct (NEIP)	Surrounded by residential precincts, traditional service industry uses, two separate components of a business park and industrial area.	Including service industry, manufacturing, transport and storage, warehouse and distribution and small office based industrial uses.
Western Industrial Precinct (WIP)	Currently zoned as UGZ.	Requires a completed/approved PSP. Considered for servicing local population-based demand.
Geelong Ring Road Employment Precinct (GREP)	Remaining vacant land mainly set aside for large lots, protected by 1,000m industrial buffer.	Establishment of large, export-oriented manufacturing and production support industries.

Source: Greater Geelong Industrial Supply report, 2018

Of these surrounding industrial precincts in Geelong, only the GREP is a 'competitor' for the GAEP, that is, the type of land provided in these precincts would appeal to the same users.

Lot sizes and sector activity in the region

The Strategic Economic Insight Report (2021) prepared by REMPLAN for Wyndham City Council outlines three broad categories for industrial employment. This provides a basis for the lot size to sector comparison.

The three categories are based on scale and market, including:

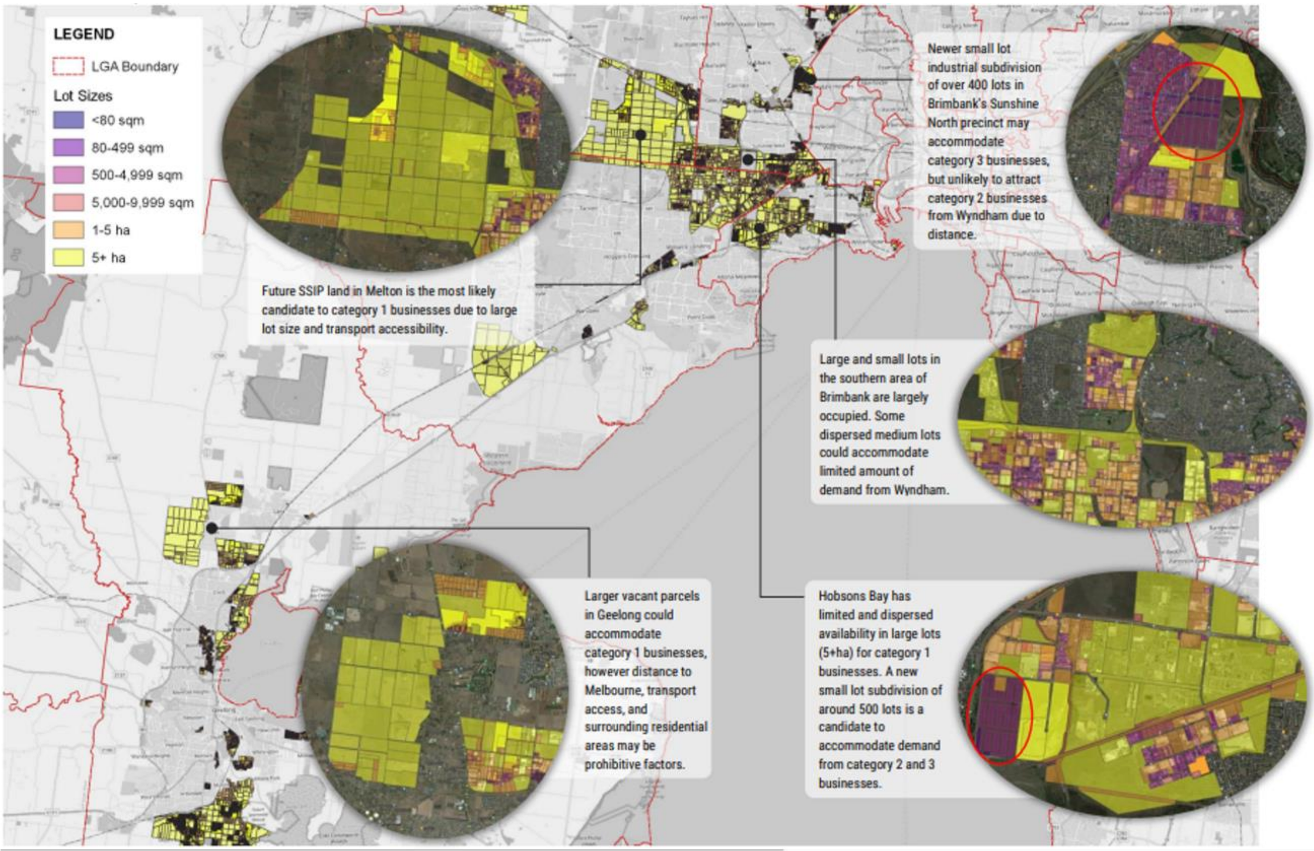
1. Larger (inter)national businesses that are seeking locations which will enable them to serve an expansive national and international market. This category typically includes warehousing, logistics, waste management and manufacturing firms. This is the most land intensive category and requires larger lot sizes.
2. Population or business serving industries that are closely linked to their location and a specific catchment to derive their customer base. These include business such as mechanics, cleaning services, and repair services.
3. Smaller businesses that have a national or international market. Examples include niche manufacturing, online retailers/wholesalers, or specialised professional services. These have the highest degree of flexibility for locations.

Figure 35 depicts a sample of lot sizes in precincts across the Western SSIP, including the study areas of Geelong and Wyndham, noting that the GAEP including the planning area is not outlined. The figure indicates the appropriate lot sizes associated with each category. For category two and three businesses the lot sizes are interchangeable within the range of <80 sqm up to 1 ha. The determining factor between these business categories is dependent on the access to local services. In relation to the planning area in the GAEP, local servicing business are considered less likely and less strategic.

Category one business operates in lot sizes ranging from 1-5 ha however are best suited to 5+ ha. For category one activity, surrounding residential areas will be restrictive and access to transport options are necessary. Category one businesses are considered the most likely form of development of the planning area and align with the strategic directions of developing the area as a state significant industrial precinct (SSIP).

This analysis is consistent with findings from the stakeholder engagement and has been used to inform the assessment of competitive precincts, recognising the ability to develop lot sizes from 1 to 5 and 5+ hectares as a competitive characteristic. This analysis is expanded on further in the multicriteria assessment of competitive precincts which ranks lot size availability and connectivity options.

FIGURE 35: LOT SIZE ANALYSIS IN SOUTH WEST CORRIDOR INDUSTRIAL AREAS



Source: REMPLAN, 2021

Multicriteria assessment of competitor precincts

A multi-criteria assessment (MCA) has been applied to each precinct to understand the role, function and competitive offer of each competing precinct in the identified submarket. This helps to position GAEP including the planning area as an industrial and employment site relative to competitor locations.

The MCA draws on research inputs from GIS analysis and a desktop policy review. The criteria list includes strategic context of the precincts, current industrial activity, connectivity to major transport routes, available land and lot sizes a well as planning and environmental regulations.

As shown below in Table 31 all criteria are assessed and then scored from 1 to 5, with higher values indicating greater performance. This MCA is informed by a suitability analysis which identifies the planning and environmental considerations of each site, along with the transport and access, lot size and other precinct considerations identified in Section 2.3.

TABLE 31: MULTI-CRITERIA ASSESSMENT

	GAEP	Laverton North Truganina (WSSIP)	Hoppers Crossing	Werribee NEIC	Southwest Quarry	North East Industrial Precinct	Western Industrial Precinct	GREP	Boral site
Available land	5	3	1	1	4	2	4	2	3
Road and Rail	4	3	5	3	5	2	2	5	2
Sea and Air	5	2	2	1	2	2	2	4	2
Specialised industrial capacity	5	4	1	3	4	2	3	5	3
Local service industrial capacity	2	5	4	3	2	5	3	3	3
Lot sizes	5	3	1	2	5	3	4	5	4
Planning status*	3	4	4	5	1	3	3	5	2
Environmental barriers	3	4	2	5	2	4	5	4	5
Development difficulties**	4	4	4	5	2	3	3	5	3
Market readiness	2	4	3	5	1	3	2	5	1

Total score	38	32	27	33	28	29	31	43	28

*Planning status is an indicator of how refined/developed the Precinct Structure Plan or Master Plan is, with precincts with planning frameworks in place and land ready for development scoring highest.

**Development difficulties are an indicator of the potential legal/statutory barriers to a precinct's industrial development, such as proximity to residential land, or restrictive overlays.

The total scores from the MCA were combined to identify the highest scoring precincts. The MCA identified and ranked the four specific precincts considered to be competitors to the planning area in the "league ladder" shown below in Table 32.

TABLE 32: LEAGUE LADDER OF POTENTIAL COMPETITOR INDUSTRIAL PRECINCTS

Ranking	Precinct	Reasoning
1	GREP	Highly connected and versatile industrial land, close to Geelong's growing population centres with an industrial buffer zone away from competing land uses. Land usage rates have been high with an average consumption rate of 13.6 annually, and the majority of land is no longer available. This precinct's positive qualities and preparedness for the market makes it the premier industrial site for Geelong presently.
2	GAEP – Planning Area and Avalon airport	Large availability of land close to both Geelong's growing population centres and Greater Melbourne. Present economic opportunity to develop high value industrial activity, not limited by lot size and close to road, rail, sea and air. Minimal planning restrictions and well placed to enter the market pending a planning scheme amendment.
3	Laverton North Truganina (WSSIP)	Much of this precinct is already occupied, however it is so large that it still offers significant development opportunities. Environmental and planning restrictions are minimal, MICLUP's authority allows for easier planning than most other precincts. Future expansion of this precinct is planned to occur outside of Wyndham LGA, on the north side in Melton LGA.

Precincts which are more tailored to local services have been excluded from the 'league ladder' as it is expected that these will more typically serve local markets. As the future expansion of the WSSIP is planned to occur within the Melton LGA, the analysis will consider the consumption rate for full Western SSIP, rather than just the portion in Wyndham.

Precincts which are considered non-competitive due to their position, land availability or restrictions are shown in

Table **33**.

