ARMSTRONG CREEK
NORTH EAST INDUSTRIAL PRECINCT

Precinct Structure Plan

MAY 2010



Victoria
The Place To Be
Department of Planning and Community Development

CITY OF GREATER GEELONG
www.geelongaustralia.com.au

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1 INTRODUCTION

The Armstrong Creek North East Industrial Precinct (NEIP) Precinct Structure Plan (PSP) has been prepared by CPG Australia Pty Ltd (CPG) and Conics with the assistance of the City of Greater Geelong, the Department of Planning and Community Development, Government agencies, service authorities and key stakeholders. The NEIP Development Contributions Plan (DCP) has been prepared concurrently with this document. The DCP sets out requirements for development proponents to make a contribution toward infrastructure required to support the development of the precinct. The PSP has been prepared to respond to the PSP requirements established by the City of Greater Geelong and the PSP Guidelines prepared by the Growth Areas Authority (GAA).

The PSP is an incorporated document in the Greater Geelong Planning Scheme. The PSP is implemented through Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct in the Greater Geelong Planning Scheme. Planning permits will only be issued for subdivision, use, and development if applications are in accordance with the requirements of the PSP. The PSP contains specific development principles which are required to be met before any approvals are issued. Both the UGZ1 and the PSP must be referred to when preparing and determining a planning permit.

1.1 ROLE OF THE PRECINCT STRUCTURE PLAN

Based on the land use framework identified by the incorporated Armstrong Creek Urban Growth Plan – Framework Plan (ACUGP), this PSP creates a framework for clear and transparent decision making for the planning and development of the NEIP. Essentially, the PSP forms the statutory "tool kit" to direct the implementation and delivery of the NEIP vision by providing clear and defendable parameters around the following key development elements:

- Land use type, mix and density. *Refer Section 4*
- Lot size range and floor area, and its spatial distribution across the site. *Refer Section 3*
- Built form and public realm guidelines. *Refer Section 4*
- Road hierarchy including cross-sections for all categories of road. *Refer Section 4: Transport and Movement*
- Open space type, function, size and distribution. *Refer Section 4: Open Space*
- Cultural heritage management. *Refer Section 4:Heritage*
- Biodiversity management. *Refer Section 4: Biodiversity*
- Drainage reservations, wetland and retarding basin size and location. *Refer Section 4: Flooding and Drainage*
- Water Sensitive Urban Design including cross sections for rain-gardens. *Refer Section 4: Drainage and Flooding*
- Infrastructure provision. *Refer sections 4: Utilities and Energy and Section 6*
- Development staging. *Refer Section 5*

The PSP is an incorporated document to the Greater Geelong Planning Scheme and will inform all decision making for the NEIP into the future.

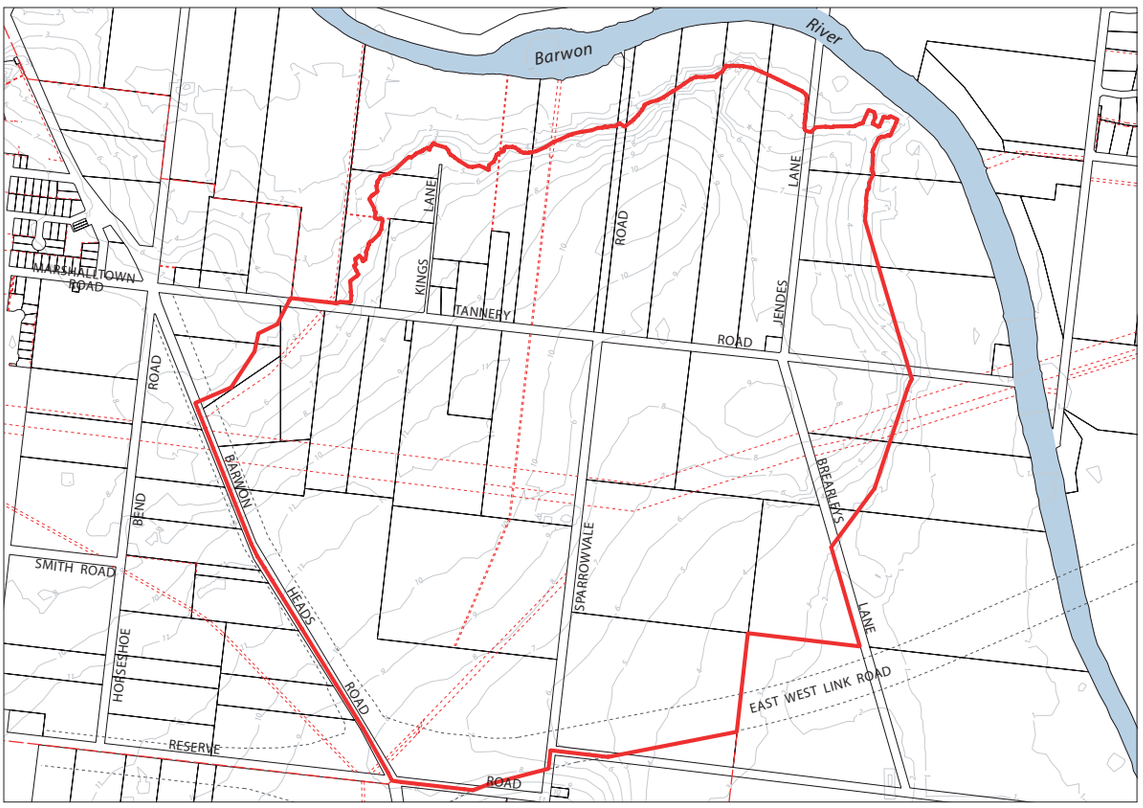
1.2 LAND TO WHICH THE PRECINCT STRUCTURE PLAN APPLIES

The NEIP comprises approximately 180 hectares and is generally bounded by the Barwon River to the north and east, Barwon Heads Road to the west and the future East West Link Road (EWLR) to the south. (Refer to Figure 1)

1.3 MONITORING AND REVIEW

The Department of Planning and Community Development and the City of Greater Geelong will jointly monitor the implementation of this Precinct Structure Plan. The effectiveness of the PSP will be evaluated regularly, at least every four years. It is expected that this PSP will be revised from time to time as required.

FIGURE 1: NEIP SITE PLAN



2 NEIP CONTEXT

2.1 GEELONG AND REGIONAL CONTEXT

The NEIP has a total land area of approximately 180ha, and is located approximately 7kms south of the Geelong Central Activities Area (CAA), near the Marshall township. The NEIP is generally bounded by Barwon Heads Road to the west, the future East West Link Road (EWLR) to the south, and the Barwon River to the east and the north. The northern boundary of the NEIP is located north of Tannery Road, in line with the Barwon River floodplain. The NEIP contains multiple lots of variable size, and has generally historically been used for agricultural purposes.

2.2 LOCAL CONTEXT

The following section provides a summary of the key precinct features and the opportunities and constraints presented by these features.

2.2.1 Heritage

European and cultural heritage assessments have been undertaken in the NEIP at various levels, including desktop, standard and complex level investigations. (Refer Supporting Information)

Cultural Heritage Management Plans (CHMP)'s are required for the EWLR and all stages of subdivisions. Mitigation will be specified by Heritage Victoria through permit conditions for any subdivisions, buildings or works for European heritage sites.

2.2.2 Biodiversity

Flora and fauna assessments have been undertaken for the whole NEIP area, including targeted assessments in the proposed EWLR alignment and land within the adjacent Barwon River floodplain. (Refer Supporting Information)

Overall, the site contains limited remnant native vegetation and is considered to be of negligible significance for flora and fauna. There are scattered and isolated examples of some common indigenous flora species, such as wattles, which vary from local to regional conservation significance. Similarly, some of the fauna habitats such as the mature plantations and farm dams are also likely to be of local significance due to the resources they provide in such a modified environment.

While the land in the Barwon River floodplain is outside of the NEIP boundary, it provides an important asset to the site. Any impacts of development on the floodplain should be minimised to avoid negative impacts on vegetation and wildlife. It is considered that any loss of native vegetation as a result of works associated with drainage outfalls from the NEIP into the floodplain will be avoided as a first principle, and if they cannot be avoided will be minimised or off-set within the significant floodplain area.

2.2.3 Topography and Landform

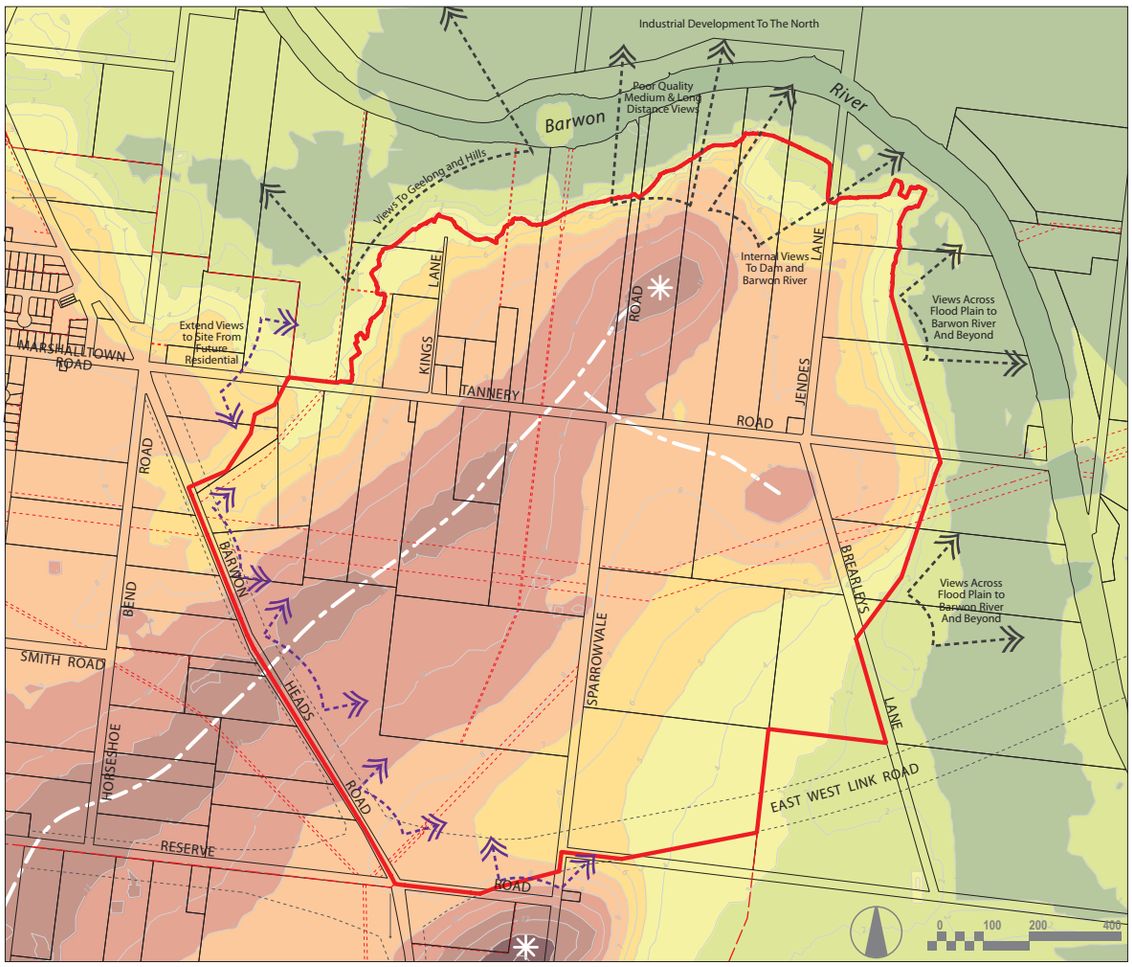
The site is gently undulating being affected by the Barwon River Floodplain. Figure 2 illustrates the topographical conditions of the NEIP.

As a result of the topography, the most important views to consider are those external to the site edge (looking into the site), internal views along thoroughfares, and views from the edge of the site particularly north-west to the south-east both from the distance and foreground.

The views from the edge of the NEIP are dominated in the foreground by the Barwon River. The following opportunities should be investigated:

- Given the flatness of the site, internal views will be created along thoroughfares and be framed by built form and parks.
- Opportunities exist to create distant views along internal thoroughfares to the Barwon River.
- Internal views to the transmission lines should be screened where possible.
- North-west views to Geelong and the You Yang's.
- Middle ground views directly north across the Barwon River terminate on the back of industrial areas. The focus should be on the foreground Barwon River aspect.
- Good vistas exist to the east across the Barwon River floodplain from the NEIP boundary.
- The NEIP future built form and landscaping should address views from external roads such as the Barwon Heads Road into the site and from future residential areas to the north-west.
- Foreground views of the Barwon Sewer Aqueduct

FIGURE 2: TOPOGRAPHICAL CONDITIONS



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Existing Easements
- Road Acquisition
- 0 - 1m
- 1m - 3m
- 3m - 5m
- 5m - 7m
- 7m - 9m
- 9m - 11m
- 11m - 13m
- 13m - 15m
- Ridge Line
- Highest Points
- Views to Adjoining Land and Surrounds
- Views from Adjoining Land & Major Roads

2.2.4 Catchment and Drainage

The majority of the precinct is currently served by open roadside drainage that drains with the fall of the land towards the Barwon River. The NEIP is of low relief and has been identified as having a minor level of inundation in a 100 year Average Recurrence Interval (ARI) design flood event. Although the site adjoins the Barwon River, the boundary of development aligns with the existing flood overlay (FO). An area of land in the south of the NEIP is affected by the Land Subject to Inundation Overlay (LSIO), however the proposed flood management regime in the PSP would provide for the amendment of this Overlay.

The minor flooding that currently affects the site will be alleviated through retarding and directing drainage to major feeder roads and then off site. The on-site drainage system will couple the pipe network with Water Sensitive Urban Design (WSUD) principles. This includes the use of rainwater harvesting, infiltration, impervious area minimisation and rain-gardens.

Water Quality

The main water quality issues that will need to be addressed for the proposed development of the NEIP are the expected water quality characteristics of development runoff.

Given the greater proportions of impervious area and stormwater contamination of industrial areas, stormwater treatment systems are typically required to protect the quality of the receiving waters. The NEIP will be required to ensure water quality is maintained. The introduction of a water cycle management system that includes WSUD rain-gardens and detention will be introduced to manage water quality and provide for treatment and polishing of water on site. The size and location of these treatment measures has been determined through the planning process, and MUSIC modelling has been undertaken to ensure water quality objectives can be met (Refer to Section 4.16 Drainage and Flooding for further details).

2.2.5 Transport and Movement

Road Network

Key roads within the NEIP include:

- Barwon Heads Road – state arterial road aligned in a general north-west to south–east direction.
- Tannery Road – local access street aligned in an east-west direction.
- Reserve Road – local access street aligned in an east-west direction.
- Sparrowvale Road – local access street aligned in a north-south direction.

The following intersections currently exist within and in the vicinity of the site.

- Barwon Heads Road / Marshalltown Road / Horseshoe Bend Road / Tannery Road – Unsignalised cross intersection with priority given to Barwon Heads Road.
- Tannery Road / Sparrowvale Road – Unsignalised T intersection with priority given to Tannery Road.
- Reserve Road / Sparrowvale Road – Unsignalised T intersection with priority given to Sparrowvale Road.
- Reserve Road / Barwon Heads Road – Unsignalised cross intersection with priority given to Barwon Heads Road.

Existing daily traffic volume data prepared as part of the ACUGP indicated relatively low traffic volumes on all roads in the vicinity of the site.

Two relevant road projects required by the ACUGP that will affect the NEIP are Barwon Heads Road upgrade and the East West Link Road construction.

Barwon Heads Road

Barwon Heads Road will continue to use its current alignment and is proposed to be widened by 40m including 20m to the east of the current road reserve (which is within an existing public acquisition overlay) and a further 10m each side to accommodate service roads.

Access to any development fronting Barwon Heads Road would be via service roads and be restricted to left in/left out access only.

Intersections between collector roads and Barwon Heads Road would be expected to be signalised. The intersection of the Tannery Road collector road and the Barwon Heads Road, which would provide a key point of access to the NEIP, is located outside of the precinct boundary. This poses a potential constraint for the early development of the NEIP should Barwon Heads Road not be upgraded in line with the development timing of the NEIP.

As such, it would be appropriate to provide the major site access further south on Barwon Heads Road midway between Tannery Road and Reserve Road. This would also assist in addressing safety concerns at the intersection where Tannery Road, Marshalltown Road and Horseshoe Bend Road all connect.

East West Link Road (EWLR)

The location of the EWLR was conceptually identified in the ACUGP however further work was required to resolve the final alignment.

Design criteria established by VicRoads and CoGG have resulted in the resolution of the EWLR alignment, at the southern extremity of the NEIP boundary. This alignment has been endorsed by VicRoads and has informed the structure planning process.

It is proposed that the EWLR will not allow direct access to developments from the main carriageway with access only afforded from main collector roads through signalised intersections and possibly service roads.

It is proposed that development of the EWLR in the interim would be expected to only serve the precinct and therefore require construction as a local access function. Allowance is required for the overall road reservation to accommodate the anticipated future cross section.

It is proposed that the intersection of the EWLR with Barwon Heads Road would form a signalised intersection in both the short and long term. VicRoads has indicated that this intersection may possibly include a full access grade separated interchange in the long term. As a result VicRoads and Council would be expected to require the land to be set aside to allow for such future treatments.

Consideration will need to be given to the standard and level of upgrade to Barwon Heads Road, and the intersections of Tannery Road and the EWLR with Barwon Heads Road, to support the NEIP should this be developed faster than the arterial road network in its ultimate form.

Spacing of collector road intersections to the EWLR are expected to be in the order of 800m however this may be relaxed by VicRoads in some circumstances.

The existing and future condition of collector roads in the NEIP has informed the structure planning process:

- Tannery Road and Sparrowvale Road are expected to be upgraded to function as collector roads within the NEIP.
- These roads currently provide a reasonable spacing to serve the future development of the area. It should however be recognised that while these roads present a good starting point for the setting of a collector road network, more effective local road networks have been determined through the structure planning process.
- The typical cross section requirements of these roads have been set out in the CoGG Integrated Infrastructure Delivery Plan, March 2009.

Public Transport

Six bus services currently operate in the vicinity of the NEIP. In addition to road based public transport, the Marshall Rail Station is located approximately 600 metres from the intersection of Barwon Heads Road / Tannery Road / Marshalltown Road / Horseshoe Bend Road.

Walking and Cycling

Existing cycle and pedestrian networks in the NEIP and surrounding area are limited and generally confined to the key surrounding rural standard arterial and collector roads. The PSP has planned for the provision of on-road cycle lanes, shared pathways and potential future networks along the Barwon River to enhance overall accessibility to and through the NEIP.

2.2.6 Land Use

Given its history, the land within the NEIP contains a number of rural uses and activities. These existing uses will change over time to respond to the overall direction of the Armstrong Creek Urban Growth Plan (ACUGP), and more specifically to reflect the future land use identified by the PSP.

Due to its location in the Armstrong Creek growth area, the NEIP is generally surrounded by land proposed for future urban uses as identified in the ACUGP. The surrounding land use patterns can be defined as follows:

- Land to the south of the NEIP is contained within the Horseshoe Bend Precinct which is designated as a residential precinct by the ACUGP.
- Land to the west is contained in the Marshall Precinct which is also designated as a residential precinct by the ACUGP. The existing Marshall township and expanding urban environs are also located to the west, and north-west, of the NEIP. The Marshall train station is located approximately 600m to the west of the NEIP.
- The Barwon River and associated river environs are located immediately north and east of the NEIP. This creates a high amenity edge to the precinct and key future open space asset with which the PSP proposes to establish a land use relationship over time as the river corridor vegetation regenerates.

On this basis, the NEIP is a highly self contained site that benefits from its natural and physical separation from surrounding land uses. The PSP will capture the advantages of this separation from a land use perspective, whilst achieving permeability and integration with surrounding and emerging residential communities in the growth area. As such, edge development will be outward facing to surrounding land to ensure a visual relationship is established.

The ACUGP identifies the role of the residential precincts to provide social and community infrastructure to support the newly establishing communities over the residential lifecycle, including active open space, retail and community facilities. The NEIP will provide synergy with these precincts and add value by providing the essential layer of local job self containment for the new community of the new growth area.

2.2.7 Service Infrastructure

The existing provision of service infrastructure in the NEIP is minimal due to the non-urban history of the growth area.

Water

The NEIP contains little in the way of servicing other than the Bellarine Transfer Mains (BTF) that run along Tannery Road, across the Barwon River, and head east to supply the Bellarine Peninsula.

Barwon Water has confirmed the provision of reticulated services in a timely and efficient manner to service the future development of the NEIP.

Recycled Water

A recycled water plan has been prepared for the Armstrong Creek area for Council. This plan seeks to meet Council objectives of reducing mains water use by 70% and reducing waste water discharges to the Black Rock Reclamation Plant (BRRP) by 50%. Barwon Water have committed to providing recycled water to the growth corridor.

Sewer

No reticulated sewerage is currently available within the growth area except for a small area in Marshall on the west side of Barwon Heads Road.

Power

The NEIP contains a 220kV overhead transmission line that bisects the precinct in an east-west direction. A minimum 40m easement is required for these powerlines. The transmission lines are contained within the same alignment as the overhead 66kV lines. As such, a combined easement of 60m is required.

The existing overhead 220kV transmission lines in Reserve Road and Barwon Heads Road do not have sufficient capacity to supply the NEIP and would cause issues with capacity, voltage, impedance, and fault levels.

In accordance with standard development guidelines, Powercor plan to relocate all of the other existing 220kV overhead lines within the NEIP to underground lines as the development progresses.

Telecommunications

There is limited existing infrastructure currently servicing some parts of the growth area, however these facilities will require upgrading to cater for the increased demand once development rolls out. Telstra intend to establish 'smart community' technology in the growth area through an upgrade of existing facilities. Alternative providers are available for the installation of optic fibre to the site.

2.2.8 Contamination

Figure 3 illustrates the existing ground conditions in the NEIP.

Given the historical use of the land for farming generally, and the location of a few Tannery operations, some level of contamination has been determined in the NEIP. Overall, it has been concluded that the majority of the land in the NEIP is considered to be of low contamination hazard.

Seven sites were identified as having medium contamination risk due to previous land use practices on the land and the location of tanks and use of pesticides on site. It was concluded that these sites do not represent a significant risk for future re-development given the relatively low sensitivity of the uses proposed in the NEIP. The key potential implications of these hazards are related to time and cost associated with the requirement for clean up, and not related to the proposed use and development of the NEIP.

Four general areas of potential high risk were identified in terms of both potential soil and ground water contamination. These sites are associated with a former timber mill, former tannery operations and former oil and glue factory. Due to this classification,

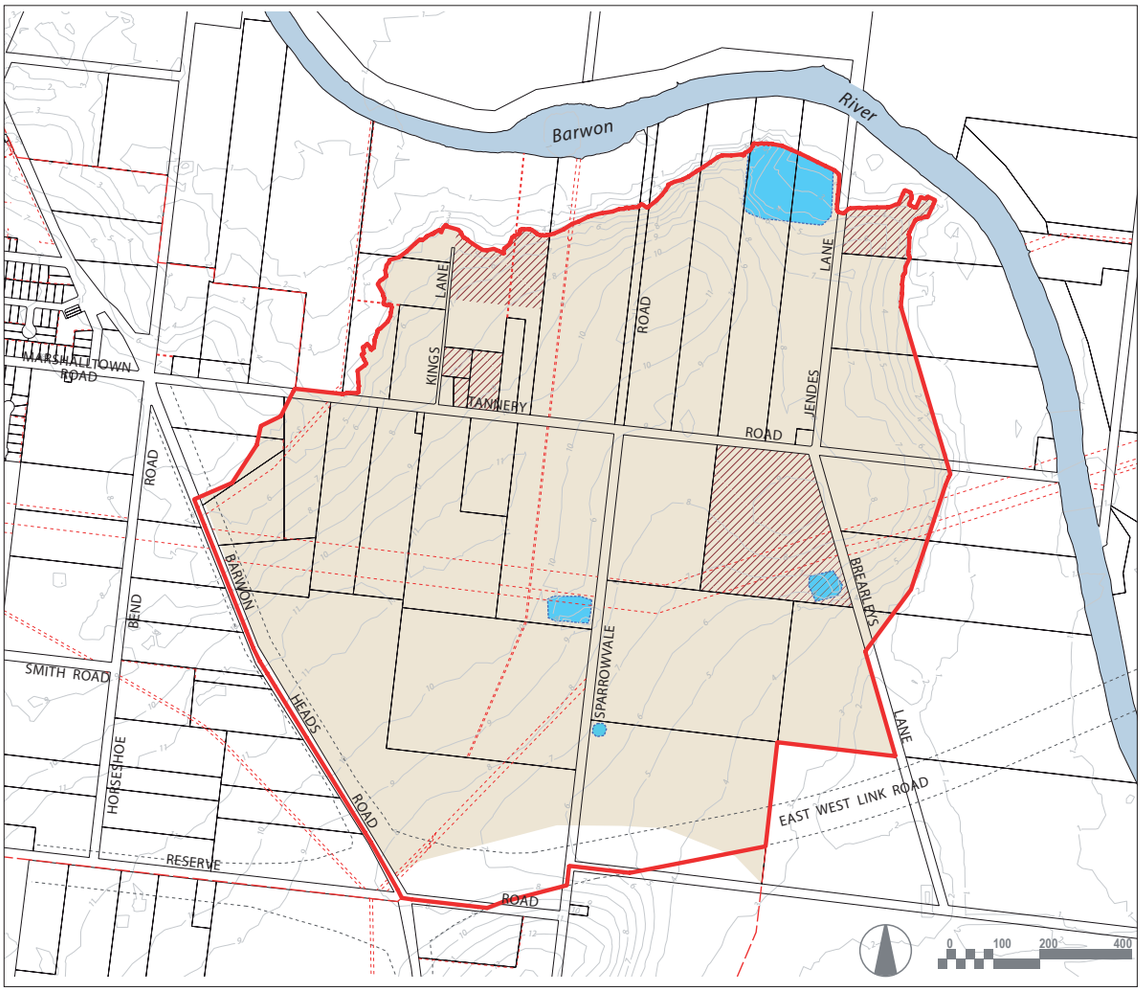
it is recommended that these sites be used for low sensitivity uses and site layouts.

The PSP has responded to these recommendations in the proposed layout and design of the NEIP. In accordance with the DSE Practice Note for Potentially Contaminated Land (June 2005) no uses defined as sensitive uses are proposed in these risk areas. Other uses proposed in these areas such as open space, may require environmental assessment prior to approvals for buildings or works.

2.2.9 Community Facilities

The NEIP is currently a mixture of industrial and farming land. As such there are no existing community facilities within the precinct. The Armstrong Creek Social Interagency Infrastructure Delivery Plan (SIIDP) identifies a walking trail along the Barwon River inside the corridor and the need for a Specialised Activity Centre for the NEIP, which should include a convenience store and retail activity. This centre has been provided for in this PSP in the form of the Development Precinct 6: the Retail Centre. The walking trail is recognised by the PSP by planning for future connections to this trail as part of the overall walking and cycle strategy for the NEIP.

FIGURE 3: GROUND CONDITIONS



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Existing Easements
- Road Acquisition
- Existing Dam Site
- Properties having potential high risk contamination sites (low sensitivity uses recommended)
- Higher Areas - lower ground water table
- Lower Areas - inferred higher ground water table

3 VISION AND FUTURE URBAN STRUCTURE

3.1 VISION

The future urban structure for the NEIP is illustrated in Figure 4.

The NEIP will become a vibrant, new generation, master planned industry and business park. Embodying benchmark standards in design, amenity and sustainability, the NEIP will introduce a new form of development to Geelong, establishing it as an attractive employment area in the region and as a key industry and business address in Victoria.

Central to the vision for the NEIP is the flexibility to accommodate a wide range of traditional and emerging forms of industry and business accommodation in a setting that is attractive to businesses and workers.

The NEIP will not directly compete with the existing industrial areas or Central Activity Area (CAA) or the Armstrong Creek Major Activity Centre, however will provide a new opportunity for start ups, industries in transition and new, high amenity and space dependent activities that cannot currently find appropriate sites within Geelong. Overall, it is envisaged that the NEIP will create a whole new market for employment opportunities in Geelong.

The NEIP will provide for local job self containment which is critical for the overall sustainability of the emerging community in the growth area. The ability to provide for flexibility in employment type is integral to supporting this goal and to maximising opportunities to capture and attract jobs in the heart of this significant urban extension.

Providing a high amenity and sustainability driven outcome on the ground, and drawing on the natural assets of the Barwon River and floodplains is an essential ingredient to unlocking the potential of the precinct over time and integrating it with the existing urban fabric.