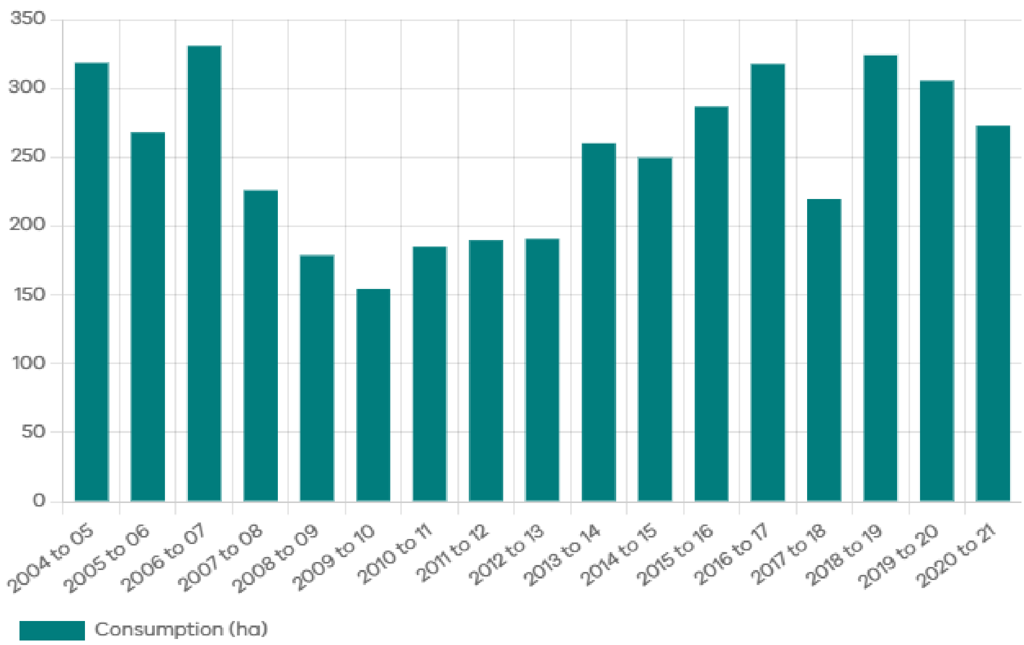
TABLE 33: EXCLUDED PRECINCTS

Precinct	Reasoning
Hoppers Crossing	▪ Traffic congestion ▪ Nearly exhausted ▪ Environmental restrictions (waterway through the precinct)
NEIP	▪ Surrounded by residential precincts
Western Industrial	▪ Planned for local servicing ▪ Close to residential area ▪ No PSP
Boral site	▪ Planned for mainly local servicing ▪ Close to residential area ▪ No PSP ▪ Development dependent on Western Industrial Precinct
Werribee NEIC	▪ RSIP enterprise precinct with proximity to population and employment centres ▪ Creating a hub of higher value employment and businesses ▪ Focus specifically on advanced manufacturing ▪ Road access, no rail

Appendix E: Recent take-up rates in Metropolitan Melbourne and Western SIPP

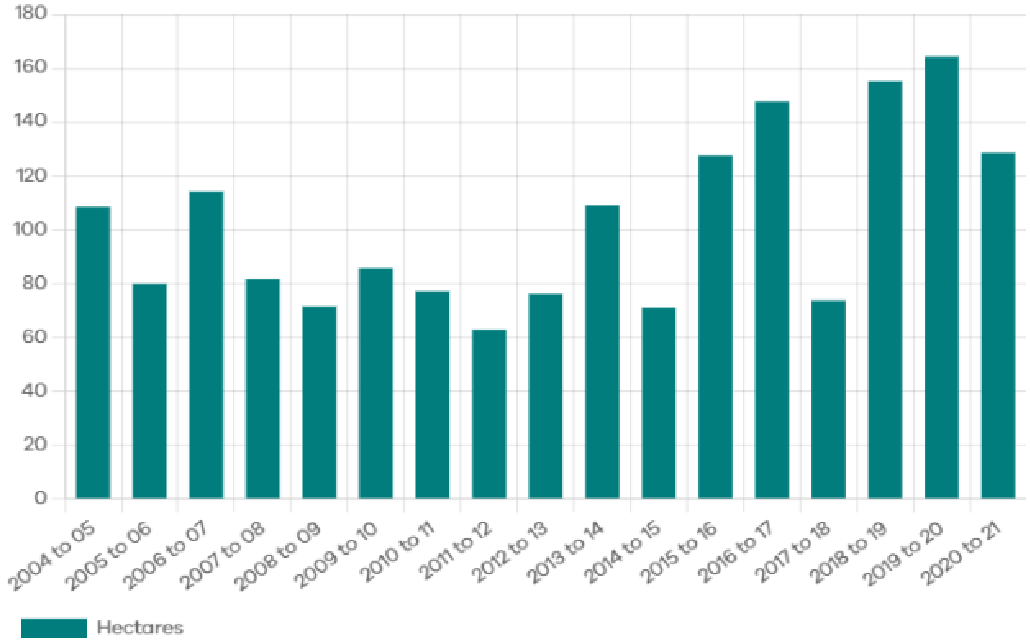
Across Metropolitan Melbourne according to the Victorian Government's Urban Development Program industrial land consumption was generally between 250 and 325 ha per year from 2014 to 2021, as in Figure 36. In the Western SIPP, the major competitor area in the west of Melbourne, take up rates have increased since 2013 with an average of 121 ha over the 8 year period to 2020-21 Figure 37. As this is slightly higher than the ten year average, both the ten year and eight year averages were used to model two different scenarios for take up in the GAEP planning area.

FIGURE 36: ANNUAL NET CONSUMPTION OF INDUSTRIAL LAND, METROPOLITAN MELBOURNE, 2004-2021



Source: Urban Development Program (2022)

FIGURE 37: ANNUAL NET CONSUMPTION OF INDUSTRIAL LAND, WESTERN SSIP, 2004-2021



Source: Urban Development Program (2022)

Appendix F: Net floorspace to jobs ratios

The conversion of the total land area to job yields was informed by SGS' job to floorspace ratios (Table 35), sense checked against the NSW Government's Common Planning Assumptions (CPA) Workspace Ratios (shown in Table 35) and high level analysis of Erskine Park in western Sydney (developed over the last 20 years as a mainly freight and logistics precinct) and areas around Melbourne Airport to understand typical site coverage ratios and job yields in industrial areas.

SGS' job to floorspace ratios are based on extensive land use audits completed by SGS across both Melbourne and Sydney over the last 10+ years. They have also been reviewed against job to floorspace ratios included in MICLUP and in the City of Melbourne Census of Land Use and Employment.

A mid-point ratio has been used for the core scenario. However, the follow table also includes a range. This highlights the high variability for some land use types which should be further considered as actual development occurs.

TABLE 34: NET FLOORSPACE TO JOB RATIOS (SQUARE METRES)

Industry	Low	Low-Mid	Medium	Mid-High	High
Freight and logistics	250	225	200	150	100
Light industrial	150	125	100	75	50
Heavy industrial	200	175	150	125	100

Source: SGS Economics and Planning, 2020

TABLE 35: INDUSTRIAL FLOOR AREA TO JOB RATIO GUIDANCE AND RANGES

Industrial Premises	Unit per FTE job position	Typical Size	Range
Traditional manufacturing	m² Gross Floor Area	100	50 to 200
Advanced manufacturing	m² Gross Floor Area	200	150 to 300
High-technology Park	m² Gross Floor Area	80	60 to 100
Warehouse, transport, and storage	m² site area¹	150m² or 50 jobs/ha	50 to 300
Data centres	m² Gross Floor Area	200	100 to 400

Source: NSW DPE, 2023[12]

[12] Department of Planning and Environment NSW (2023) CPA Workspace Ratios

Appendix G: Suitability analysis

A suitability analysis of each competitive precinct, based on the existing planning overlays and environmental restrictions, indicates the extent to which each precinct can accommodated certain land uses.

Planning restrictions occur through a variety of overlays and zonings, some of which are policy based, and enforced to maintain certain qualities and values in a zone, while others are naturally formed restrictions, such as bodies of water.

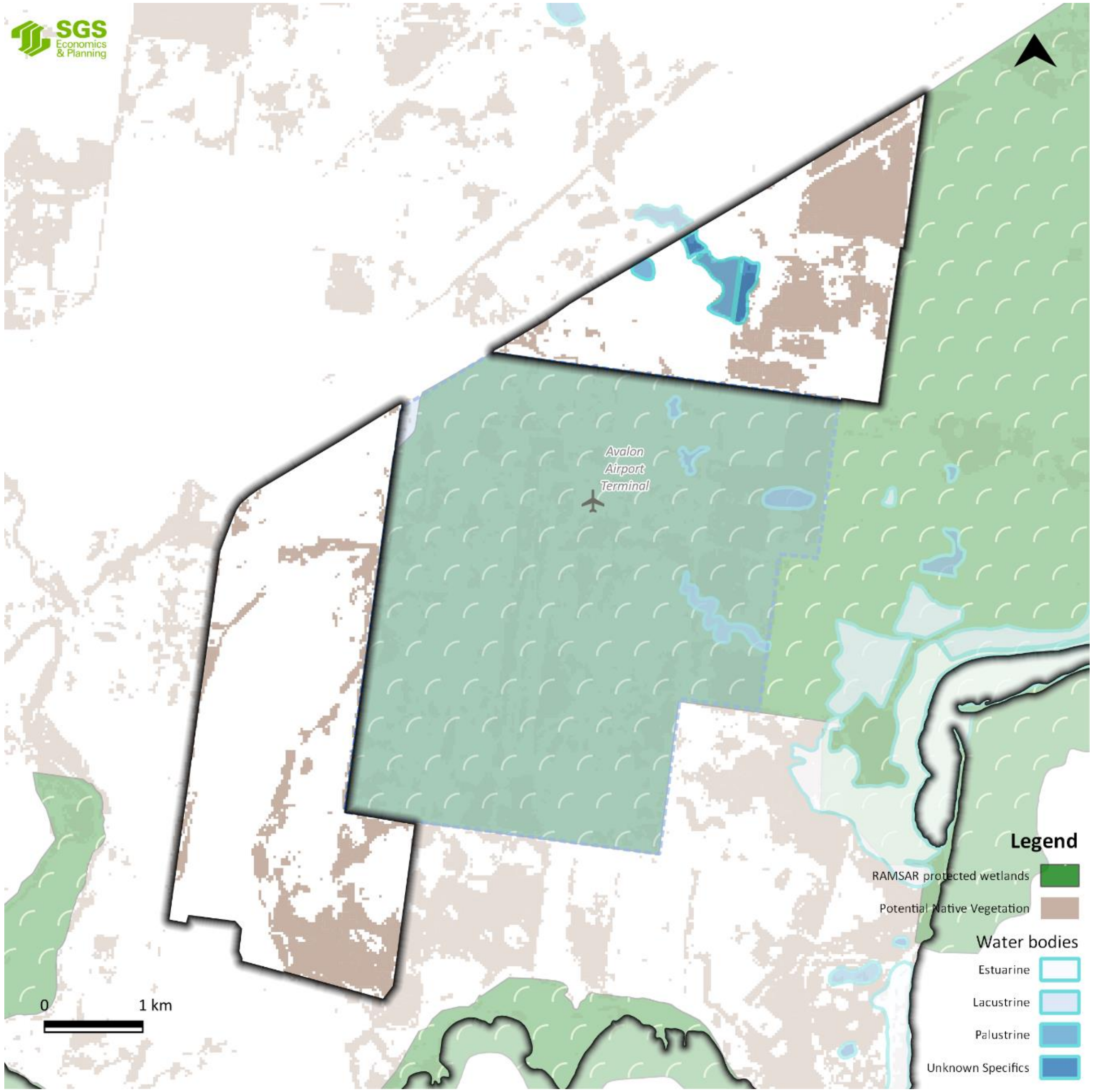
Ramsar wetlands are nationally recognised for their conservational importance. The Ramsar agreement promotes the conservation and wise use of these wetlands, so developing them as industrial precincts should be avoided.