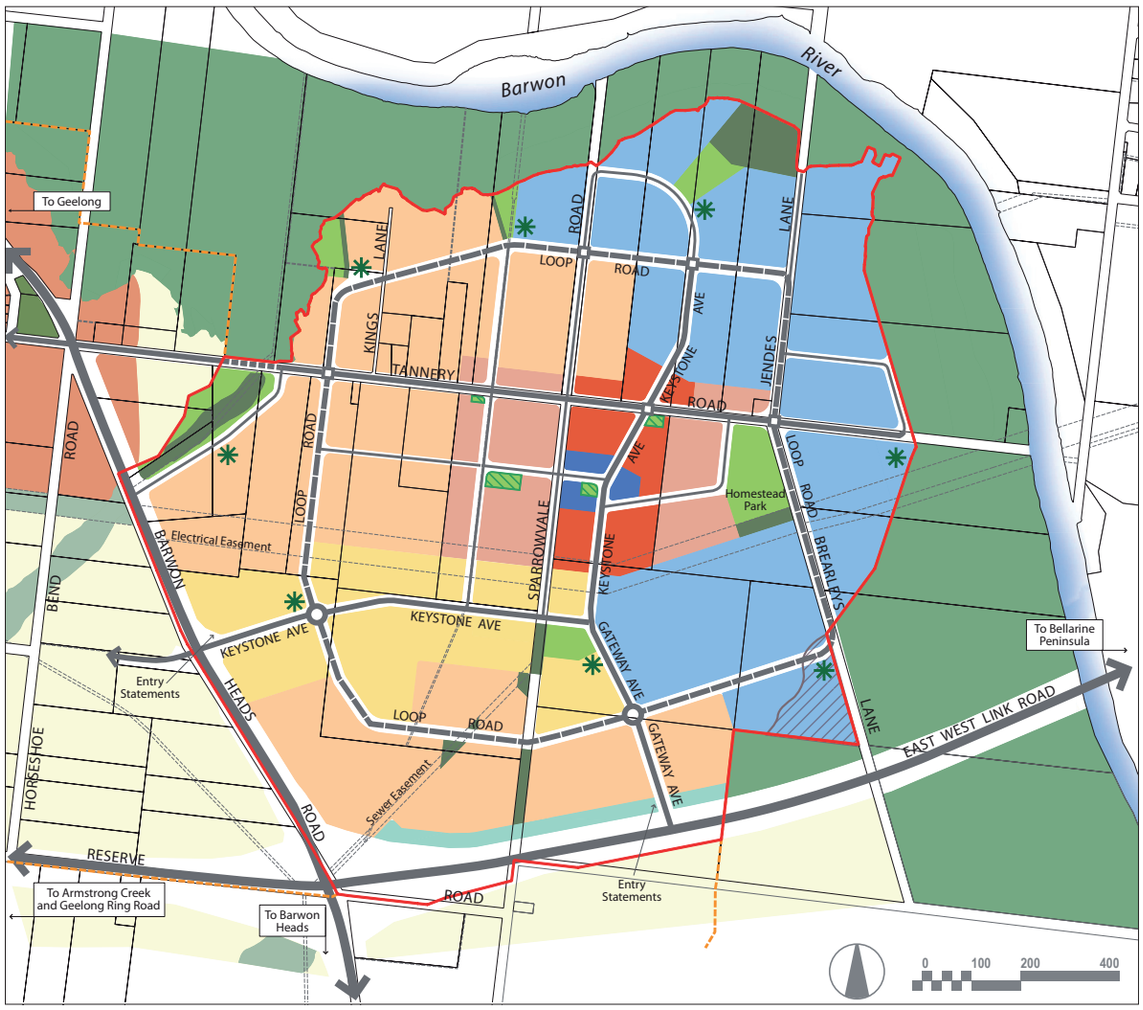
3.2 KEY OBJECTIVES

The key objectives of the NEIP vision are as follows:

1. To deliver employment land for 8,000 jobs for the Armstrong Creek Growth Area.
2. To contribute to greater self-containment of employment in the Growth Area.
3. To create clear connections to surrounding residential areas which improve access to local jobs by walking, cycling and public transport.
4. To deliver an amenity-rich business address in a high quality environment.
5. To provide a range of local services to support the working population within walking distance of most of the workforce.
6. To deliver high quality and sustainable buildings with a positive presentation to the public realm.
7. To create a variety of open space parks and plazas to support the recreational activities and derive amenity for the local workforce.
8. To set new benchmarks in environmental sustainability, infrastructure and communications technology for an industrial and business precinct.

These objectives are supported by the more detailed objectives in the elements of Section 4.

FIGURE 4: NEIP FUTURE URBAN STRUCTURE PLAN



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Area subject to 100 Year Flood Event
  Development of area is subject to offset. Flood storage to be determined subject to detailed design

ROAD NETWORK

- Proposed East West Link Road & Barwon Heads Road
- Major Access and Circulation Route (Loop Road)
- Primary Road Network
- Local Access Only (Buses Accepted)
- Secondary Road Network

PRECINCTS

- Precinct 1 - Industry North & South
- Precinct 2 - Campus Business
- Precinct 3 - Industry and Mixed Business
- Precinct 4 - Village Frame East and West
- Precinct 5 - Village
- Precinct 6 - Retail Centre (Specialised Activity Centre)

OPEN SPACE

- NEIP Parks
- NEIP Urban Park/Plazas
- Local Node/Private Plaza

ENCUMBERED OPEN SPACE

- Barwon River Riparian
- East-West Link Drainage/ Biodiversity Corridor
- Drainage/Encumbered Parks

3.3 NEIP URBAN STRUCTURE

The key features of the proposed land use structure are described in summary below. Full details of the PSP elements are contained in Section 4 of this document.

3.3.1 A sense of place and community

Urban Design

A series of design requirements and standards have been established to articulate the built form response to deliver the overall vision for the NEIP. These design parameters will assist in creating visual difference across the precinct and will guide the land use responses in these areas.

Heritage

Respecting the heritage qualities of the past use of the precinct (both pre and post European contact), the PSP proposes to integrate and respect cultural elements in future development. This includes the retention of the historic homestead known as "Sunnyside" on Tannery Road as part of a future business centre; the retention of views to the historic aqueduct; and the interpretation of cultural heritage sites into the open space offer.

3.3.2 Specialised activity centre (Precinct 6 – Retail Centre)

Located centrally to the precinct is a 2,800sqm specialised activity centre known within this document as Precinct 6: Retail Centre, as required by the ACUGP. This centre will meet the retail needs of the worker population in the NEIP and is centrally located at the junction of two key collector streets to maximise accessibility within a walkable catchment of most businesses.

To enhance the quality of place, and to create a complementary transition in land uses, the PSP proposes a threshold area around the specialised centre which will accommodate a more finer grain mix of business and industrial uses referred to as the Village.

In addition to traditional service industry uses, this area will also include complementary non-retail uses that will be required to enhance the experience and attractiveness of this precinct for workers including a gym, child care, training and conference facilities. These types of uses will meet the needs of the workers within a contained walkable catchment, reducing the need for unnecessary car based trips.

The demand assessment undertaken as part of the precinct structure planning process confirms the need for these threshold uses which are ancillary to the retail based centre, and acknowledges a localised catchment within the precinct for these specific uses.

3.3.3 Local employment and business activity

The NEIP will provide for 8,000 jobs across a mix of business and industry types, including service industry, manufacturing, transport and storage, wholesale trade, professional services and public administration.

A form-based approach to the NEIP structure has been established which will create mixed land use sub-precincts across the whole site. While each sub-precinct will contain a general land use focus, the uses will be mixed and flexible, and will be informed by the built form guidelines in Section 4.

In terms of the land use profile, mixed business and industry will be located along the main boulevard entry leading into the site from Barwon Heads Road.

This boulevard will be flanked by uses including service industry, manufacturing, transport and storage, warehouse and distribution and small office based industrial uses.

At the interface to Barwon Heads Road, the mixed business and industry areas will combine to deliver a variable land use frontage with a focus on service industry and associated wholesale trade. The provision of larger format car, boat and machinery sales could be located along this frontage, on well designed sites that maximise exposure and improve the presentation quality of this key address to the precinct.

In terms of creating the right image and address for the precinct, this edge will include a mix of industry and business uses that mirror the higher order operations proposed in the heart of the site.

The majority of land to the west of Sparrowvale Road will accommodate a range of core industrial uses, including transport and storage, distribution, construction and service based industry.

Taking advantage of the amenity of the Barwon River and responding to land patterns in this area, land adjacent to the precinct boundary to the north and south of Tannery Road, and east of Brearleys and Jendes Lanes will accommodate campus based business uses.

Campus based business will generally include larger format industrial uses with significant associated office / administration / research floorplates that benefit from being located in a higher amenity location due to their core business and type of operation (refer to Section 4.6).

3.3.4 Better transport choices

The proposed urban structure is supported by a highly permeable and strategic road network that provides for localised internal movements through the core of the site, separated from heavier industrial based traffic on the internal loop road.

The road network has been designed to adequately provide for peak vehicle movements without impacting on the external road network. The road network allows for future public transport provision as well as pedestrian and cycle pathways or lanes on all key roads to facilitate through and internal walking and cycling movements.

3.3.5 Climate change and environmental sustainability

The PSP also aims to maximise the site based sustainability footprint, based around:

- dark fibre telecommunications;
- off grid electricity;
- innovative built form;
- rain-gardens;
- recycled water and re-use; and
- WSUD initiatives.

The proposed urban structure also contributes to the sustainability of the NEIP through the following measures:

- ensuring that lots and buildings are oriented to maximise solar access;
- providing good opportunities for walking and cycling via a highly permeable street network and dedicated on and off road paths;
- providing streets that can accommodate bus movements; and
- providing clear connections to the Marshall Train Station.

All of these elements will assist to improve the overall sustainability of the NEIP.

3.3.6 Open space network

To add to the quality of place, the PSP proposes a network of open space and wetlands that will enhance the character and amenity of the NEIP. Combined with an established hierarchy of landscape themes throughout the road network, the NEIP will create a high amenity, green environment for workers.

Where possible, existing areas of native vegetation have been incorporated into the proposed open space. Wetlands have been designed to include shallow inundation to support aquatic vegetation and improve overall ecological integrity and habitat quality. This is particularly important in the northern dam which is proposed to be re-established to support the potential future habitat of the growling grass frog.

3.3.7 Delivery

Of critical importance to the delivery of the PSP vision, the proposed urban structure takes into account staging of infrastructure and landholder boundaries and land ownership. The PSP contains an indicative staging to respond to the infrastructure sequencing and to ensure efficiencies in the delivery of key development modules over time.

3.4 LAND USE BUDGET

The land use budget for the whole NEIP is contained in Table 1, and Appendix 1 which outlines the land use budget for specific properties.

TABLE 1: LAND BUDGET

NEIP Land Budget		Ha
1	**Gross Area**	**178.37**
2	**Encumbered Land**	**32.83**
2.1	Existing Roads	8.95
2.2	Existing Easement***	10.46
2.3	Drainage Reserves*	4.79
2.4	Acquisition for EWLR reserve	6.69
2.5	Acquisition under PAO for Barwon Heads Road Widening (20m only)	1.93
3	**Gross Developable Area**	**145.54**
4	**Unencumbered Open Space**	**5.47**
4.1	Plazas	0.39
4.2	NEIP Parks	5.08
5	**Net Developable Area**	**140.07**
6	**Employment****	**120.03**
6.1	Precinct 1 – Industry	49.18
6.2	Precinct 2 – Campus Business	41.65
6.3	Precinct 3 – Mixed Industry & Business	14.04
6.4	Precinct 4 – Village Frame	9.23
6.5	Precinct 5 – Village	4.92
6.6	Precinct 6 – Retail Centre	1.00
7	**Roads**	**20.04**
7.1	Proposed New Road Reserves (exc. existing easements)	20.04

** Drainage reserves includes all land within the 1 in 100 year flood line.*

*** Includes Local Roads and Laneways.*

****Area of existing easements exclude any overlap with road acquisitions.*

3.4.1 Public Open Space Budget

The public open space budget for the NEIP is contained in Table 2. Section 4.13 and Appendix 7 details the area of each existing land parcel that is required as passive open space.

In accordance with the Schedule to Clause 52.01 of the City of Geelong Planning Scheme, 10% of unencumbered passive open space is required in the Armstrong Creek Urban Growth Area.

The PSP for the NEIP will contribute 3.07% of unencumbered land for passive open space.

The Growth Areas Authority (GAA) has established a standard for passive open space in employment areas in the order of 2.0%. While the GAA does not apply to the land outside the metropolitan area, it is considered that this is an acceptable standard to apply to the NEIP. Given the proposed contribution, the NEIP exceeds this accepted minimum and sets a high standard for Greenfield employment areas.

TABLE 2: PASSIVE OPEN SPACE (POS) LAND USE BUDGET

NEIP – Passive Open Space Budget			% of NEIP
1	**Gross Area**	**178.37 ha**	
2	**Passive Open Space**	**5.47 ha**	**3.07%**
2.1	Plazas	0.39 ha	0.22%
2.2	Parks	5.08 ha	2.85%

** Passive open space accounts for unencumbered land only.*

3.4.2 Lot Size Range

A flexible arrangement of lots is required to deliver the desired vision for the NEIP. Table 3 provides an indicative lot range for subdivision. As a result of the design led approach to the urban structure, ranges have been developed that provide flexibility to meet the variable needs of industry and business types and sizes.

3.4.3 Overall Job Density (by precinct)

The NEIP will contain a mix of employment opportunities to meet the 8,000 person job target required by the ACUGP. Table 4, Appendix 3 and Appendix 4 identify the proposed job density, industry type and proposed gross floor areas.

TABLE 3: NEIP LOT SIZE RANGE

Precinct	Indicative Lot Size Range
1. NEIP Industry Precinct	250sqm – >5000sqm
2. NEIP Campus	1500sqm – >5000sqm
3. NEIP Mixed Industry and Business Precinct	250sqm – 5000sqm
4. NEIP Village Frame Precinct	250sqm – 5000sqm
5. NEIP Village Precinct	100sqm – 1500sqm
6. NEIP Retail Centre	100sqm – 1500sqm

TABLE 4: NEIP EMPLOYMENT DEMAND FINDINGS

NEIP – Employment Demand Findings (based on estimate at 2021)					
	% of Emp by Industry	Employees (no.)	% of Total Growth in Geelong*	Floorspace Ratio (Emp/m²)	Floorspace Requirement (m²)
Agriculture, forestry, fishing etc	0.0%	0	0.0%	N/A	N/A
Mining	0.0%	0	0.0%	N/A	N/A
Manufacturing	5.0%	400	7.2%	30	12000
Electricity, gas and water	0.0%	0	0.0%	N/A	N/A
Construction	10.0%	800	13.3%	250	200000
Wholesale, retail trade:	5.0%	400	15.0%	20	8000
- Core Retail Centre	1.8%	140	N/A	20	2800
Transport and Storage	7.0%	560	20.3%	300	168000
Communication	4.0%	320	6.2%	15	4800
Finance, property, business service:	25.0%	2000	11.0%	30	60000
- Financial and insurance services	0.0%	0	N/A	N/A	0
- Rental, hiring and real estate services	5.0%	400	N/A	30	12000
- Professional, scientific and technical services	20.0%	1600	N/A	30	48000
Public Administration, Defence	6.0%	480	20.0%	30	14400
Community Services	10.0%	800	6.2%	50	40000
Recreation, arts, other services:	8.0%	640	11.0%	250	160000
- Arts and recreation services	0.5%	40	N/A	250	10000
- Accommodation and food services	2.0%	160	N/A	250	40000
- Other services	5.5%	440	N/A	250	110000
Targeted 'Economic Signatures'	20.0%	1600	N/A	30	48000
Total	**100.0%**	**8000**	**13.2%**		**715200**

Source: Conics

** NEIP as a % of the total future jobs growth in Geelong by industy type*

3.5 JOURNEY TO WORK STATEMENT

The NEIP is located in close proximity to the centre of Geelong. It is highly accessible by existing and future major roads (Barwon Heads Road and the future East West Link Road). This provides direct and convenient access to the whole of Geelong and the surrounding region, and also provides proximity to existing and likely future major bus routes, including those that service the balance of the Armstrong Creek Growth Area. The major street network in the NEIP is designed to be public transport ready providing a high degree of access throughout both the employment precincts of the NEIP and its service centre: Precinct 6 – Retail Centre. Local service nodes including child care are also distributed throughout the NEIP close to these potential public transport routes. Marshall Train station is also in close proximity to the NEIP, and Tannery Road has been designed to allow a direct bus route from the station into the heart of the NEIP.

Cycling and walking is supported by a network of on-road commuter bike lanes and off road pedestrian and cycle paths. These have strong connections to surrounding residential areas via Tannery Road, the main NEIP entries from Barwon Heads Road and the East West Link Road. This will further be supported in future via the Barwon River Corridor when the recreation trail is constructed.

As a result public transport options include travel by rail and bus, and by various future bus networks throughout the NEIP and potentially the wider region. Pedestrian and cycle accessibility is also high. The details of road access, public transport, and walking and cycling is provided under the Movement and Transport element in Section 4.

This pattern of access is also supported by analysis of anticipated employment growth for Geelong and analysis of journey to work data. The increasing level of employment demand that is expected within Geelong will be derived from population growth within the City of Greater Geelong as well as those regions directly south and west of Geelong, namely the remainder of the G21 Region (Colac-Otway Shire, Golden Plains Shire, the Borough of Queenscliffe and Surf Coast Shire).

Employment demand is generated at an estimated rate of one additional job for every two additional residents. Table 5 shows the anticipated jobs demand for both Geelong and the G21 Region according to a high and low job containment scenario (based upon continuation of current high levels of jobs containment and improved job containment brought about by higher fuel costs, improved public transport and increasing desire to work closer to home). This demonstrates a level of containment for Geelong (both currently at 75.1% and a possibly increasing to 85%) and suggests journeys to work will be relatively short and likely to be drawn from Geelong and the Armstrong Creek Growth Area. Given this employee catchment there is potentially a high level of support for journeys via future extensions to bus networks and the commuter train system in Geelong.

TABLE 5: JOBS DEMAND – SCENARIO ANALYSIS

	Total Jobs Demand 2021	Contained Jobs – Low Scenario	Contained Jobs – High Scenario
CoGG Jobs Demand	129505	97258	110079
G21 Region Jobs Demand	43316	9443	12995
Total Jobs Demand	**172821**	**106701**	**123074**

Source: ABS Census and Conics

4 ELEMENTS

4.1 INTRODUCTION

This section sets out objectives and planning and design guidelines for the following elements:

- Employment and Specialized Activity Centre
- Image and Character
- Local Service Nodes
- Development Precincts 1-6
- Subdivision
- Transport and Movement
- Open Space
- Biodiversity
- Heritage
- Drainage and Flooding
- Utilities and Energy

Each element includes:

- Objectives: an objective describes the desired outcome to be achieved in the completed development.
- Plans: a plan sets out the spatial expression of objectives.
- Planning and Design Guidelines: planning and design guidelines including figures and tables that:
  - *Must* be met; or
  - *Should* be met.

If the responsible authority is satisfied that an application for an alternative to a planning and design guideline that should be met, meets the relevant objective(s), the alternative may be considered to the satisfaction of the responsible authority.

4.2 EMPLOYMENT AND SPECIALISED ACTIVITY CENTRE

4.2.1 Vision: Employment and specialised activity centre

The PSP will provide for 8,000 jobs to be accommodated in the NEIP as required by the ACUGP. The proposed NEIP industry mix and type is based on the anticipated increase in job demand within Geelong as a result of the planned scale of residential development in the growth area and the region more generally.

The anticipated employment by industry within the NEIP represents predominantly service industries (both blue collar and white collar service employment) though will also support value adding opportunities such as those businesses that will be targeted by the developers. This is directly consistent with intent of the NEIP as outlined in the ACUGP.

The estimated total floor space requirement within the NEIP based on the estimated scale and mix of business and industry activity on-site is 715,200m^2 GFA.

The proportion of future jobs growth in Geelong by industry type, expected to be accommodated within the NEIP, is considered reasonable based on the functional and planning intent for the precinct.

The NEIP will not replicate or compete with the function of the Geelong Central Activity Area (CAA) or the Armstrong Creek Major Activity Centre. Upper white collar employment, government administration and the corporate sector in general will continue to be accommodated within the Geelong CAA. The NEIP will accommodate a range of service industries that will directly support the corporate sector within the Geelong CAA and will therefore be complimentary to the function and the future growth of the Geelong CAA and the Armstrong Creek Major Activity Centre. The NEIP will provide an alternative opportunity, particularly for large floor plate office uses that cannot be accommodated with the Geelong CAA.

4.2.2 Objectives: Employment and specialised activity centre

- To deliver a high quality, high amenity, next generation business park, in Armstrong Creek.
- To accommodate a high level of employment diversity and density, and a wide range of industrial activity that compliments the existing employment offer in Geelong.
- To provide a specialized activity centre that supports the day to day needs of local workers in a pedestrian friendly, high amenity setting.
- To create a sustainable employment precinct that responds to current business demands and provides opportunities for the evolution of industry and business through design, lot size and layout.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 3 and 5.

4.2.3 Implementation Strategies: Employment and specialised activity centre

The objectives for employment and specialised activity centre are met by implementation of all the following:

- Figure 4 NEIP Future Urban Structure Plan
- NEIP Land Use Budget for Employment Land
- Table 4: NEIP Employment Demand Findings
- The planning and design guidelines for each element set out in section 4.

4.3 IMAGE AND CHARACTER

4.3.1 Vision: Image and character

The intent of the structure and layout of the overall NEIP is to emulate the form and structure of a traditional urban district or village, in an employment area. To this end, it embodies a core village and fringe which are a more intensive urban experience relative to the outer more expansive areas that are the lower density industrial and campus environments. The campus business environment in particular provides the transition to the Barwon River corridor and therefore provides the lowest intensity of built form, with a greater sense of landscape and open space relative to development. Within this structure all employment places are located within convenient walking distance of either the core village, or smaller convenient local service nodes, or both.

The design requirements and built form guidelines for the NEIP are contained in the section 4 elements that follow. Development should be generally consistent with these design requirements.

4.3.2 Objectives: Image and character

- To define a range of development precincts having progressively smaller scale uses and more continuous built form, intensifying towards the specialised activity centre.
- To ensure that built form has a direct and positive presentation to the street.
- To provide high quality streetscapes that provide a high quality pedestrian environment that encourages walking.
- To organise the scale of land use and the vehicles that access them, to provide areas that are progressively more pedestrian focussed and walkable.
- To ensure the special centre is within walking distance of most employment places, particularly uses with higher employment densities to support the daily needs of the workforce.
- To provide secondary local service nodes.

Through their implementation they support 3.2 Key Objectives:

- 2, 3, 4, 5 and 6.

4.3.3 Implementation Strategies: Image and character

The objectives for image and character are met by implementation of all the following:

- Figure 4 NEIP Future Urban Structure Plan.
- The planning and design guidelines for each element set out in this section.
- The following minimum standards of external wall articulation, which apply to all development precincts:

4.3.4 Planning and Design Guidelines: Image and character

Minimum Standard of External Wall Articulation

The following requirements establish minimum standards of building articulation for walls fronting public streets and open spaces, Articulation refers to:

- varying the setback from wall to property boundary by recessing parts of the wall to allow for landscaped areas to screen the wall; and/or
- incorporating large areas of glazing; and/or
- providing pedestrian entrances to the building that are clearly expressed as a design feature; and/or
- incorporating architectural features or details into the wall such as expressed pillars, architectural screens, and varying building materials and colours.
  A combination of these treatments is preferred; varying the colour of the wall only is not acceptable.

The following planning and design guidelines should be met by all development in the NEIP:

- Incorporate articulation throughout the full length of the wall.
- Ensure that the following wall lengths without articulation are not exceeded:
    - Precinct 1 – Industry 8m
    - Precinct 3 – Mixed Industry and Business Area 3m
    - Precinct 4 – Village Frame 3m
- Ensure the percentage of total wall area that is contained in a single section of blank wall (ie. has no articulation) is not exceeded:
    - Precinct 6 – Retail Centre 15%
    - Precinct 5 – Village 30%
    - Precinct 2 – Campus Business 15%

4.4 LOCAL SERVICE NODES

4.4.1 Vision: Local service nodes

In addition to the retail centre as a focus of daily services for workers a limited number of local service nodes are permitted. The nodes provide a focal point within a short distance from workplaces to workers to buy food and drinks, socialise, and access childcare. These nodes will be integrated into other buildings and will be co-located with either a park or plaza to extend the social opportunities and amenity of these places. Nodes will address the public street or park/ plaza directly rather than being internalised in a particular site.

4.4.2 Objectives: Local service nodes

The objectives for local service nodes are:

- To provide opportunities for smaller scale services and food and drink places to locate close to workplaces throughout the NEIP.
- To encourage social interaction and pedestrian activity on streets and open spaces throughout the NEIP.

Through their implementation they support 3.2 Key Objectives:

- 1, 4, 5 and 7.

4.4.3 Implementation Strategies: Local service nodes

The objectives for local service nodes are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct.
- Planning and design guidelines in this element and those applying to the precinct in which the node is located.

4.4.4 Planning and Design Guidelines: Local service nodes

General Intent

The following planning and design guidelines *should* be met:

- Ensure nodes comprise of café's food and drink outlets (including indoor dining) and worker support services such as child care.
- Design local nodes to be integrated with surrounding buildings.
- Ensure local nodes are located in accordance with the Figure 4 NEIP Future Urban Structure Plan and co-located with an Urban Park or Plaza.
- Design local nodes to address the public open space or major street network to ensure clear visibility and legibility within the surrounding areas without detracting from appearance of surrounding built form.
- Where shown adjoining a designated open space in the Figure 4 NEIP Future Urban Structure Plan, locate the local node adjacent to this open space and address the open space with the building facades, pedestrian entry and dining areas or other outdoor activity areas.
- Where not shown adjoining a designated open space, locate local node generally in accordance with the Figure 4 NEIP Future Urban Structure Plan.
- Where a location varies greatly to that shown on the Figure 4 NEIP Future Urban Structure Plan, provide evidence that the node in the proposed location will adequately service the surrounding businesses without conflicting with another adjoining node. Refer to the subdivision element regarding design of subdivisions to support acceptable level of access by walking, to the nodes.

4.5 PRECINCT 1: INDUSTRY NORTH AND SOUTH

4.5.1 Vision: Precinct 1 – Industry North and South

Precinct 1 covers approximately 49.14Ha of land in the NEIP. Precinct 1 is the primary focus of industrial activity and is accordingly located adjacent to the key road network enabling efficient and easy vehicle movements for traffic associated with the permissible uses. In terms of land use, Precinct 1 South could potentially accommodate a waste treatment facility taking advantage of the proximity to the EWLR.

The Precincts contain frontages to Barwon Heads Road which in addition to industry would enable opportunities for car, boat and caravan sales, and a petrol station, on well designed lots to achieve a high amenity presentation at the entry to the NEIP.

Generally, uses in these precincts will be characterised by low job density.

The built form will be characterised by regular spacing of larger buildings with greater front setbacks, and will provide a high standard of presentation to the public realm.

4.5.2 Objectives: Precinct 1 – Industry North and South

The objectives for Precinct 1 are:

- To provide land for a full range of industry, warehouse and trade supplies including large tenancies and land uses.
- To provide land for car, boat and caravan sales, and a service station, along Barwon Heads Road.
- To provide a mix of lot sizes to accommodate a diverse range of industrial uses.
- To consolidate industrial uses to manage off site impacts including traffic, noise and hours of operation.
- To ensure the siting and design of industrial uses contributes to a high amenity environment including good street presentation, management of interfaces with open space and major roads and is supportive of an amenable pedestrian environment.
- To provide opportunities for a limited number of food and drink premises and other staff support services such as child care, in close proximity to working environments.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 4, 5 and 6.

4.5.3 Implementation Strategies: Precinct 1 – Industry North and South

The objectives for Precinct 1 are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct.
- Planning and design guidelines in this element.

4.5.4 Planning and Design Guidelines

The following planning and design guidelines *must* be met:

Each building must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.

The following planning and design guidelines *should* be met:

General Intent

- Connect the office or most active component of the land use to the street, and front the primary building entrance to the primary street frontage.
- Provide clearly defined building entrances which connect to the street/open spaces with footpaths.
- Prioritise the pedestrian through the design of buildings and the public realm.
- Articulate built form facades to provide a human scale and visual interest.
- Incorporate landscaped areas around less active sections of building facades to provide visual screening.

Streetscape

- Design streets in accordance with element 4.12 Transport and Movement and with WSUD treatments consistent with element 4.16 Drainage and Flooding.
- Provide street trees along all streets, in locations consistent with the street cross-sections and Appendix 8 WSUD Typical Street Tree Cross-sections.

- Select streets trees from Appendix 5: Preferred Street Trees and preferably space trees of the same species as indicated in the aforementioned table.

Private Landscape

- Maintain a landscaped setback along the street frontages of the lot consistent with the building setbacks in the design guidelines table for the precinct. Landscaping must be capable of partially screening (visually softening) the building mass. However, it must not completely conceal the building such that passive surveillance of street activity, or the legibility of the pedestrian entrances to the building, is diminished. Planting in this setback must include shade trees at a maximum spacing of 8m.
- Landscape on-site car parking areas with canopy trees planted around the perimeter of the parking areas at a minimum of 1 tree per 5 spaces

Lot Access

- For allotments that have access from a rear lane, utilize this access rather than the primary street frontage.
- On larger lots (>5000m^2), provide vehicle access through the site from the lane and exit onto the street to simplify on-site vehicle turning. Ensure that this is the only vehicle exit point onto the street for the site.
- On sites without laneway access, minimise the number and width of vehicle access points to the site. This limiting of access points increases opportunities for on-street parking (in preference to on-site parking alone), water treatment in the verge, street trees and perceived amenity of walking along the verge.

Built Form and Architecture

- Design the built form for this precinct to be generally consistent with the controls in Design Guidelines Table 6 Precinct 1 – Industry North and South.
- Specific setbacks apply to allotments fronting Barwon Heads Road, the East West Link Road and the Barwon River Corridor and are defined below under Interfaces.

TABLE 6: DESIGN GUIDELINES – PRECINCT 1 INDUSTRY NORTH AND SOUTH

Lot Size/ Range	Building Height	Setbacks		
		Street/Open Space	Rear	Side
250–1000m^2	2 storeys and 9.5m	2m min (up to 4m to facilitate required building articulation and landscaping)	2m min	1m min (up to 4m for driveway access)
>1000m^2	2 storeys and 11.5m	2m min (up to 5m to facilitate required building articulation and landscaping)	2m min	2m min (up to 7m for driveway access)

Signs

- Integrate signage for tenancies into the architectural design of the built form.
- Design signage so that it does not visually dominate the façade.
- Design freestanding signage, particularly for multiple tenancy lots, to be small scale, less visually prominent than the buildings, integrated into the front landscape of the site, and of similar design, colours and materials to the buildings on-site.

Sub-Precincts

- Design the street network to ensure permeability and connectivity within and between sub-precincts. The sub-precinct must appear an integrated part of the whole urban form of the NEIP.

Interfaces – With Barwon Heads Road

- Encourage uses with large outdoor display or sales areas such as car, boat and caravan sales, and petrol stations, to locate along the Barwon Heads Road frontage of the NEIP.
- Locate and address buildings associated with large outdoor display or sales areas such as car, boat and caravan sales, and petrol stations close to the street, and locate internal car parking or display areas to the rear.
- Design buildings so that they are a strong visible element of the street frontage rather than sitting behind outdoor displays.
- Design buildings to provide a sense of activation and containment to the street edges.
- Design buildings to support a pedestrian scale for the service road and street verges.
- Setback buildings which interface with Barwon Heads Road consistent with Figure 5.

Interfaces – With the East West Link Road

- Front buildings onto the service road along the East West Link Road, to address that road in the same way as for other streets in the precinct (Refer Figure 6).
- Provide planting in the adjoining drainage corridor in order to screen the East West Link Road, create a vertical element to frame the service road, add amenity to the street, as well as screening buildings from the East-west Link Road.