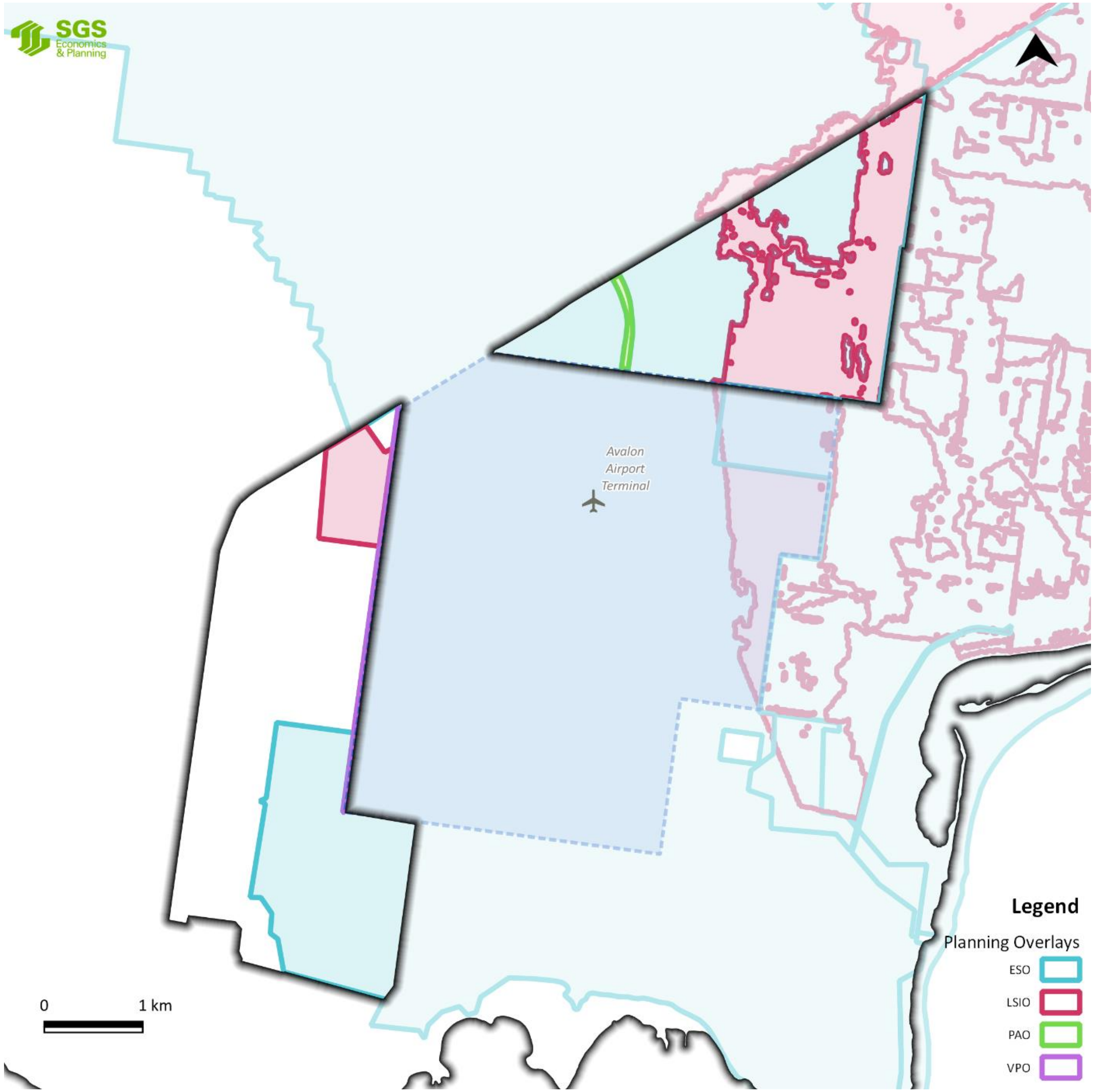
The Native Vegetation survey of 2005 was composited from various sources, such as landsat imagery, ground-truthing points and expert validation. In Victoria, a permit is required to remove, destroy or lop native vegetation, potentially adding large costs to development projects in approval time to sites with large amounts of native vegetation.

Water bodies are generally either described as estuarine, lacustrine or palustrine, estuarine being bodies of water near the ocean such as river mouths, lacustrine being a solid open body of water (like a lake), and palustrine being a marshy or swampy body of water. All of these pose significant barriers to land development and may have an impact on the kinds of activities that can take place in those developed lands.

The suitability of each competitive precinct for specific land uses is shown as follows.

The Greater Avalon Employment Precinct





The Greater Avalon Precinct

The north-east portion of the site is covered by land subject to inundation overlay (LSIO) and contains areas of potential native vegetation. The western corner of this site includes the PAO14 Public Acquisition Overlay 14, which enables the acquisition by Geelong Council for the purposes of railway construction.

The western portion of the planning area has fewer potential barriers in terms native vegetation and bodies of water, as well as less restrictive planning overlays.

The prevalence of the LSIO and native vegetation could impact on the capability of these lots to perform activities that are high in pollution or are subject to high damages from flooding.

This is the only precinct of the comparative precincts that sees the benefits of existing directly adjacent to an airport, giving the land a premium capacity to deal with air freight distribution or wholesale retailing.

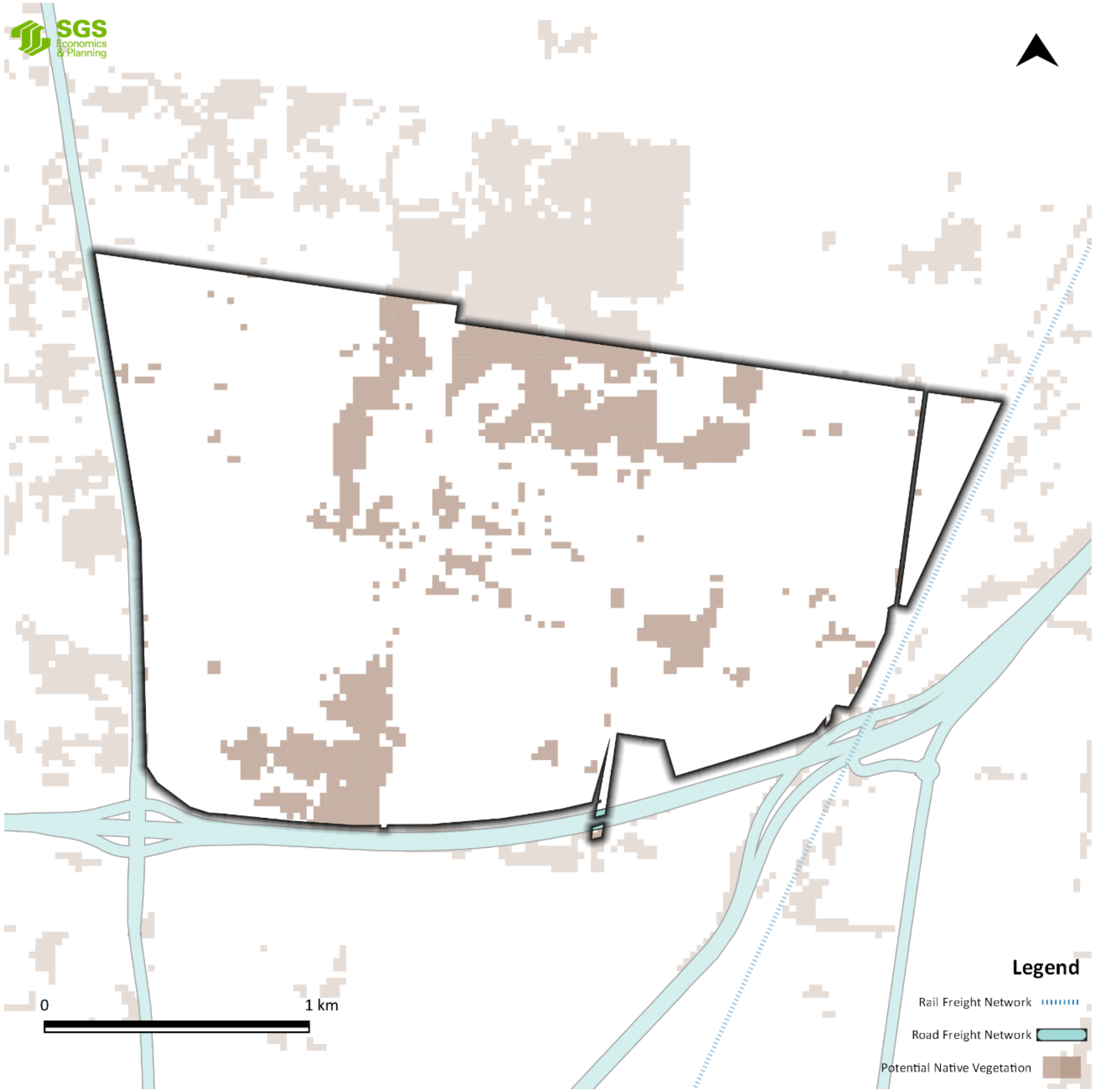
Planning overlays impacting this precinct are:

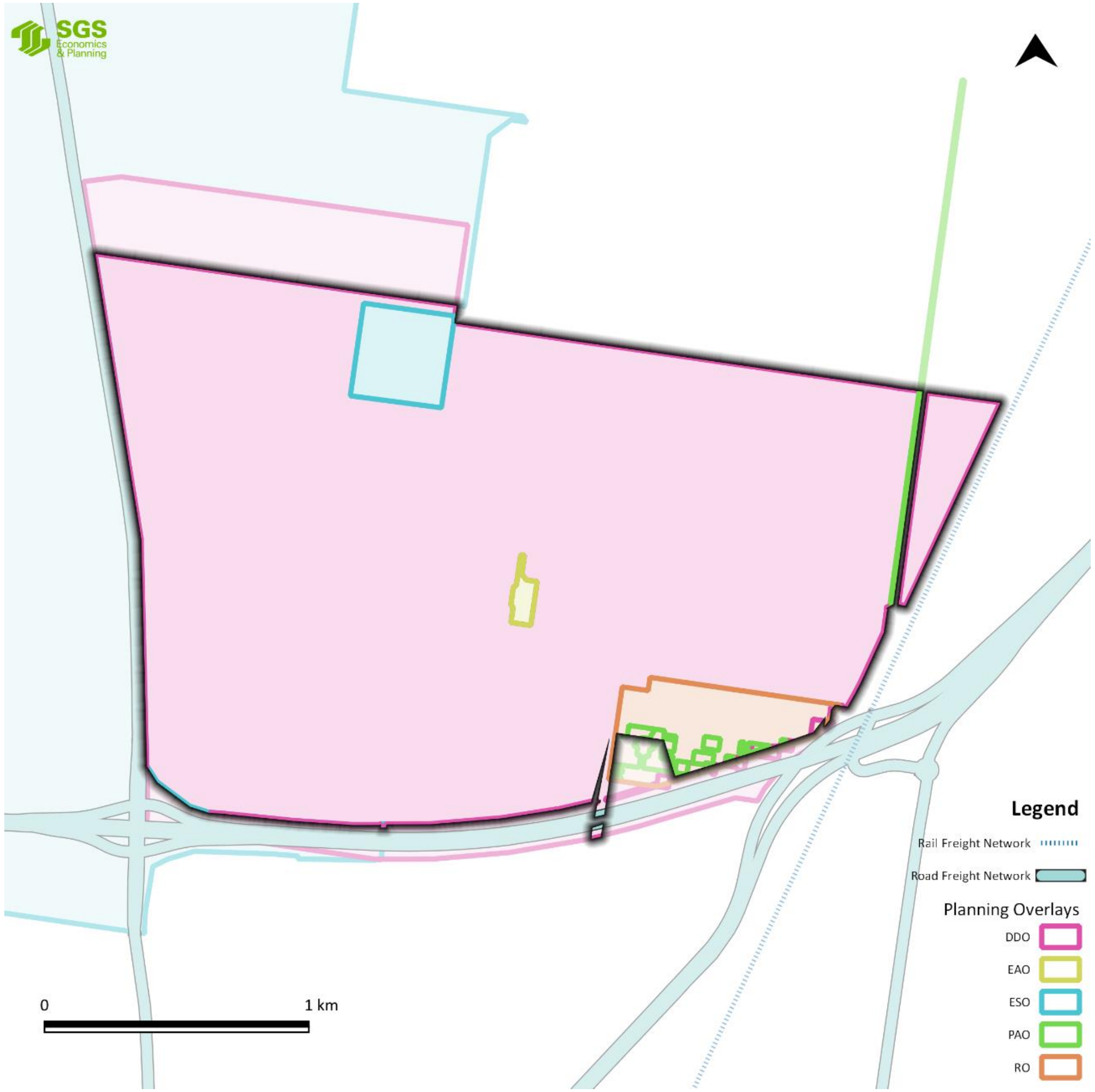
LSIO- LAND SUBJECT TO INUNDATION OVERLAY

PAO14- PUBLIC ACQUISITION OVERLAY 14 (aligned with the proposed airport rail link)

ESO4- SCHEDULE 4 ENVIRONMENTAL SIGNIFICANCE OVERLAY- Grasslands within the Werribee Plains Hinterland

The Geelong Ring-Road Employment Precinct (GREP)





The Geelong Ring-Road Employment Precinct

The GREP is a currently operating industrial development park in the north of Geelong. It exists in a similar area to the GAEP and has been highly successful in providing industrial land to the region. Its success sets an important precedent for the GAEP, as the GREP runs out of industrial lots, the supply can be supplemented by newly developed and released GAEP land.

Planning overlays impacting this precinct are:

DDO18- GEELONG RING ROAD EMPLOYMENT PRECINCT

EAO- ENVIRONMENTAL AUDIT OVERLAY- Potentially contaminated sites. https://www.environment.vic.gov.au/sustainability/victoria-unearthed/about-the-data/environmental-audit-overlay

RO- RESTRUCTURE OVERLAY- Identification of old and inappropriate subdivisions. https://planning-schemes.app.planning.vic.gov.au/Greater%20Geelong/ordinance/45.05

ESO4- SCHEDULE 4 ENVIRONMENTAL SIGNIFICANCE OVERLAY- Grasslands within the Werribee Plains Hinterland https://planning-schemes.app.planning.vic.gov.au/Greater%20Geelong/ordinance/42.01-s4

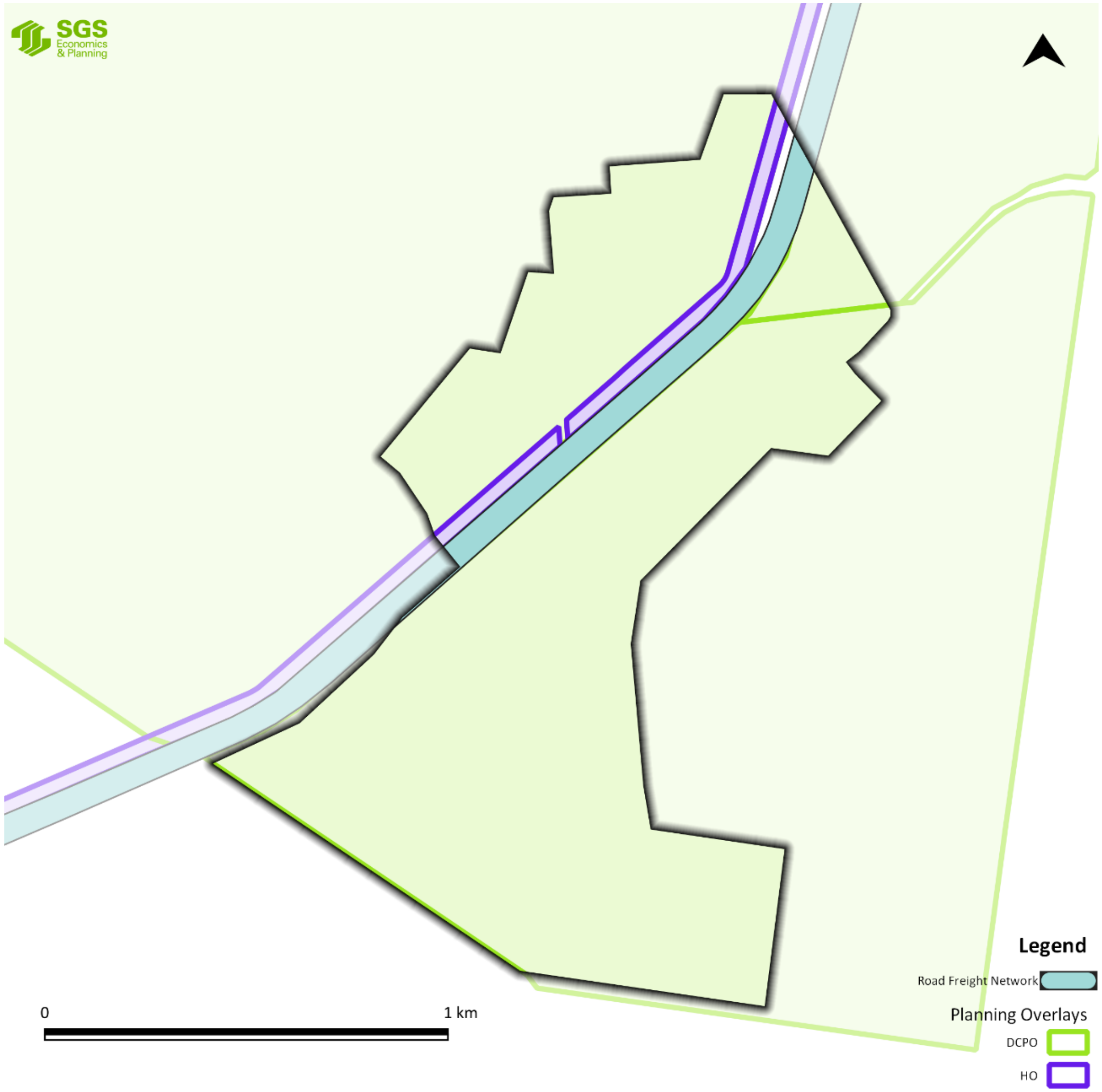
PAO4- PUBLIC ACQUISITION OVERLAY 4- Proposed Road

PAO12- PUBLIC ACQUISITION OVERLAY 12- Proposed Drainage Infrastructure

PAO13- PUBLIC ACQUISITION OVERLAY 13- Proposed Drainage Infrastructure and Road

VPO – VEGETATION PROTECTION OVERLAY

The Werribee NEIC



Werribee NEIC

The NEIC is a site recognised by Plan Melbourne as an area of high employment and economic activity. The NEIC is, however, small, and not well suited to competitive uses with the GAEP. Proximity to housing, the presence of heritage infrastructure in the zone and a small precinct/lot size more or less separate it from the large-format industrial activities we are seeking. Additionally, major road works are currently being planned to alleviate the high traffic stress of this precinct, making bulk transport to and from here difficult.

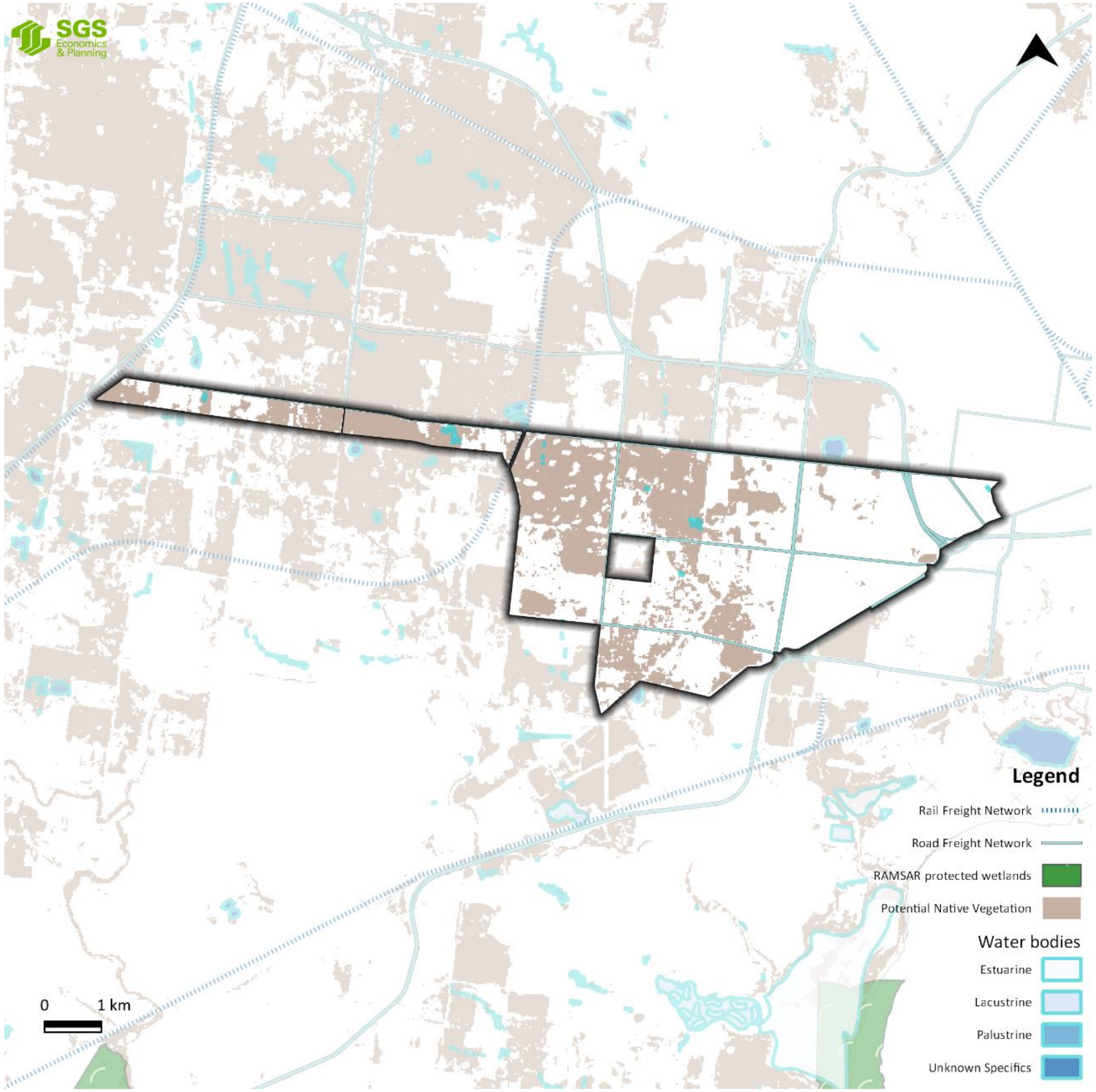
Planning overlays impacting this precinct are:

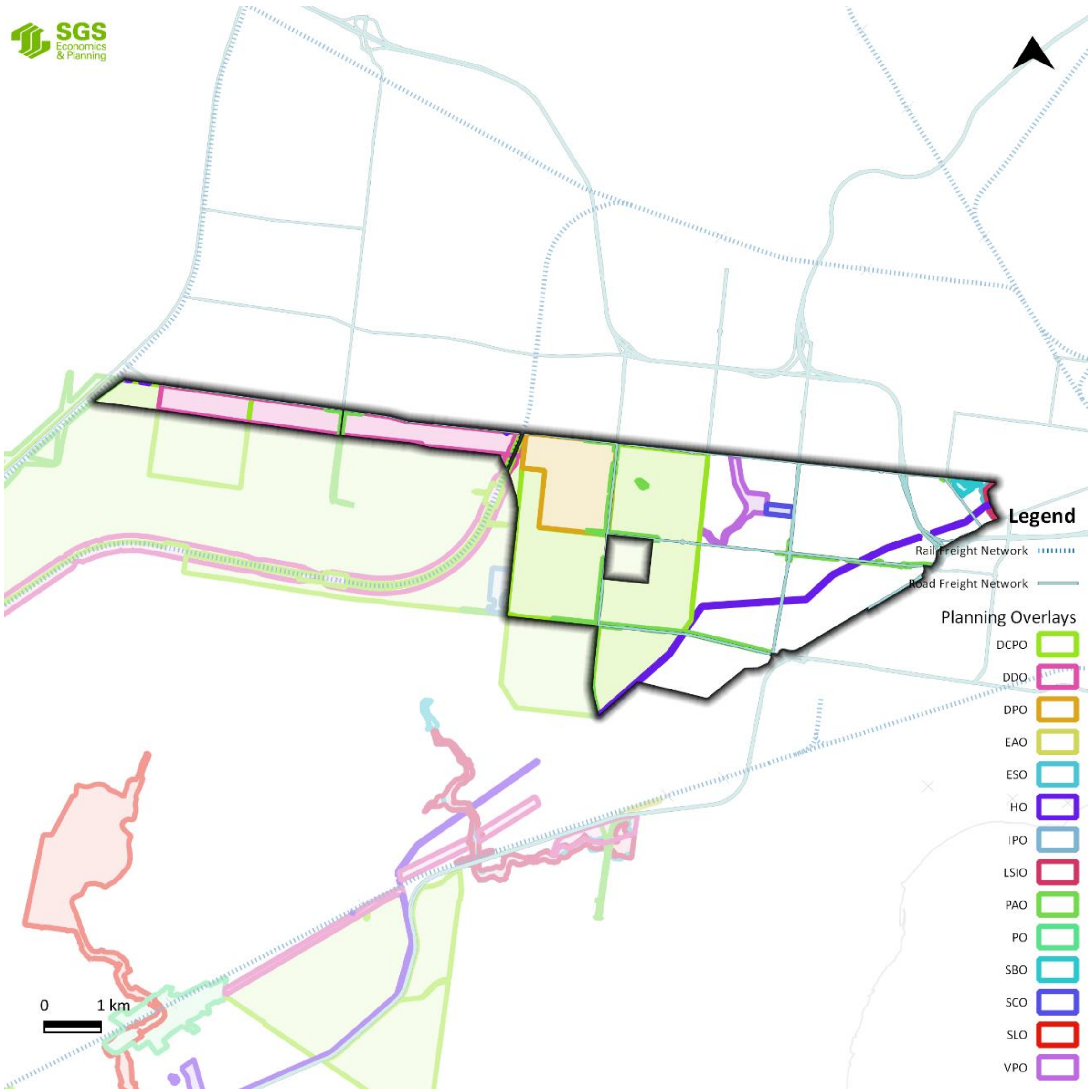
HO2 – HERITAGE OVERLAY SCHEDULE 2 – Main Outfall Sewer, Hoppers Crossing, Laverton North, Truganina, Werribee, and Williams Landing.

DCPO14 – SCHEDULE 14 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY – East Werribee Employment Precinct.

DCPO12- SCHEDULE 12 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY- Point Cook West Employment Precinct

Laverton-Truganina State Significant Industrial Precinct





Laverton-Truganina State Significant Industrial Precinct

This large precinct is a part of MICLUP and has already largely been developed. The sheer size of this precinct, and the many different planning overlays make it difficult to summarise the viability of the entire precincts, however the proximity to the city and previous developments/residential areas, as well as generally small lot sizes mean that this entire precinct is subject to high traffic congestion and negatively impacting buffer zones. Additionally, most of the industrial land from this precinct has been developed already.

Planning overlays impacting this precinct are:

DCPO9- SCHEDULE 9 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY- Truganina Employment Precinct Development Contributions Plan.

VPO2- SCHEDULE 2 TO THE VEGETATION PROTECTION OVERLAY- Angliss Estate Grassland Reserve.

PAO2- SCHEDULE 2 TO THE PUBLIC ACQUISITIONS OVERLAY- Vic Roads for Roads Purposes.

PAO9- SCHEDULE 9 TO THE PUBLIC ACQUISITIONS OVERLAY- Melbourne Water for Drainage Purposes.

DPO1- SCHEDULE 1 TO THE DEVELOPMENT PLAN OVERLAY- Truganina Development Plan.

DDO10- SCHEDULE 10 TO THE DESIGN AND DEVELOPMENT OVERLAY- Regional Rail Link Section 2 Noise Attenuation.

DDO11- SCHEDULE 11 TO THE DESIGN AND DEVELOPMENT OVERLAY- Boundary Road Office and Industrial Precinct.

DCPO13- SCHEDULE 13 TO THE DESIGN CONTRIBUTIONS PLAN OVERLAY- Manor Lakes Development Contributions Plan.

DCPO15- SCHEDULE 15 TO THE DESIGN CONTRIBUTIONS PLAN OVERLAY- Tarneit North Development Contributions Plan.

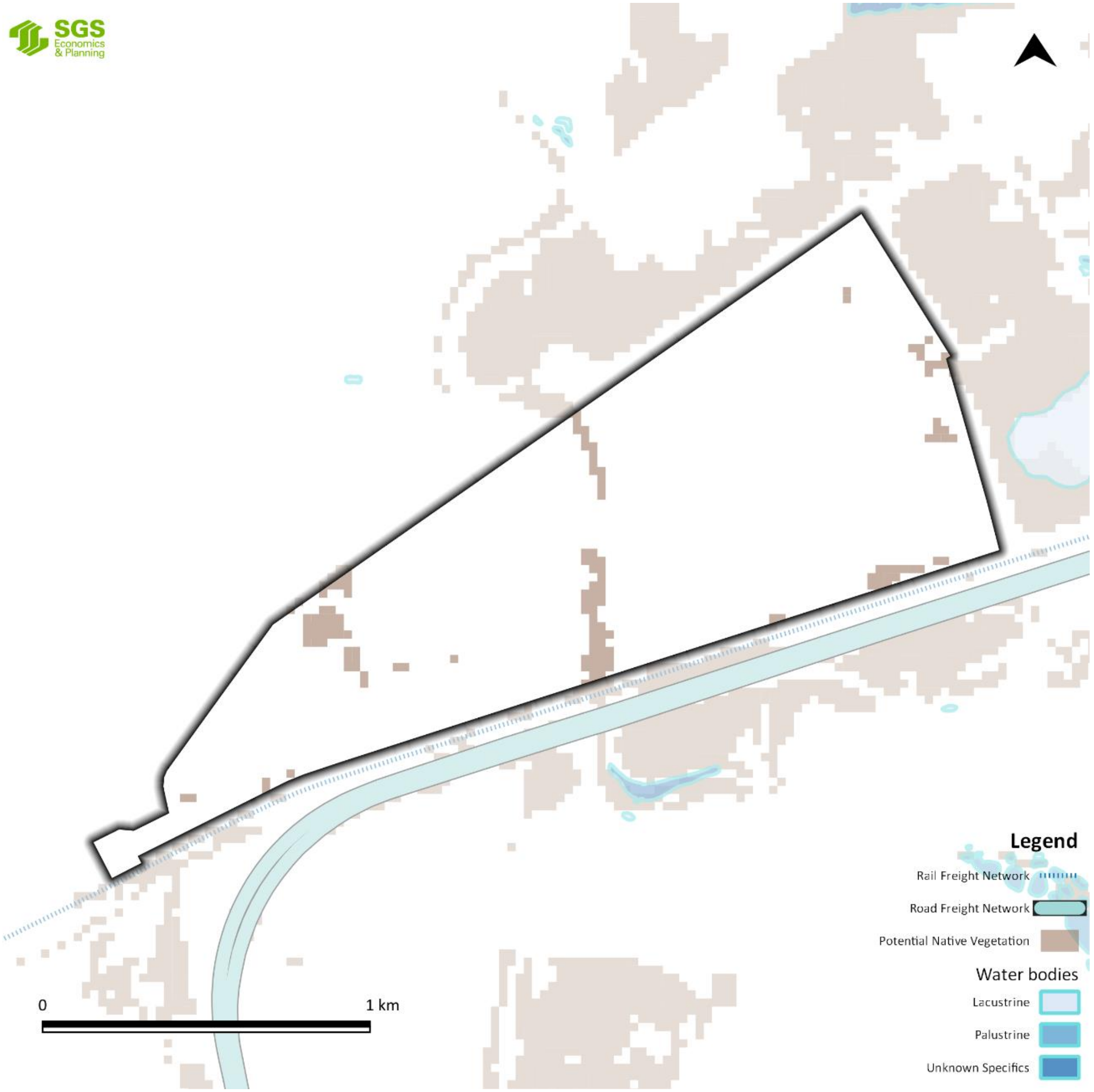
HO11- SCHEDULE 11 TO THE HERITAGE OVERLAY- Evans House (former).