Interfaces – With the Barwon River Corridor

- Setback buildings from the Barwon River corridor by a minimum of 6m from the property boundary with the corridor.
- Provide a landscape buffer within the building setback area sufficient to largely screen the building mass when viewed from the corridor.
- Provide outdoor recreation areas within the building setback area to overlook the corridor and provide access directly from pedestrian entrances in the building.
- Articulate rear walls located onto the corridor to the minimum standards for wall articulation defined under element 4.3 Image and Character,.
- Provide buildings with areas of glazing to allow natural light, ventilation and overlooking from within the buildings onto the corridor. Where large areas of glazing are provided and maintained, the density of landscape buffering may be reduced to allow views into the river corridor.
- Design buildings in accordance with Figure 7 Interface with the Barwon River Corridor.
- Design the transition in ground level from allotment to corridor as a landscaped batter, rather than retaining wall. This provides a 'soft' or vegetative edge to the corridor.
- Avoid the construction of solid fencing along the boundary with the corridor.
- Screen internal circulation areas, carparking, and loading and service areas behind buildings or planting from the corridor by buildings or planting.

Car Parking and Service Areas

- Include on-street parking spaces along the allotment frontage in assessing on-site parking provision (on-site parking provision is the parking rate for the use, less the number of spaces available on-street). This excludes sections of street frontages where there are driveway crossovers. For the purposes of this calculation, the length of a car parking space on-street is taken to be 7m.
- Where a lot has access to a rear lane, provide access to parking, servicing and loading areas from the rear lane in preference to the public street.
- Locate car parking, service and loading areas behind the buildings at either the side or the rear of the lot.
- Screen servicing and loading areas from primary frontages with buildings or landscaping.

FIGURE 5: INTERFACE WITH BARWON HEADS ROAD

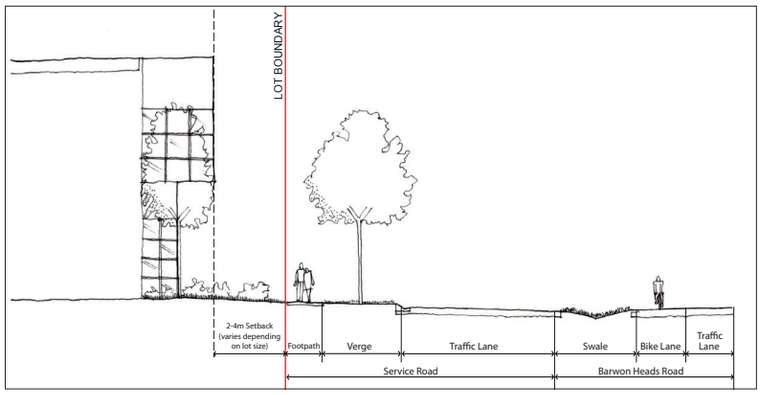


FIGURE 6: INTERFACE WITH THE EAST WEST LINK ROAD

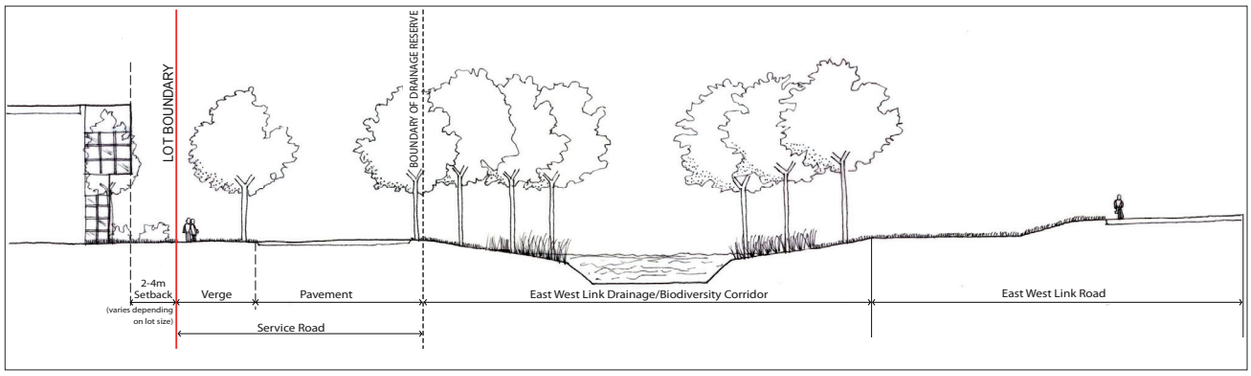
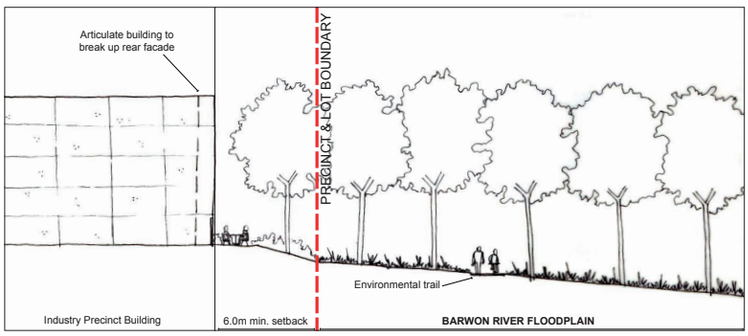


FIGURE 7: INTERFACE WITH THE BARWON RIVER CORRIDOR



4.6 PRECINCT 2: CAMPUS BUSINESS

4.6.1 Vision: Precinct 2 – Campus Business

Precinct 2 contains approximately 41.60Ha of land.

Precinct 2 is differentiated from the other precincts by the separation of built form by landscape and space, larger floor space units having more the appearance of an office or commercial building, and more concentrated activity. The uses that will be supported in Precinct 2 primarily span activities traditionally associated with industry and warehouse but incorporate a relatively high level of office, and training and research activities to support the core use. The Precinct will also contain small cafes in the designated local nodes associated with open plazas where people will meet and gather throughout the day.

Precinct 2 is the prestige business address in the NEIP and offers views and access to open space and the Barwon River corridor. Homestead Park and the wetland in the north of the precinct will provide high amenity locations for people to recreate at lunch time or to meet friends. The re-use of the historic building in the Homestead Park ("Sunnyside") is encouraged as a communal space for conference and training facilities to be used by the businesses across the NEIP.

4.6.2 Objectives: Precinct 2 – Campus Business

The objectives of Precinct 2 are:

- To provide land for industrial uses having a higher proportion of ancillary office, training, research and development or employment intensive activities in a high amenity campus setting.
- To provide opportunities for a limited number of food and drink premises and other staff support services such as child care, in close proximity to working environments.
- To provide a more active frontage to the Barwon River corridor, that draws amenity from views into the corridor.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 4, 5, and 6.

4.6.3 Implementation Strategies: Precinct 2 – Campus Business

The objectives for image and character for Precinct 2 are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct.
- Planning and design guidelines in this element.

4.6.4 Planning and Design Guidelines: Precinct 2 – Campus Business

The following planning and design guidelines *must* be met:

- Each building must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.

The following planning and design guidelines *should* be met:

General Intent

- Encourage tenancies which are medium to large scale.
- Design buildings facades more akin to an office or commercial building.
- Design multistorey buildings so that they visually read as layered structures.
- Design buildings with regular, generous spacing between.
- Provide a high quality landscaped setting for the buildings.
- Connect the office or most active component of the land use to the street and open space (including the Barwon River corridor) where applicable. Front the primary building entrance to the primary street frontage.
- Design buildings to overlook the street and adjoining open space.
- Design buildings to address the Barwon River corridor, overlook the corridor, and have outdoor recreational areas facing the corridor
- Define entrances and clearly delineate access pathways to the street and / or open spaces with footpaths.

Streetscape

- Design streets in accordance with element 4.12: Transport and Movement and with WSUD treatments consistent with element 4.16: Drainage and Flooding.
- Provide street trees along all streets, in locations consistent with the street cross-sections and Appendix 8 WSUD Typical Street Tree Cross-sections.
- Select streets trees from Appendix 5 Preferred Street Trees and preferably space trees of the same species as indicated in the aforementioned table.

Private Landscape

- Provide and maintain a landscaped setback along the street frontages of the lot consistent with the building setbacks in the design guidelines table for the precinct. Landscaping must be capable of partially screening (visually softening) the building mass. However, it must not completely conceal the building such that passive surveillance of street activity, or the legibility of the pedestrian entrances to the building, is diminished. Planting in this setback must include shade trees at a maximum spacing of 8m.
- Landscape on-site car parking areas with canopy trees planted around the perimeter of the parking areas at a minimum of 1 tree per 5 spaces.

Built Form and Architecture

- Design buildings for this precinct to be generally consistent with the controls in Table 7 Design Guidelines - Precinct 2 Campus Business.

TABLE 7: DESIGN GUIDELINES – PRECINCT 2 CAMPUS BUSINESS

Lot Size/ Range	Building Height	Setbacks		
		Street/ Open Space	Rear	Side
1500-2500m^2	3 storeys and 13.5m	2m min	2m min	2m min
>2500m^2	3 storeys and 13.5m	4m min	4m min	4m min

Specific setbacks apply to allotments fronting the Barwon River Corridor and are defined below under Interfaces.

Signs

- Integrate signage for tenancies into the architectural design of the built form.
- Design signage so that it does not visually dominate the façade.
- Design freestanding signage, particularly for multiple tenancy lots or uses with multiple buildings, to be small scale, less visually prominent than the buildings, and integrated into the front landscape of the site, and of similar design, colours and materials to the buildings on-site.

Sub-Precincts

- Design the street network to ensure permeability and connectivity within and between sub-precincts. The sub-precinct must appear an integrated part of the whole urban form of the NEIP.

Interfaces – with the Barwon River Corridor

- Design buildings to address the corridor with large areas of glazing which allow overlooking of the corridor for workers within the buildings.
- Design buildings to have recognisable storeys expressed in the façade.
- Locate outdoor recreation areas in the form of gardens, terraces either at ground level or as balconies above so that they front the corridor. Ground level terraces may be located within the building setback to the boundary with the corridor.
- Set all buildings back a minimum of 6m from the property boundary shared with the river corridor.
- Provide a landscaped buffer within the 6m setback to the corridor which contains canopy trees and shrubs to partially screen the mass of the building when viewed from the corridor.
- Design buildings in accordance with Figure 7 Interface with the Barwon River Corridor.
- Design the transition in ground level from allotment to corridor as a landscaped batter, rather than retaining wall. This provides a 'soft' or vegetative edge to the corridor.

- Avoid the construction of solid fencing along the boundary with the corridor.
- Screen internal circulation areas, carparking, and loading and service areas behind buildings or planting from the corridor either by buildings or planting.

Car Parking and Service Areas

- Include on-street parking spaces along the allotment frontage in assessing on-site parking provision (on-site parking provision is the parking rate for the use, less the number of spaces available on-street). This excludes sections of street frontage where there are driveway crossovers. For the purposes of this calculation, the length of a car parking space on-street is taken to be 7m.
- Where a lot has access to a rear lane, provide access to parking, servicing and loading areas from the rear lane in preference to the public street.
- Locate car parking, service and loading areas behind the buildings at either the side or the rear of the lot.
- Screen servicing and loading areas from primary frontages with buildings or landscaping.

4.7 PRECINCT 3: MIXED INDUSTRY AND BUSINESS

4.7.1 Vision: Precinct 3 – Mixed Industry and Business

Precinct 3 contains approximately 14.13Ha of land. This is the gateway to the NEIP and will provide a distinctive high quality built form that sets the flavour and theme for the overall NEIP. Lot sizes in this precinct will be mixed to enable a wide range of uses of a medium to small scale. Built form in this precinct will represent a transition to the core industrial and campus business areas, and will typically be more articulated to reflect a more human scale.

Precinct 3 is a focus for higher amenity uses fronting the key boulevard entries: Keystone and Gateway Avenue. These uses will address the street directly with their principle pedestrian entrances, reception, sales, office, and display areas, creating a quality pedestrian environment on the desire line to the finer grain (small scale, small street frontage) uses in the core of the site.

Industry which contains a larger component of ancillary office will be encouraged at the Keystone and Gateway Avenue frontage in addition to service industry and wholesale trade. Opportunities for service based education and training facilities will be contained in this Precinct, creating positive synergies with the skills needs of industry and business located in the NEIP.

4.7.2 Objectives: Precinct 3 – Mixed Industry and Business

The objectives for Precinct 3 are:

- To provide land for small to medium scale, mixed industry and business uses along the key entry roads into the NEIP.
- To encourage a high presentation of built form to these key road frontages, and a high level of pedestrian amenity and activity.
- To provide opportunities for a limited number of food and drink premises and other staff support services such as child care, in close proximity to working environments.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 4, 5, and 6.

4.7.3 Implementation Strategies: Precinct 3 – Mixed Industry and Business

The objectives for precinct 3 are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct.
- Planning and design guidelines in this element.

4.7.4 Planning and Design Guidelines: Precinct 3 – Mixed Industry and Business

The following planning and design guidelines *must* be met:

- Each building must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.

The following planning and design guidelines *should* be met:

General Intent

- Encourage tenancies and land uses that are small to medium scale and occupy smaller sections of street frontage and so allow a greater number of uses to present to the street, than in the industrial precinct.
- Locate buildings with a zero front boundary setback.
- Articulate buildings with longer frontages to the street.
- Design buildings to be connected to side boundaries providing continuous facades to streets. Openings between buildings are permitted for vehicle and pedestrian access into the site.
- Ensure that ground level land uses activate the street, having window display areas and pedestrian entrances onto the street, plaza or open space.
- Ensure that the principle pedestrian entrance and reception/ office fronts the street directly.
- Provide awnings over the street verge where there are pedestrian entrances and office/ display areas, which provide relief from sun and rain. Awnings may extend up to 1.5m back from the kerb to allow for the growth of street trees.
- Encourage second storey office uses.
- Design buildings so that second storeys are distinguishable from the ground level when viewed from the street (or open space), that the front setback of upper levels is in line with the ground floor, and that windows are provided to allow for passive surveillance onto the street, plaza or open space.
- Locate on-site car parking behind buildings, and screen on-site car parking with planting to minimise its visual impact. No parking is permitted between the building line and the primary street frontages.

Streetscape

- Design streets in accordance with element 4.12 Transport and Movement and with WSUD treatments consistent with element 4.16 Drainage and Flooding.
- Provide street trees along all streets, in locations consistent with the street cross-sections and Appendix 8 WSUD Typical Street Tree Cross-sections.
- Select streets trees from Appendix 5: Preferred Street Trees and preferably space trees of the same species as indicated in the aforementioned appendix

Private Landscape

- Provide and maintain a landscaped setback along the less active street frontages of the lot consistent with the building setbacks in the design guidelines table for the precinct. Landscaping must be capable of partially screening (visually softening) the building mass. However, it must not completely conceal the building such that passive surveillance of street activity, or the legibility of the pedestrian entrances to the building, is diminished. Planting in this setback must include shade trees at a maximum spacing of 5m.
- Landscape on-site car parking areas with canopy trees planted around the perimeter of the parking areas at a minimum of 1 tree per 5 spaces

Lot Access

- Where allotments front a rear lane, provide vehicle access from the rear lane rather than the primary street frontage.
- Where lots only front a public primary street, limit vehicle access to one point only and encourage access to be shared with adjoining lots. Building setbacks to side boundaries may be increased to allow pedestrian or vehicle access to the site. This limiting of access points increases opportunities for on-street parking (in preference to on-site parking alone), allows a continuous building line between tenancies, water treatment in the verge, street trees and improves the amenity of walking along the verge.

Built Form and Architecture

- Design buildings for this precinct to be generally consistent with the controls in Table 8: Design Guidelines – Precinct 3 Mixed Industry and Business.