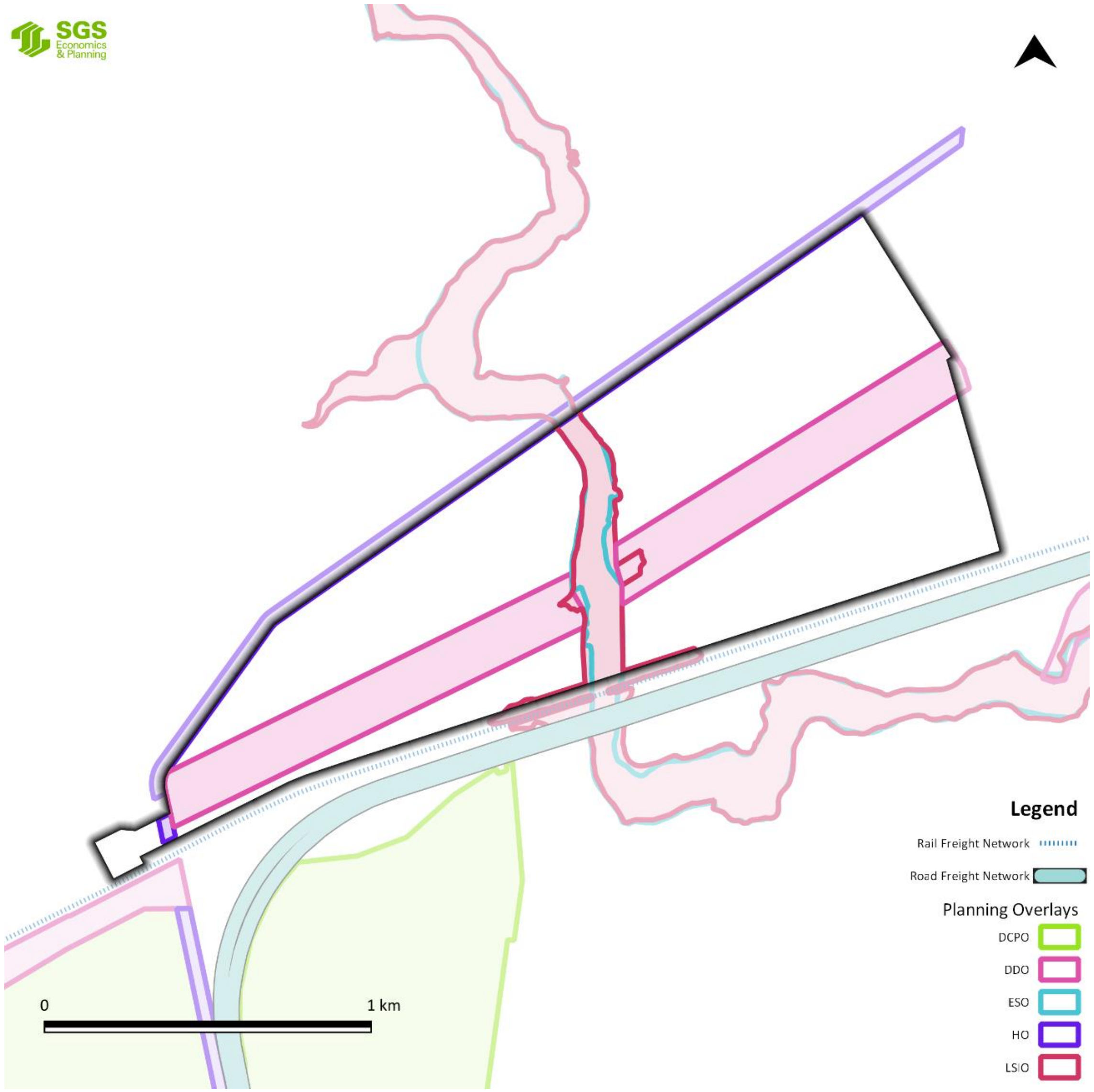
SBO- SPECIAL BUILDING OVERLAY

ESO6- SCHEDULE 6 TO THE ENVIRONMENTAL SIGNIFICANCE OVERLAY- Kororoit Creek Corridor Protection.

LSIO- LAND SUBJECT TO INUNDATION OVERLAY

Hoppers Crossing





Hoppers Crossing

The industrial precinct at Hopper's Crossing has many advantages. It has a prime location directly adjacent to both significant road and rail infrastructure, and very few environmental barriers to construction and development. It is however subject to some crippling planning overlays, as the very centre of the precinct is divided by an inundation zone. The effective lot size of this precinct is too small to deal with the large format industry we are considering.

Planning overlays impacting this precinct:

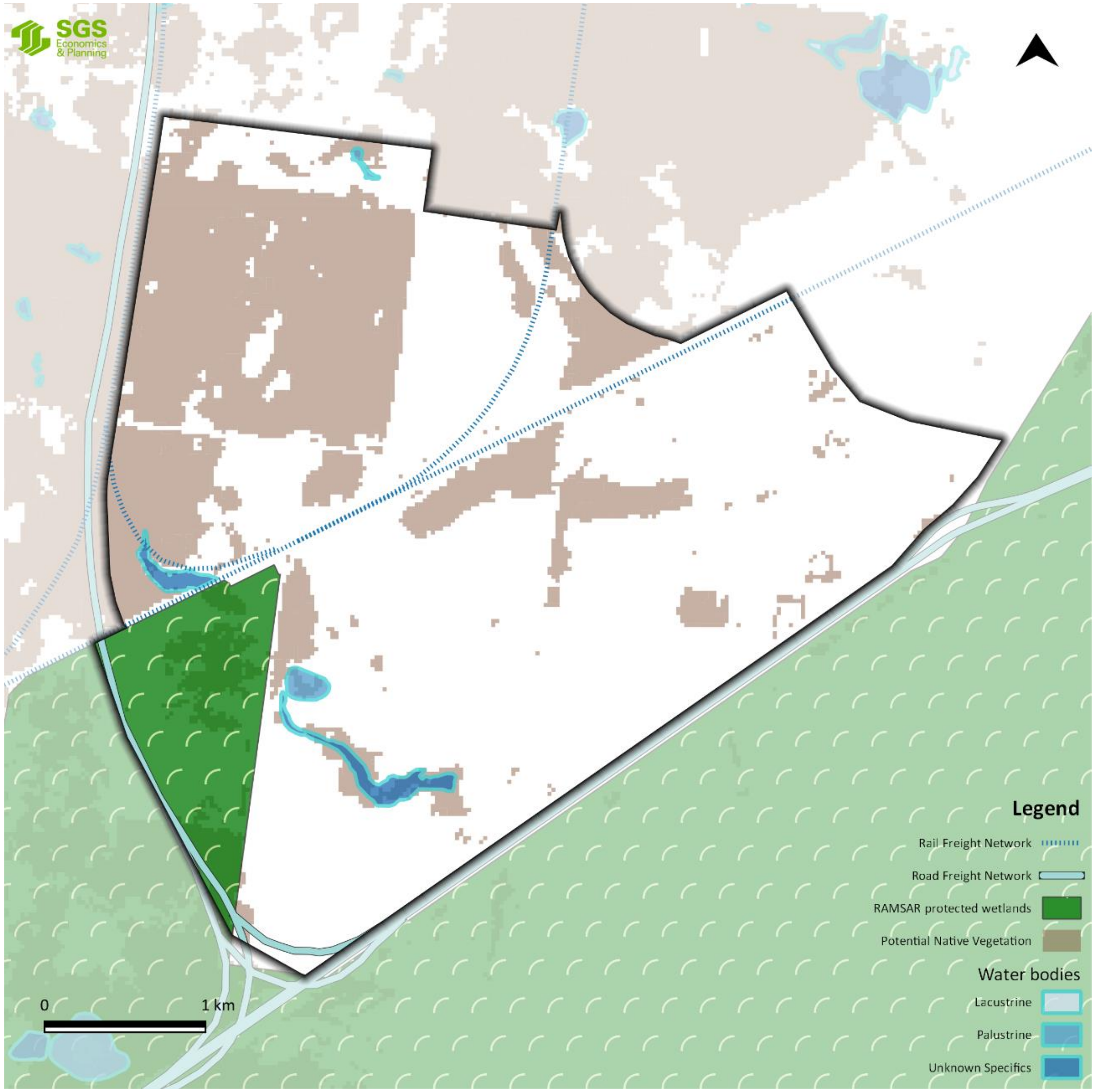
DDO3- OLD GEELONG ROAD INDUSTRIAL AREA

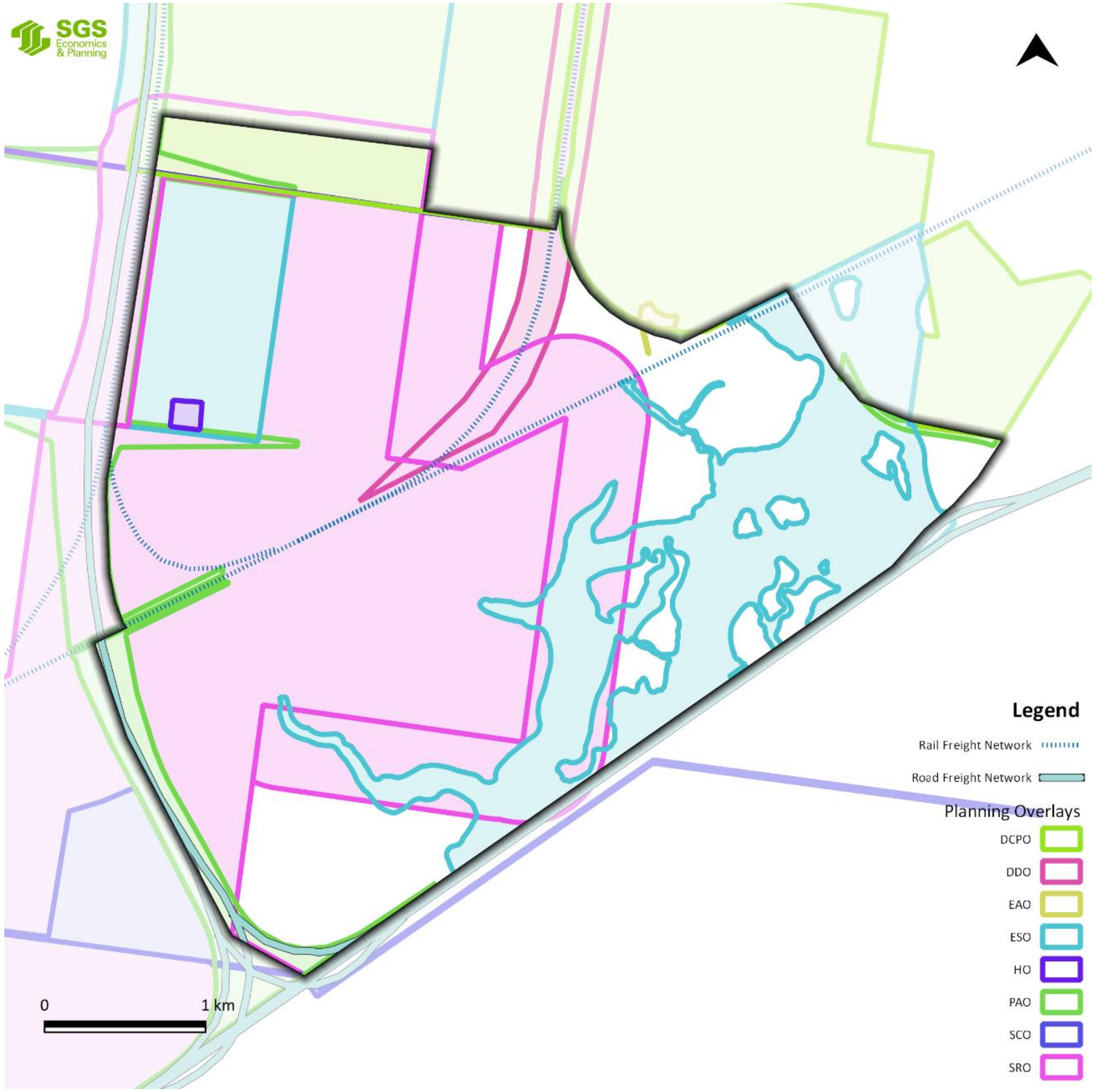
LSIO- LAND SUBJECT TO INUNDATION OVERLAY

ESO1- ENVIRONMENTAL SIGNIFICANCE OVERLAY SCHEDULE 1- Areas of flora and fauna habitat and of geological and natural interest.

HO2- HERITAGE OVERLAY SCHEDULE 2- Main Outfall Sewer, Hoppers Crossing, Laverton North, Truganina, Werribee, and Williams Landing.

South West Quarries





South West Quarries

This large parcel of land is some of the most restricted from all the precincts in this study. Part of this precinct edges onto Ramsar wetlands, a high proportion of native vegetation is also present, as well as bodies of water, and the sheer number of overlays of this precinct would add valuable time to development.

Despite this, the precinct also has some qualities that give it huge advantages over the others. Not only the size, but the premier access to road and rail, with major intersections for both running through this precinct, as well as the separation from residential land opening up a variety of industrial activities. Importantly for this consideration, the precinct does not currently have a PSP, which would need to be prepared prior to development.

Planning overlays impacting this precinct:

ESO1- ENVIRONMENTAL SIGNIFICANCE OVERLAY SCHEDULE 1- Waterway corridors.

ESO2- ENVIRONMENTAL SIGNIFICANCE OVERLAY SCHEDULE 2- Rural conservation area.

DDO10- REGIONAL RAIL LINK SECTION 2 RAIL NOISE ATTENUATION

SRO1- STRATEGIC EXTRACTIVE RESOURCE AREAS- Mineral extraction.

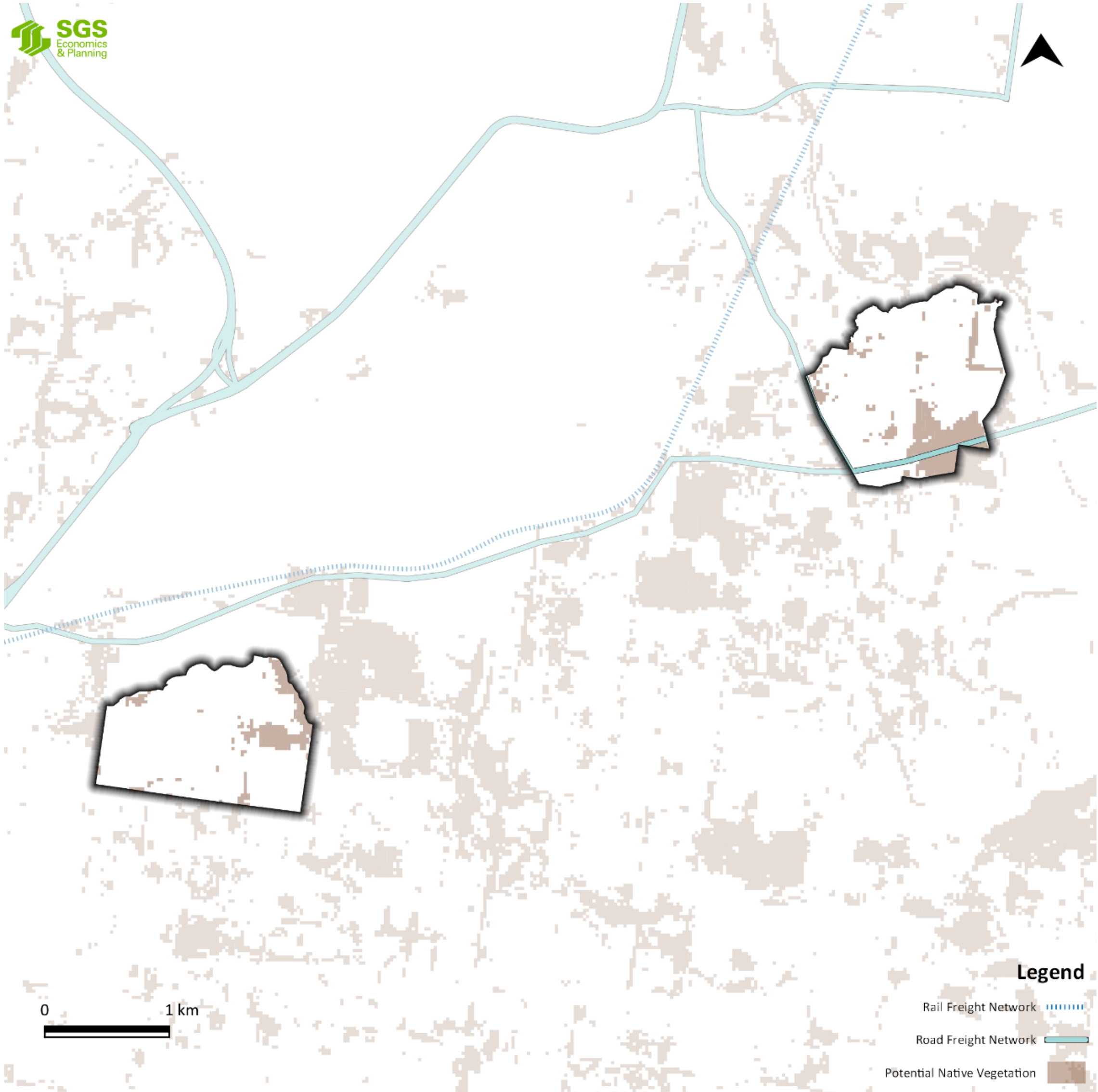
SRO2- PROTECTING EXTRACTIVE INDUSTRIES- Protection of mineral extraction.

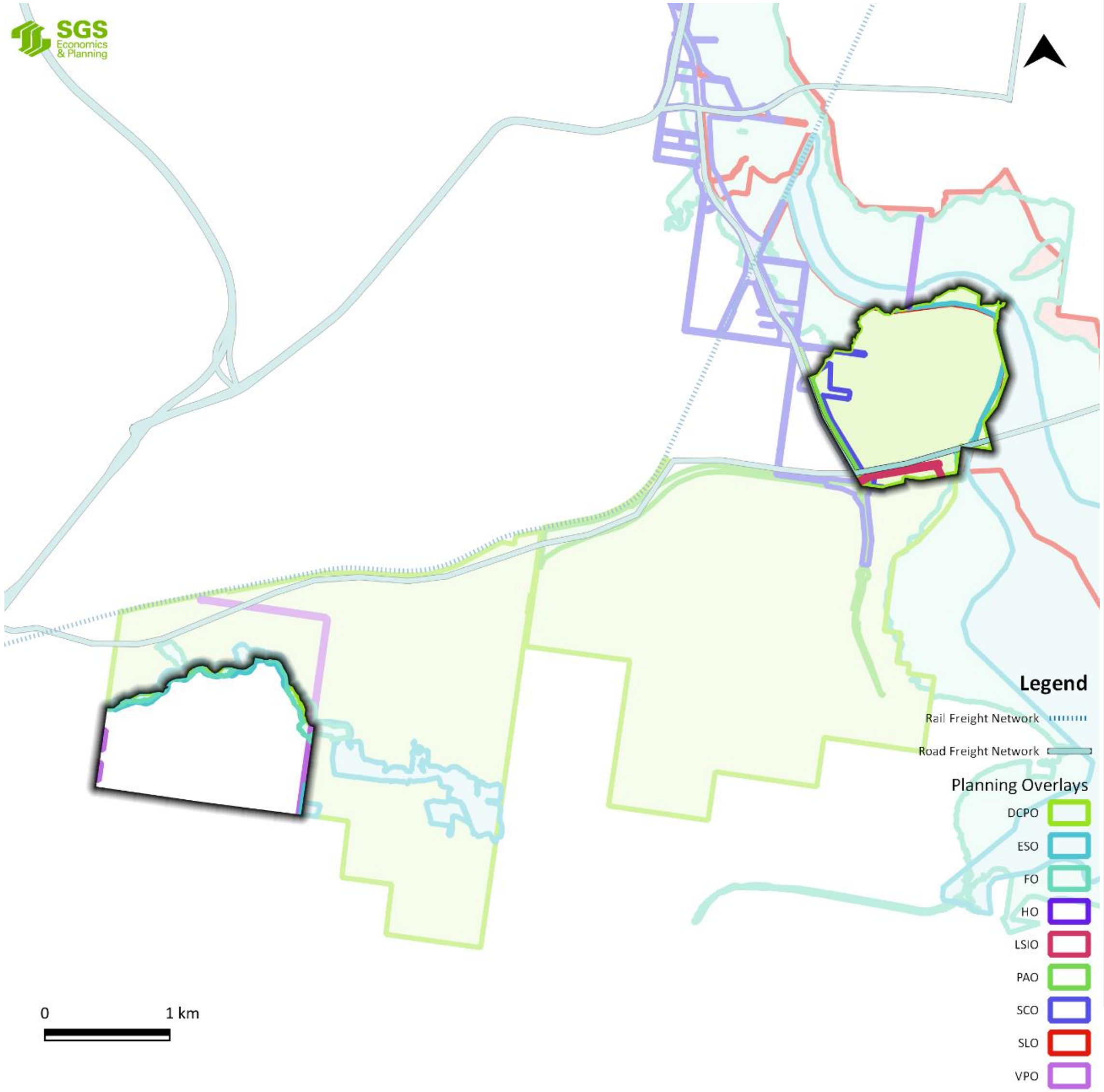
HO14-- HERITAGE OVERLAY SCHEDULE 14- Applied to a house

PAO5- Outer Metropolitan Ring / E6 Transport Corridor

PAO8- Outer Metropolitan Ring / E6 Transport Corridor – Rail Connections

Armstrong Creek





Armstrong Creek

This industrial precinct lies to the south of Geelong and is separated into two disconnected sections. The north east section is close to town residencies and has been releasing its supply of lot onto the market since 2018. The western section is still being developed, and currently has no PSP, though is slated to serve as a local, small-scale site of industry for the city of Geelong. Both of these sites already have intended uses that do not compete with the GAEP.