TABLE 8: DESIGN GUIDELINES – PRECINCT 3 MIXED INDUSTRY AND BUSINESS

Lot Size/ Range	Building Height	Setbacks		
		Street/Open Space	Rear	Side
100 – 800m²	2 storeys and 9.5m	0m (up to 2m for longer frontages to facilitate required wall articulation)	0m min	0m
>800m²	2 storeys and 11.5m	0m (up to 3m for longer frontages to facilitate required wall articulation)	0m min	0m

- On allotments where there is no access from a rear laneway, side setbacks may be increased to facilitate driveway access from the front or side of the lot.
- Specific setbacks apply to allotments fronting Barwon Heads Road and are defined below under Interfaces.

Signs

- Integrate signage for tenancies into the architectural design of the built form.
- Design signage so that it does not visually dominate the façade.
- Design freestanding signage, particularly for multiple tenancy lots, to be small scale, less visually prominent than the buildings, integrated into the front landscape of the site, and of similar design, colours and materials to the buildings on-site.
- Signage for Keystone may be incorporated into the landscape or building design of the corner of Barwon Heads Road and Keystone Avenue. If signage is included within the landscape then the buildings behind may be setback further accordingly.
- Ensure that signage for individual business does not visually compete with gateway signage for the NEIP.

Sub-Precincts

- Design the street network to ensure permeability and connectivity within and between sub-precincts. The sub-precinct must appear an integrated part of the whole urban form of the NEIP.

Interfaces – with Barwon Heads Road

- Ensure the design of buildings located on the corner of Barwon Heads Road and Keystone Avenue express the importance of the gateway location into the NEIP.
- Design buildings which front street corners or Barwon Heads Road itself to frame the street with no or a minimal front setback.
- Design buildings which front street corners to address the corners preferably with increased building height. Incorporation of second storeys is preferred.
- Where the side of a building faces a road, ensure that facades are articulated and have architectural features and detailing suited to their prominent location.
- Locate on-site car parking to the rear of buildings and not fronting Barwon Heads Road in this precinct.

Car Parking and Service Areas

- Include on-street parking spaces along the allotment frontage in assessing on-site parking provision (on-site parking provision is the parking rate for the use, less the number of spaces available on-street). This excludes sections of street frontage where there are driveway crossovers. For the purposes of this calculation, the length of a car parking space on-street is taken to be 7m.
- Where a lot has access to a rear lane, provide access to parking, servicing and loading areas from the rear lane in preference to the public street.
- Locate car parking, service and loading areas behind the buildings at either the side or the rear of the lot, and not between the front building line and the street.
- Screen servicing and loading areas from primary frontages with buildings or landscaping.

4.8 PRECINCT 4: VILLAGE FRAME EAST AND WEST

4.8.1 Vision: Precinct 4 – Village Frame East and West

Precinct 4 covers approximately 9.29Ha of land in the NEIP. Precinct 4 will contain a diverse mix of industry and commercial uses on a range of lot sizes. This Precinct will represent a graduation in form, lot size and streetscape from the larger format industrial and campus style area to the smaller format Village and Retail Centre, with a greater emphasis on the public realm experience. This will differentiate it from the precincts above as a key in the transition to the more pedestrian scale main-street environment in the core of the NEIP.

Precinct 4 will introduce opportunities for small local industry and service business to locate close to the vibrancy of the finer grain (small uses with small street frontages), more mixed use precincts contained in the core of the site. Uses spanning from small 'start ups' to industry seeking a higher amenity environment than that offered in the Precinct 1, will be encouraged to locate in Precinct 4. This Precinct will have a 'worker focus' and is expected to achieve a moderate to high job density. Shops will not be permitted in this precinct.

4.8.2 Objectives: Precinct 4 – Village Frame East and West

The objectives for Precinct 4 are:

- To provide for a diverse mix of industry and commercial uses, excluding retail.
- To encourage a range of lot sizes to accommodate a mix of employment generating activities.
- To encourage higher amenity, finer grain types of industry proximate to the Retail Centre.
- To provide land for smaller scale industry, distribution, and warehousing.
- To provide land for wholesale trade and trade supplies.
- To provide land for small local offices that support industrial uses.
- To provide land for accommodation provided for the adjacent industry and including serviced apartments, hotels, and motels, close to the amenity of the retail centre and Homestead Park.
- To provide more pedestrian focussed street environment providing direct connectivity to the retail centre, the urban parks and plazas and Homestead Park.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 4, 5, and 6.

4.8.3 Implementation Strategies: Precinct 4 – Village Frame East and West

The objectives for precinct 4 are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct
- Planning and design guidelines in this element.

4.8.4 Planning and Design Guidelines: Precinct 4 – Village Frame East and West

The following planning and design guidelines *must* be met:

- Each building must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.

The following planning and design guidelines *should* be met:

General Intent

- Encourage tenancies and land uses which are medium to small in scale.
- Locate buildings with a zero front boundary setback.
- Design buildings to be connected to side boundaries, providing continuous facades to streets. Openings between buildings are permitted for vehicle and pedestrian access into the site.
- Ensure that ground level land uses activate the street, having window display areas and pedestrian entrances onto the street, plaza or open space.
- Design buildings so that second storeys are distinguishable from the ground level when viewed from the street (or open space), that the front setback of upper levels is in line with the ground floor, and that windows are provided to allow for passive surveillance onto the street, plaza or open space.

- Ensure that the principle pedestrian entrance and reception/office fronts the street directly.
- Provide awnings over the street verge above the pedestrian entrances to buildings. Awnings may extend up to 1.5m back from the kerb to allow for the growth of street trees.
- Locate on-site car parking behind buildings and screened with landscape to minimise visual impact. No parking is permitted between the building line and the street boundary.
- Articulate buildings with longer frontages to the street.

Streetscape

- Design streets in accordance with element 4.12 Transport and Movement, and with WSUD treatments consistent with element 4.16 Drainage and Flooding.
- Provide street trees along all streets, in locations consistent with the street cross-sections and Appendix 8: WSUD Typical Street Tree Cross-sections.
- Encourage the selection of streets trees from Appendix 5 Preferred Street Trees and preferably space trees of the same species as indicated in the aforementioned appendix.

Private Landscape

- Encourage the location of buildings abutting the street boundaries of the site.
- Where longer frontages require greater building articulation, encourage small landscape buffers to be included in the width allowed by boundary setbacks. Buffer landscaping must be capable of partially screening (visually softening) those sections of the building mass.
- Limit private landscaping to off -street areas: car parking areas, boundaries where no building abuts, pedestrian corridors and internal plazas or courtyards.
- Landscape on-site car parking areas with canopy trees planted around the perimeter of the parking areas at a minimum of 1 tree per 5 spaces.

Lot Access

- Where allotments have vehicle access from a rear lane, utilize this access rather than the primary street frontage.
- Where lots have access from a public street only, limit vehicle access to one point and encourage access to be shared with adjoining lots. Building setbacks to side boundaries may be increased to allow pedestrian or vehicle access to the site. This limiting of access points increases opportunities for on-street parking (in preference to on-site parking alone), allows a continuous building line between tenancies, water treatment in the verge, street trees and perceived amenity of walking along the verge.

Built Form and Architecture

- Design buildings for this precinct to be generally consistent with the controls in Table 9: Design Guidelines - Precinct 4 Village Frame.
- On allotments where there is no access from a rear laneway, consider increased side setbacks to facilitate driveway access from the front or side of the lot.

TABLE 9: DESIGN GUIDELINES – PRECINCT 4 VILLAGE FRAME

Lot Size/ Range	Building Height	Setbacks		
		Street/Open Space	Rear	Side
250 – 800m^2	2 storeys and 9.5m	0m min (up to 2m for longer frontages to facilitate required wall articulation)	0m min	0m
>800m^2	2 storeys and 11.5m	0m min (up to 2m for longer frontages to facilitate required wall articulation)	0m min	0m

Signs

- Integrate signage for tenancies into the architectural design of the built form.
- Ensure signage does not visually dominate the façade.
- Design freestanding signage, particularly for multiple tenancy lots, to be small scale, less visually prominent than the buildings, integrated into the front landscape of the site, and of similar design, colours and materials to the buildings on-site.

Sub-Precincts

- Precinct 4 is a transitional area between industry and campus business and the Retail Centre, and therefore should appear as part of the fringe of the retail centre rather than a series of separate or privatised developments.
- Design the street network to ensure permeability and connectivity within and between sub-precincts. The sub-precinct must appear an integrated part of the whole urban form of the NEIP.

Car Parking and Services Areas

- Include on-street parking spaces along the allotment frontage in assessing on-site parking provision (on-site parking provision is the parking rate for the use, less the number of spaces available on-street). This excludes sections of street frontage where there are driveway crossovers. For the purposes of this calculation, the length of a car parking space on-street is taken to be 7m.
- Locate car parking, servicing and loading areas behind the buildings at either the side or the rear of the lot, and not between the front building line and the street. Loading bays for small service vehicles may be accommodated in a designated space on-street that is used for visitor parking during regular business hours.
- Where a lot has access to a rear lane, provide access to parking, servicing and loading areas from the rear lane in preference to the public street.
- Screen servicing and loading areas from primary frontages with buildings or landscaping.
- Provide designated pedestrian paths to building entrances and to surrounding public streets within car parking areas.

4.9 PRECINCT 5: VILLAGE

4.9.1 Vision: Precinct 5 – Village

Precinct 5 will cover approximately 4.93Ha of land in the NEIP. Precinct 5 will contain a highly diverse mix of industry and commercial uses that meet both business and worker needs, and support the retail centre, including a gym and conference and training facilities.

As land uses transition along the Keystone Avenue main street environment into the more dense retail core, the Precinct will contain more active streets and smaller tenancy sizes fronting the street. Buildings will be well designed with potential for shop top housing, allowing night time activation which will encourage passive surveillance of the street, improving overall safety in the heart of the NEIP. This precinct is differentiated by a greater presence of commercial and service based uses to support the overall performance and functioning of the NEIP.

4.9.2 Objectives: Precinct 5 – Village

The objectives for Precinct 5 are:

- To provide a mixed use precinct that includes industry, business, accommodation, recreation, and professional services.
- To provide a mix of lot sizes to accommodate a diverse range of uses.
- To provide a mix of uses that supports the needs of businesses and their workers.
- To provide a more pedestrian focussed street environment providing direct connectivity to the retail centre, the urban parks and plazas and Homestead Park.
- To provide land for industry and warehouse that can be accommodated in a finer grain form (smaller floor areas and smaller street frontages), including mechanics, printers, textiles and footwear distribution.
- To provide land for professional services including printers, financial services and post office.
- To provide land for gym or indoor sports centre.
- To provide land for conference centre, meeting and training facilities.
- To provide opportunities for shop top housing.
- To provide land for cafés and restaurants.
- To provide land for accommodation provided for the adjacent industry and including serviced apartments, hotels, and motels.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 4, 5, and 6.

4.9.3 Implementation Strategies: Precinct 5 – Village

The objectives for precinct 5 are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct
- Planning and design guidelines in this element.

4.9.4 Planning and Design Guidelines: Precinct 5 – Village

The following planning and design guidelines *must* be met:

- Each building must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.

The following planning and design guidelines *should* be met:

General Intent

- Encourage tenancies and land uses which are small scale and occupy small sections of street frontage allowing many uses to present to the street.
- Locate buildings to directly front the street boundary with no setback.
- Design buildings with zero side setbacks to provide continuous facades to streets. Openings between buildings are permitted for vehicle and pedestrian access into the site and to ensure adequate passive surveillance of internal parking areas from the street or open space.
- Design ground levels of buildings to activate the street, with window display areas and pedestrian entrances onto the street, plaza or open space.
- Encourage the use of the verges for on-street dining whilst allowing pedestrian flow.
- Provide awnings over the street verge to form a continuous line, providing protection from sun and rain. Awnings must be a consistent 1.5m back from the kerb to allow for the growth of street trees.
- Encourage second and third storey uses.
- Design second and third storeys as layered structures which follow the vertical building line of the ground floor and have windows and/or balconies fronting the street, plaza or open space.
- Design pedestrian entrances to uses above ground floor to be clearly legible.
- Locate on-site car parking behind buildings and screen car parking areas with landscape to minimise visual impact. No parking is permitted between the building line and the street boundary.

Streetscape

- Design buildings and the public realm in order to prioritise the pedestrian with awnings, lighting, street furniture, footpath design, and street trees that suit the local social and climatic conditions.
- Design streets in accordance with element 4.12 Transport and Movement, and with WSUD treatments consistent with element 4.16 Drainage and Flooding.
- Provide a full width pavement within street verges (and the southern side of Tannery Road only) to allow for greater pedestrian circulation, social congregation and on-street dining and a main-street character.
- Provide street trees along all streets, in locations consistent with the street cross-sections and Appendix 8: WSUD Typical Street Tree Cross-sections.
- Provide streets trees selected from Appendix 5: Preferred Street Trees and preferably space trees of the same species as indicated in the aforementioned appendix.

Private Landscape

- Encourage the location of buildings to abut the street boundaries of the site.
- Where longer frontages require greater building articulation, encourage small landscape buffers to be included in the area between the building and the boundary. Buffer landscaping must be capable of partially screening (visually softening) those sections of the building mass.
- Limit private landscaping to off -street areas: car parking areas, boundaries where no building abuts, pedestrian corridors and internal plazas or courtyards.
- Landscape on-site car parking areas with canopy trees planted around the perimeter of the parking areas at a minimum of 1 tree per 5 spaces.

Lot Access

- Where allotments have vehicle access from a rear lane, utilize this access rather than the primary street frontage.
- Where lots have access from a public street only, limit vehicle access to one point only and encourage access to be shared with adjoining lots. Building setbacks to side boundaries may be increased to allow pedestrian or vehicle access to the site. This limiting of access points increases opportunities for on-street parking (in preference to on-site parking alone), allows a continuous building line between tenancies, water treatment in the verge, street trees and perceived amenity of walking along the verge.

Built Form and Architecture

- Design buildings to be generally consistent with the controls in Table 10 Design Guidelines – Precinct 5 Village.
- Setbacks shown in Table 10: Design Guidelines – Precinct 5 Village are a minimum. Increased setbacks are subject to development approval, and will be assessed upon the merit of the proposal to maintain the design intent expressed within the element. On allotments where there is no access from a rear laneway, side setbacks may be increased to facilitate driveway access from the front or side of the lot.

TABLE 10: DESIGN GUIDELINES – PRECINCT 5 VILLAGE

Lot Size/ Range	Building Height	Setbacks		
		Street/Open Space	Rear	Side
100 – 800m^2	2 storeys and 9.5m	0m min	0m	0m
>800m^2	3 storeys and 13.5m	0m (up to 2m for longer frontages to facilitate required wall articulation)	0m	0m

Signs

- Integrate signage for tenancies into the architectural design of the built form.
- Design signage so that it does not visually dominate the façade.
- Locate signage for ground floor uses so that it is suspended below the footpath awning facing perpendicular to the line of the street, or integrated into the façade of the building.
- Design freestanding signage, particularly for multiple tenancy lots, so that it is small scale, less visually prominent than the buildings, integrated into the front landscape of the site, and of similar design, colours and materials to the buildings on-site.

Sub-Precincts

- Precinct 5 is a transitional area between industry and campus business and the Retail Centre, and therefore should appear as part of the fringe of the retail centre rather than a series of separate development.
- Design the street network to ensure permeability and connectivity within and between sub-precincts. The sub-precinct must appear an integrated part of the whole urban form of the NEIP.