Planning overlays impacting this precinct:

SCO8- SCHEDULE 8 TO THE SPECIFIC CONTROLS OVERLAY- Barwon Heads Road (Settlement Road, Belmont to Reserve Road, Marshall)

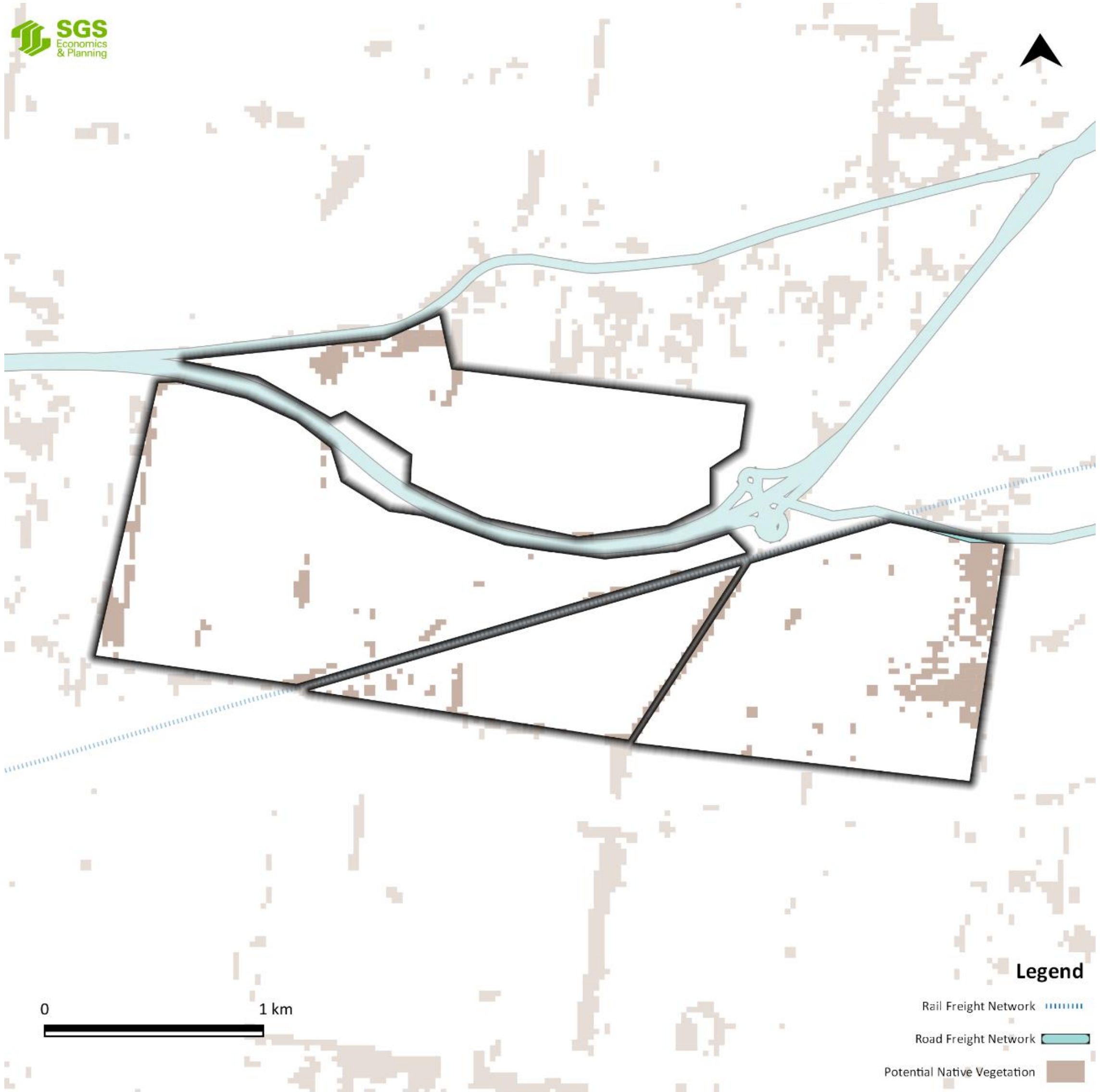
ESO2- ENVIRONMENTAL SIGNIFICANCE OVERLAY SCHEDULE 2- High Value Wetlands And Associated Habitat Protection.

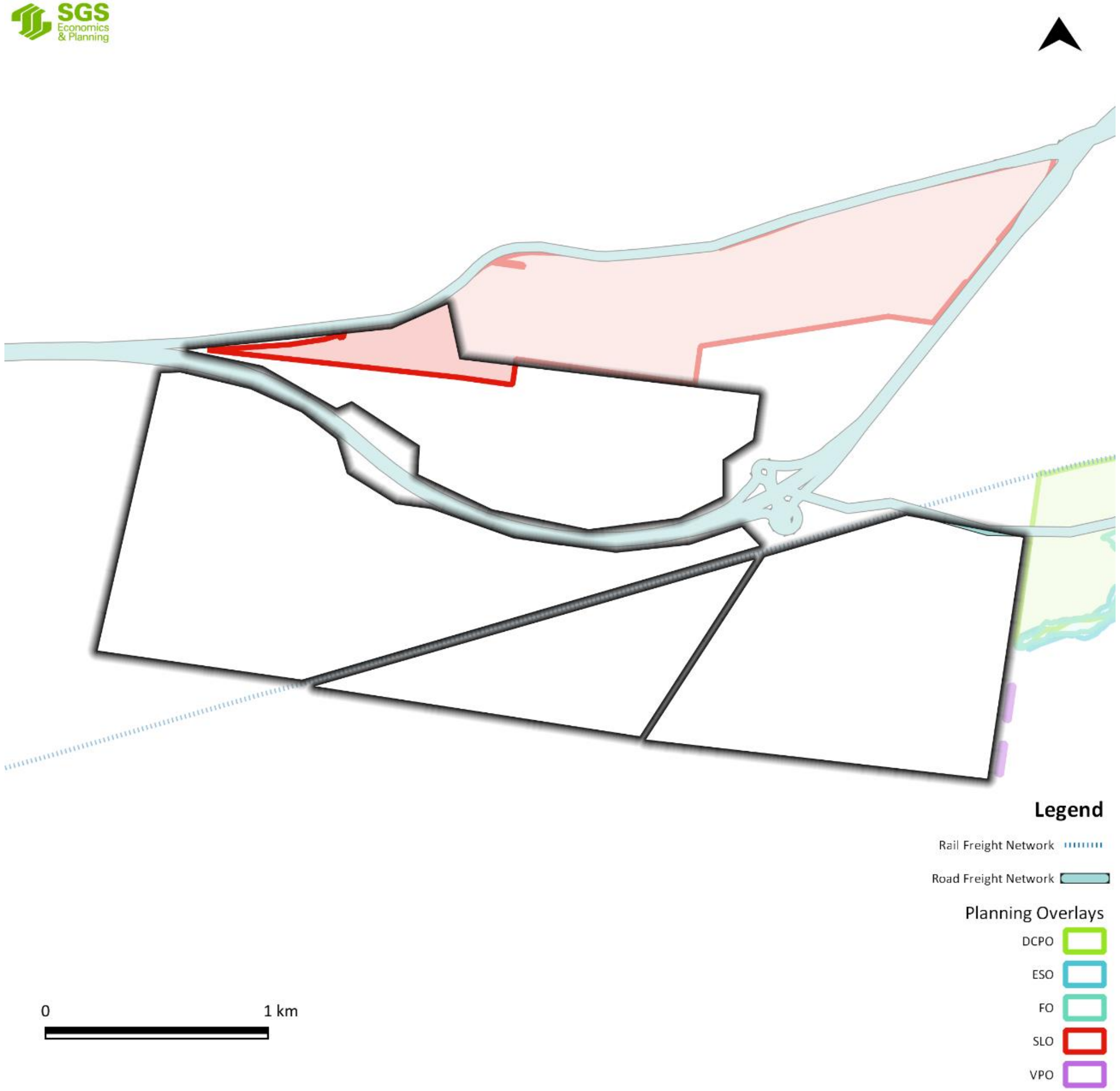
SLO16- SCHEDULE 16 TO THE SIGNIFICANT LANDSCAPES OVERLAY- RIVERS OF THE BARWON: BARWON RIVER (PARWAN) CORRIDOR ENVIRONS.

LSIO- LAND SUBJECT TO INUNDATION OVERLAY-

DCPO1- SCHEDULE 1 TO THE DEVELOPMENT CONTRIBUTIONS PLAN OVERLAY- Armstrong Creek North East Industrial Precinct Development Contributions Plan

Boral Site


SGS
Economics
& Planning
0
1 km
Legend
Rail Freight Network
Road Freight Network
Potential Native Vegetation



Boral Site

This site sits to the South west of Geelong, previously used as a significant extractive area. The site is divided into four sections, with a total area of 643 hectares of developable land. There is no PSP for this site and has been suggested to be developed in conjunction with the WIP.

A, adjacent site directly to the South has a potential to be opened as a new quarry, and in such a case, this site could act as an important buffer for it.

Planning overlays impacting this precinct:

SLO3 – SCHEDULE 3 TO THE SIGNIFICANT LANDSCAPE OVERLAY – Waurn Ponds Valley.

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