Car Parking and Service Areas

The following planning and design guidelines *must* be met:

- Include on-street parking space along the allotment frontage when assessing on-site parking provision (on-site parking provision is the parking rate for the use, less the number of spaces available on-street). This excludes sections of street frontage where there are driveway crossovers. For the purposes of this calculation, the length of a car parking space on-street is taken to be 7m.
- Locate car parking, servicing and loading areas behind the buildings at either the side or the rear of the lot, and not between the front building line and the street. Loading bays for small service vehicles may be accommodated in a designated space on-street that is used for visitor parking during regular business hours.
- Where a lot has access to a rear lane, provide access to parking, servicing and loading areas from the rear lane in preference to the public street.

- Screen servicing and loading areas from primary frontages with buildings or landscaping.
- Provide designated pedestrian paths to building entrances and to surrounding public streets within car parking areas.
- Site and design onsite parking in the Village in order to allow for passive surveillance to ensure the safety of users. On-site car parking areas should be located behind buildings or landscape buffers as in other precincts, but must still be visible from a public street, pedestrian thoroughfare, or open space via breaks in the building line for driveways and pedestrian entries. Landscape buffers between the street and the parking area should allow visibility into the carpark, maintaining a clear view at eye height below the canopy of shade trees planted in the buffer.
- Ensure carparking areas are lit at night to applicable standards.

4.10 PRECINCT 6: RETAIL CENTRE (SPECIALISED ACTIVITY CENTRE)

4.10.1 Vision: Precinct 6 – Retail Centre (Specialised Activity Centre)

The NEIP retail centre (approximately 1.00Ha of the NEIP) is centrally located to maximise its accessibility, placing almost all of the employment lands within a 5 to 10 minute walk to the centre (within a 400-800m walkable catchment). This retail centre is differentiated from the rest of the NEIP by its focus upon supporting the needs of the local workers, providing convenience level shopping in a high amenity street based environment.

Active ground floor uses are encouraged to create vibrancy and life on the street, and enhance the overall amenity and appeal of the centre. The centre will contain a mix of uses that support the needs of the workers including professional services, a convenience store, ATM, travel agency, dry cleaners, and child care. Upper level dwellings would be supported in this precinct, as well as serviced apartments for business use, and conference, meeting and training facilities.

In addition to commercial uses, Precinct 6 will also contain small scale industry uses, the type of which will be informed by the built form, lot size and setback requirements applicable in this precinct. Industry locating in Precinct 6 will be compatible with the high amenity uses and design outcomes sought in this central node.

The centre must be located in accordance with the Figure 4 Future Urban Structure Plan, near the intersection of the Keystone Avenue and local cross-street. The PSP contains an indicative masterplan which will inform planning applications for development of this centre (Refer Figure 8).

4.10.2 Objectives: Precinct 6 – Retail Centre (Specialised Activity Centre)

The objectives for Precinct 6 are:

- To provide retail to serve the professional and personal needs of the local worker population.
- To provide a centrally located centre within a 5 to 10 minute walk (defined as a 400-800m walkable catchment) of almost all workplaces.
- To ensure retail does not exceed a total floorspace of 2,800sqm.
- To provide a high quality, pedestrian prioritised street environment and awnings over the footpath.
- To provide land for entertainment facilities.
- To provide land for child care and medical centres to support the daily needs of the workers.
- To provide land for cafés and restaurants.
- To provide land for shop-top housing, serviced apartments and other forms of residential accommodation that can be integrated at an upper level into a convenience centre.
- To provide land for service industry and trade supplies that can be accommodated in a finer grain form (small scale, small floor area, small street frontage) and high amenity environment.
- To provide land for small offices providing personal and professional services to the working population and premises.

Through their implementation they support 3.2 Key Objectives:

- 1, 2, 4, 5, 6, 7 and 8.

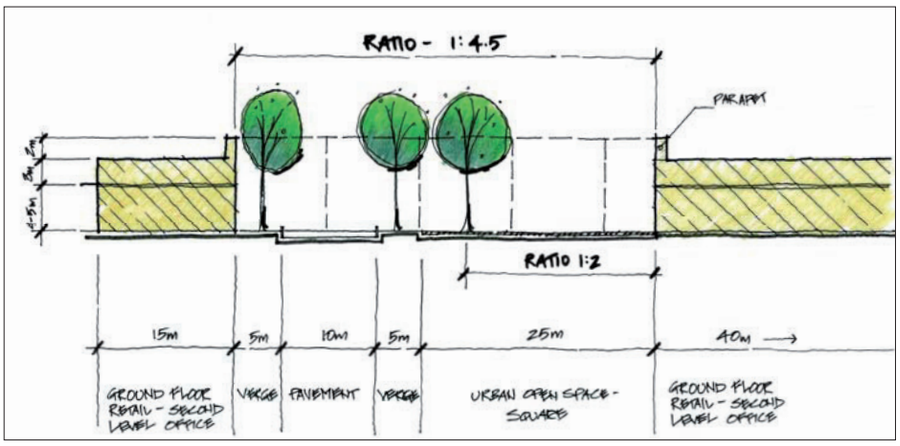
FIGURE 8: INDICATIVE MASTERPLAN FOR THE RETAIL CENTRE



LEGEND

- Precinct 6 - Retail Centre
- Precinct 5 - Village
- Precinct 4 - Village Frame
- Urban Park/Plaza
- Indicative Building Disposition
- Precinct Boundaries

INDICATIVE SECTION A-A



*Note: *Desired minimum ratio of height to depth (minimum vertical scale) of spaces between buildings and street/park trees, and between building facades on opposing sides of the street.*

4.10.3 Implementation Strategies: Precinct 6 – Retail Centre (Specialised Activity Centre)

The objectives for image and character for precinct 6 are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Figure 8 Indicative Masterplan for the Retail Centre.
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct.
- Planning and design guidelines in this element.

4.10.4 Planning and Design Guidelines: Precinct 6 – Retail Centre (Specialised Activity Centre)

The following planning and design guidelines *must* be met:

- Each building must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.

The following planning and design guidelines *should* be met:

General Intent

- Locate buildings to directly front the street boundaries with no setback.
- Encourage smaller scale shop frontages which present numerous uses to the street.
- Design ground level buildings to activate the street, with window display areas and pedestrian entrances onto the street, plaza or open space. The verge may be used for on-street dining whilst allowing pedestrian flow.
- Provide awnings over the street verge to form a continuous line, providing protection from sun and rain. Awnings must be a consistent 1.5m back from the kerb to allow for the growth of street trees.
- Encourage second and third storey buildings.
- Design buildings with second and third storeys so that they are layered structures and read as separate levels, follow the vertical building line of the ground floor and have windows and/or balconies fronting the street, plaza or open space.
- Design pedestrian entrances to uses above ground floor to be clearly legible.
- Design buildings with zero side boundary setbacks to create a connected, continuous line of building facades along the street boundary. Openings between buildings are permitted for vehicle and pedestrian access into the site and to ensure adequate passive surveillance of internal parking areas from the street or open space.
- Encourage small to medium scale tenancies.
- Locate smallest scale uses so that they front the street.
- Locate larger uses so that they are recessed behind smaller uses and accessed via a pedestrian mall, to ensure the street front is comprised of small scale facades and the greatest mix of uses.
- Locate on-site car parking behind buildings and screened with landscape to minimise visual impact. No parking is permitted between the building line and the street boundary.

Streetscape

- Design buildings and the public realm to prioritise the pedestrian with awnings, lighting, street furniture, footpath design, and street trees that suit the local social and climatic conditions.
- Design streets in accordance with element 4.12 Transport and Movement, and with WSUD treatments consistent with element 4.16 Drainage and Flooding.
- Design verges in the Retail Centre with a full width pavement to allow greater pedestrian circulation, on-street dining opportunities, and a more main street feel than in other precincts.
- Provide street trees along all streets, in locations consistent with the street cross-sections and Appendix 8: WSUD Typical Street Tree Cross-sections.
- Select streets trees from Appendix 5 Preferred Street Trees and preferably space trees of the same species as indicated in the aforementioned appendix.

Private Landscape

- Locate buildings to abut the street boundaries of the site.
- Limit private landscape to off -streets areas: car parking areas, boundaries where no building abuts, pedestrian corridors and internal plazas or courtyards.

- Landscape on-site car parking areas with canopy trees planted around the perimeter of the parking areas at a minimum of 1 tree per 5 spaces.

Lot Access

- Where allotments abut a rear lane, utilize the rear lane for vehicular access rather than the primary street frontage.
- Where lots abut a public street only, limit vehicle access to one point only, and encourage the sharing of access with adjoining lots. Building setbacks to side boundaries may be increased to allow pedestrian or vehicle access to the site. This limiting of access points increases opportunities for on-street parking (in preference to on-site parking alone), allows a continuous building line between tenancies, water treatment in the verge, street trees and perceived amenity of walking along the verge.

Built Form and Architecture

- Design buildings for this precinct to be generally consistent with the controls in Table 11: Design Guidelines – Precinct 6 Retail Centre.

TABLE 11: DESIGN GUIDELINES – PRECINCT 6 RETAIL CENTRE

Lot Size/ Range	Building Height	Setbacks		
		Street/Open Space	Rear	Side
100 – 1500m^2	3 storeys and 13.5m	0m	0m	0m

- Setbacks shown above are a minimum. Increased setbacks are subject to development approval, assessed upon the merit of the proposal to maintain the design intent expressed above. On allotments where there is no access from a rear laneway, side setbacks may be increased to facilitate driveway access from the front or side of the lot. The preferred building disposition within the retail centre is shown in Figure 8: Indicative Masterplan for the Retail Centre.

Signs

- Integrate signage for tenancies into the architectural design of the built form, and be of similar design, colours and materials to the buildings on-site.
- Design signage so that it does not visually dominate the façade
- Locate signage for ground floor uses so that it is suspended below the footpath awning facing perpendicular to the line of the street, or integrated into the façade of the building.

Car Parking and Service Areas

- Include on-street parking spaces along the allotment frontage in assessing on-site parking provision (on-site parking provision is the parking rate for the use, less the number of spaces available on-street). This excludes sections of street frontage where there are driveway crossovers. For the purposes of this calculation, the length of a car parking space on-street is taken to be 7m.
- Locate car parking, servicing and loading areas behind the buildings at either the side or the rear of the lot, and not between the front building line and the street. Loading bays for small service vehicles may be accommodated in a designated space on-street that is used for visitor parking during regular business hours.
- Where a lot has access to a rear lane, provide access to parking, servicing and loading areas from the rear lane in preference to the public street.
- Screen servicing and loading areas from primary frontages with buildings or landscaping.
- Provide designated pedestrian paths to building entrances and to surrounding public streets within car parking areas.
- Provide safe on-site car parking areas for users and promote passive surveillance from surrounding public spaces.

- Site and design onsite parking in the Retail Centre in order to allow for passive surveillance to ensure the safety of users. On-site car parking areas should be located behind buildings or landscape buffers as in other precincts, but must still be visible from a public street, pedestrian thoroughfare, or open space via breaks in the building line for driveways and pedestrian entries. Landscape buffers between the street and the parking area should allow visibility into the carpark, maintaining a clear view at eye height below the canopy of shade trees planted in the buffer.
- Ensure car parking areas are lit at night to applicable standards.

4.11 SUBDIVISION

4.11.1 Subdivision application requirements

Subdivision applications will need to demonstrate compliance with the PSP, having regard to the size and purpose of the subdivision, particularly key elements such as road cross sections, drainage requirements, native vegetation, cultural heritage, lot size and access type and locations and be in accordance with the built form elements above (in terms of building envelopes and access configuration).

Significant technical work has been undertaken in preparing the PSP to ensure the proposed traffic, infrastructure and drainage strategies will adequately serve the site at full development. The PSP technical reports will need to be referred to when preparing applications. Interim development applications will need to develop drainage solutions and catchment strategies that reflect the ultimate catchment strategy. Temporary solutions will need to be negotiated with CoGG on a case by case basis.

An application report will need to be lodged with any subdivision application detailing its compliance with the requirements of the PSP including proposed layout, design response, building controls, and provision and design of physical infrastructure. The report will need to address other requirements of the Planning Scheme in relation to subdivision.

Indicative stages for subdivision are contained in the PSP (Refer to Section 5). Applications for subdivision should be generally consistent with these stages.

4.11.2 Objectives: Subdivision

Subdivisions should demonstrate compliance with the following objectives:

- To provide for walking, cycling, public transport and cars and trucks in an integrated manner.
- To provide safe and direct movement through and between precincts in the NEIP for pedestrians, cyclists, public transport, cars and trucks.
- To maintain the connectivity of the street and pedestrian network shown in the PSP.
- To maintain the directness of access to the Retail Centre and Local Service Nodes sufficient to maintain a 5-10 minute walkable catchment to the Retail Centre and 2-5 minute walkable catchment to Local Service Nodes.
- To provide the open spaces required under the PSP.
- To maintain directness of pedestrian access to open space in the NEIP and the Barwon River Corridor.
- To ensure that local service nodes are provided generally in accordance with the locations shown on the Figure 4 Future Urban Structure Plan.

Through their implementation they support 3.2 Key Objectives:

- 3, 4, 5, 6, 7 and 8.

4.11.3 Implementation strategies: Subdivision

The objectives for subdivision are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Permissible uses and development controls defined in Schedule 1 to the Urban Growth Zone (UGZ1): North East Industrial Precinct.
- Planning and design guidelines in this element.

4.11.4 Planning and design guidelines: Subdivision

The following provisions of the Greater Geelong Planning Scheme must be taken into account where relevant:

- Clause 56.03 Liveable and sustainable communities
- Clause 56.04 Lot design
- Clause 56.05 Urban landscape
- Clause 56.06 Access and mobility
- Clause 56.07 Integrated water
- Clause 56.08 Site management
- Clause 56.09 Utilities
- Subdivisions should meet the objectives of Clause 56.06 of the Greater Geelong Planning Scheme as relevant for the design of an industrial and employment precinct having regard to the need to accommodate truck movements within the local street network while meeting other connectivity objectives.

The following planning and design guidelines *must* be met:

- Each lot must be connected to a reticulated recycled water supply system (where connected to the lot) for toilet flushing and garden watering.
- Demonstrate delivery of the NEIP Road Network Plan and supporting road cross-sections (Refer Appendix 6) and all elements of NEIP Public Transport, Walking and Cycling Plan (Figure 9) as they apply to the subject land over which the application is made.
- A masterplan for public open space to be transferred to Council must be prepared to the satisfaction of Council.

4.12 TRANSPORT AND MOVEMENT

The PSP aims to deliver a high density employment precinct that is highly accessible via public transport, walking and cycling.

The NEIP is located within 600m of the Marshall train station and has direct bus access via Barwon Heads Road. While future planning for bus routes in Armstrong Creek is currently un-resolved with the DoT, the PSP proposes a road network that will support bus access and movements.

It is proposed that Tannery Road will act as a key bus route, providing direct access to the central activity node and high job density areas.

The proposed Tannery Road bus route will also provide direct connections with Marshalltown Road in the west and the Marshall Station improving overall accessibility by sustainable transport modes.

The PSP proposes a hierarchy of walking and cycling networks. Pedestrian paths are integrated into each road cross section to provide a permeable pedestrian network through the site. A major pedestrian and cycle network is proposed for the precinct's primary road network, and major access and circulation routes (refer Figure 9), providing a high level of direct commuter access to key land uses within a shared path system. A minor pedestrian and cycle network is also proposed for the key local streets, providing total coverage of the precinct by these modes.

On-street bicycle lanes are provided along major roads abutting the site and within the NEIP itself including:

- Barwon Heads Road
- EWLR
- Keystone Avenue
- Gateway Avenue
- the Loop Road.

An off -road shared bicycle and pedestrian path is provided along Tannery Road in the form of a 3.0m path. This will also provide access to recreation activities along the Barwon River.

To maximise walking by employees within the precinct, the PSP has been designed utilising 'walkable neighbourhood' principles. The centrally located activity node will provide access to over 50% of the precinct within a 400m walkable catchment (5 minutes), and the balance of the site will be able to access this area within a 10 minute walk. This is critical to delivering the precinct's sustainability vision. The public transport, walking and cycling plan is contained in Figure 9.

FIGURE 9: NEIP PUBLIC TRANSPORT, WALKING AND CYCLING PLAN.



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries

NEIP External

- Envirotrack
- Pedestrian & Cycle Path

NEIP Internal

- Pedestrian Paths & Off-Road Cycle
- Pedestrian Paths & Cycle Lanes
- Pedestrian Paths Only
- Cycle Lanes Only
- Retail Centre
- Transit Ready Streets
- Indicative Bus Stop Location

PSP Road Network

The PSP road network is clearly defined and provides a high level of accessibility and integration with the surrounding road network. The road network provides for direct and clear access to all properties.

The road network is illustrated in Figure 10.

The internal road network includes the following key features:

- Keystone Avenue and Gateway Avenue Entry Roads – major entry road from both Barwon Heads Road and the EWLR.
- Loop Road – A ring road providing a priority route circulating the site, in particular supporting larger commercial vehicles.
- Keystone Avenue – A central spine providing access to the Village and Retail Centre.
- Tannery Road – An east-west spine road providing access to the village centre and connecting to Marshalltown Road for efficient bus connections.
- Local Streets – Other streets that provide direct access to individual properties will also be provided, however are not generally shown in the PSP layout at present, and will be resolved as part of future subdivision layout.
- Sparrowvale Road (section between Keystone Avenue and Tannery Road) – Service street providing for vehicle movements, parking on the eastern side of the street, pedestrian movements and a continuous system of rain-gardens along the wider western verge of the street (driveway crossovers are permitted).

The external road network includes the following key features:

- Barwon Heads Road / Keystone Avenue (signalised intersection)
- EWLR / Gateway Avenue (signalised intersection)
- Barwon Heads Road / Secondary site access (unsignalised intersection)
- Barwon Heads Road / Tannery Road / Marshalltown Road / the Horseshoe Bend Road (unsignalised intersection), provide access for Public Transport only.

Road Hierarchy

The NEIP will be accessible via a main signalised intersection on Barwon Heads Road and the new Keystone Avenue. Keystone Avenue will be a key collector road that will establish a sense of entry to the business park and create a desire line that filters vehicles directly into the heart of the specialised activity centre. This entrance road will be designed to maximise exposure to Barwon Heads Road. This will be a fully signalised intersection.

Service roads will be located on Barwon Heads Road providing one way traffic movements and left in/left out access in accordance with the VicRoads Access Management Policy. These service roads will create a perceived sense of direct frontage for uses located along this interface within a managed road network that will avoid any impact on traffic flows on Barwon Heads Road.

In addition to the key access road, external access to the site will be provided in the south via connections to the EWLR, and potentially at the intersection of Tannery Road and Barwon Heads Road. As Tannery Road is outside of the precinct, the timing and delivery of an appropriate standard intersection in this location is uncertain. As such, the PSP proposes a left in/left out un-signalised intersection at this location providing access for public transport only (not commercial or associated vehicles).

A key element of the road network is the Loop Road which forms a 'ring' around the core of the precinct. This route enables separation of heavy vehicle circulation from the more pedestrian focussed areas inside the loop road. It thus ensures overall efficiencies without impeding movements of any user groups.

A series of key local roads provide the key north south and east-west connections through the precinct for local traffic. These local roads connect with the Loop Road enabling a high level of permeability and ease of movement through the precinct. Street and intersection design have been considered carefully to manage local road intersections with the Loop Road, and with all the proposed collector roads.

FIGURE 10: NEIP ROAD NETWORK PLAN



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Existing Easements
- Road Acquisition
- (1) East West Link Road
- (2) Barwon Heads Road
- (3a) Gateway Avenue Entry section
- (3b) Gateway Avenue Main Street section
- (4) Loop Road
- (5) Local Access Only (Buses Accepted)
- (6a) Service Road Barwon Heads Road
- (6b) Service Road E-W Link Road
- (7a) Keystone Avenue Entry section
- (7b) Keystone Avenue Main Street section
- (8) Tannery Road
- (9a) Local Road - Industrial
- (9b) Local Road - Campus Business
- (10) Sparrowvale Road (service road & water treatment corridor)
- Existing Tannery Road
- A Intersection Designation (Refer to Table 23)

TABLE 12: NEIP SITE INTERSECTION DETAILS

	Intersection Details
A: Barwon Heads Road / Keystone Avenue	Signalised T intersection with Barwon Heads Road. Midway between Tannery Road and Reserve Road. Spaced approx 550m from Reserve Road and 650m from Tannery Road. Intersection could include a western approach to create a cross intersection and connect to the adjacent residential precinct.
B: East West Link Road / Gateway Avenue	Locate approximately 600m from Barwon Heads Road Achieve an alignment similar to the existing Sparrowvale Road alignment. Provide for potential southern approach with the adjacent Horseshoe Bend Precinct.
C: Barwon Heads Road / Secondary Access Road	The secondary access is located midway between Tannery Road and Keystone Avenue. Signalised T intersection catering for left in and left out movements only.
D: Service Roads	Provide along the Barwon Heads Road frontage. Provide one way traffic movements and left in/left out access to Barwon Heads Road.
E: Barwon Heads Road / Tannery Road / Marshalltown Road / Horeshoe Bend Road	Provide public transport access only. Continue to provide for local residential traffic until the NEIP fully transitions.
F: Loop Road / Keystone Avenue	Intersection to operate as a roundabout. Two lanes required on each leg of the roundabout.
G: Loop Road / Gateway Avenue	Intersection to operate as a roundabout. Two lanes required on each leg of the roundabout.
H: Loop Road / Tannery Road (West)	Potential long term signalised intersection.
I: Loop Road / Tannery Road (East)	Un-signalised intersection. Priority to Loop Road.
J: Loop Road / Sparrowvale Road	Un-signalised intersection. Priority to Loop Road.
K: Loop Road / Keystone Avenue	Un-signalised intersection. Priority to Loop Road.
L: Tannery Road / Keystone Avenue	Un-signalised intersection. North South Priority.
M: Tannery Road / Sparrowvale Road	Un-signalised intersection. Priority to Tannery Road.
N: Keystone Avenue/Gateway Avenue	Un-signalised 'T' intersection. North-South Priority.

East West Link Road (EWLR)

As discussed previously, the EWLR will be an arterial road that serves the growth area and beyond. An 80m road reserve is required for the EWLR. The EWLR is proposed to have an 80km/h speed limit including on-road bicycle lanes with signalised intersections at regular intervals.

It is proposed that Gateway Avenue will intersect with the EWLR. A signalised pedestrian intersection will be provided at this point, enabling connection to the Horseshoe Bend Precinct to the south and a potential traffic connection via a possible south leg of the intersection. These details are to be resolved in the detailed design with VicRoads. This work will also determine the status of the interchange at the Barwon Heads Road/Reserve Road intersection.

The ACUGP indicates the requirement for allowance for an ultimate grade separated interchange at this intersection. The agreed reservation provides allowance for such an intersection. The exact location of on and off ramps and any modelling of this intersection will need to be further designed by VicRoads at such time as the grade separated interchange is required.

In the interim, a local road will be required to be provided in the EWLR reservation. An intersection is proposed as part of this local access function at Gateway Avenue, approximately 710 metres from Barwon Heads Road. This intersection will be located to achieve a similar alignment to the existing Sparrowvale Road alignment which is indicated in the ACUGP as operating as a major access point for the NEIP.

The agreed alignment of the EWLR is identified in the Figure 4 Future Urban Structure Plan.

Traffic Generation and Distribution

Based on the proposed land uses it is forecast that the road network will support in the order of 32,000 vehicle movements per day. The predicted daily traffic volumes are not expected to exceed 15,000 per day. The road network has been appropriately designed to accommodate for this level of traffic and to cater for the distribution of traffic as modelled by GTA Consultants as part of the structure planning process.

Traffic volumes along the Loop Road are not expected to exceed 10,000 vehicles per day, while traffic volumes along other internal roads would not be expected to exceed 7,500 – 5,000 vehicles per day. These traffic volumes are well within the road capacity of 18,000 vehicles per day.

In addition, it is noted that the Loop Road has a three lane carriageway providing a central turning lane along its length ensuring no obstruction is caused by turning traffic to the through traffic movements, further increasing two-way capacity.

Road Cross-sections

Road cross sections have been prepared for the design of the various categories of roads in the precinct. These cross sections vary to the CoGG Integrated Infrastructure Delivery Plan cross sections to respond to the specific needs of commercial and industrial traffic, as well as providing for walking, cycling and public transport movements into and through the site.

4.12.1 Objectives: Transport and movement

The transport and movement objectives are:

- To design a road network that provides for safe and convenient walking, cycling, and public transport.
- To provide direct links to Marshall Station for bus, walking and cycling.
- To provide early delivery of public transport.
- To provide visible and secure bike storage facilities at key public destinations throughout the precinct.
- To provide seating and shade along core walking tracks.
- To provide a road network that supports the business and industrial aspects of the site and is attractive and financially viable for businesses to locate within the precinct.
- To provide sufficient road network capacity through the site and at the key site intersections with the surrounding road network to minimise delays to vehicles accessing the precinct.
- To minimise through movements of traffic on minor streets by providing priority to the loop road at all opportunities.
- To provide legible and efficient connections to surrounding areas and road networks.

Through their implementation they support 3.2 Key Objectives:

- 2, 3, 4, 5 and 8.

4.12.2 Implementation strategies: Transport and movement

The objectives for transport and movement are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Figure 10 NEIP Road Network Plan.
- Table 12 NEIP Site Intersections Details.
- Figure 9 NEIP Public Transport, Walking and Cycling Plan.
- The Road Cross-sections included in Appendix 6.
- Provision of transport infrastructure and services indicated in the transport plans and set out in the North East Industrial Precinct Development Contributions Plan and the Precinct Infrastructure Plan in Section 6.
- Planning and design guidelines in this element.

4.12.3 Planning and Design Guidelines: Transport and movement

The following planning and design guidelines *must* be met:

- Develop a public transport ready precinct.
- Provide bus routes and stops in accordance with Figure 9 Public Transport, Walking and Cycling Plan and in consultation with the Department of Transport to provide maximum accessibility by public transport.
- Provide bus access only from the western end of Tannery Road outside the NEIP precinct boundary.
- Provide internal walking and cycling networks in accordance with Figure 9 Public Transport, Walking and Cycling Plan.
- Provide regional walking and cycling networks in accordance with Figure 9 Public Transport, Walking and Cycling Plan (this will include the Barwon River proposed pedestrian/bike trails; and regional E-W connections).
- Design shared pathways/walking and cycling routes in accordance with the Road Cross-sections in Appendix 6.
- Construct the road network in accordance with Figure 10 NEIP Road Network Plan and Table 12 Site intersection Details.
- Design roads in accordance with the Road Cross Sections contained in this element and the Table 12 NEIP Site Intersection Details.
- Provide intersections in accordance with the NEIP Site Intersection Detail Table 12.
- Set land aside for the EWLR in the location designated in the Figure 4 Future Urban Structure Plan.

The following planning and design guidelines *should* be met:

- Whilst no definitive local road network is established for the NEIP beyond that reflected in the Road Network Plan, include the following general principles for its design:
  - Road cross sections in the order of 12.6m carriageways within a 23m road reserve (approx) are considered to be reasonable to cater for commercial vehicle movements.
  - Certain areas of the NEIP not required for commercial vehicles may be designed with a smaller carriageway in the order of 7.0-10.6m depending on the provision of on-street parking.
  - Minimise any constraints from a sight distance perspective to the locating of local access road intersections to the collector road network.
  - Rear lane vehicular access in Precinct 6.

4.13 OPEN SPACE

The PSP proposes a network of open space including public parks, passive recreation areas and more formal active recreation areas.

The PSP proposes to provide passive open space in the order of 3.07% of the total developable land area. In addition to this, the NEIP will provide access to land outside of the precinct in the Barwon River Floodplain as part of a master planned regional open space network.

TABLE 13: PASSIVE OPEN SPACE (POS) LAND USE BUDGET

NEIP – Passive Open Space Budget			% of NEIP
1	**Gross Area**	**178.37 ha**	
2	**Passive Open Space**	**5.47 ha**	**3.07%**
2.1	Plazas	0.39 ha	0.22%
2.2	Parks	5.08 ha	2.85%

** Passive open space accounts for unencumbered land only.*

The PSP seeks to deliver a high amenity employment node that meets the needs of the range of businesses and employees located in the precinct.

A series of local parks are proposed throughout the precinct that will provide space for people to meet and engage in informal recreation.

The Village, Village Frame and Retail Centre will include more urban public open space areas that will be located within walking distance of most employees. These spaces will be integrated with the surrounding uses and will be designed to maximise solar orientation and will be well landscaped to enhance overall amenity.

A more formal open space is proposed in the northeast of the precinct to utilise an existing green space at the locally significant Sunnyside site. The proposed 'homestead park' will create a passive recreation asset in the campus business area of the NEIP and will be utilised formally for social gatherings, functions and organised activities.

Whilst outside of the precinct, the NEIP will take advantage of access to the environmental assets of the Barwon River corridor. The PSP proposes a network of open space and access options to improve the overall quality of this space and integration with the precinct where possible. The future management and evolution of these options will need to be resolved with the CCMA, Parks Victoria, DSE and Council. In the short term, and based on land contained within the precinct, the PSP proposes the creation of potential through streets to allow for pedestrian access to the river banks once improvement details have been resolved. Development will be required to have a positive interface to the River and should be designed consistent with the cross sections in Figures 6 and 7.

Urban plazas are also provided in the Industry, Mixed Industry and Business, and Campus Business precincts (Precincts 1, 2 and 3) and form the basis of the proposed local service nodes. These urban spaces will act as destinations in their own right and provide for passive recreation opportunities and act as a meeting space. This will be a flexible open space that can achieve multiple objectives such as gathering, fundraising, informal recreation, etc.

These plazas will generally be hard surfaced spaces that will contain seating, strong landscaping and urban art to assist create a sense of place. The plazas will compliment the green open space offer in the overall NEIP. These are important localised place-making elements and will provide for a multifaceted open space typology across the NEIP to cater for the range of demographics.

In addition to formal open space areas, the PSP proposes a green street network and introduces a landscape hierarchy across the precinct to improve amenity and assist with overall way finding. This landscaping will enhance the walking & cycling networks provided within the road network.

4.13.1 Objectives: Open Space

The open space objectives are:

- To provide passive open space that is easily accessible and well distributed and connected across the precinct.
- To provide various forms of open space to improve interest and use and allow the open space to be responsive to the development precinct in which it is located.

- To provide landscaping treatments throughout the precinct that maximise amenity.
- To provide design legibility through spatial design and detailing.
- To provide green relief through the development, within the open space and park areas and along streets.
- To provide future pedestrian and cycle access to the Barwon River Corridor.

Through their implementation they support 4.2 Key Objectives:

- 4, 7 and 8.

4.13.2 Implementation strategies: Open Space

The objectives for open space are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Figure 11 NEIP Open Space Plan.
- Table 13 NEIP Passive Open Space Land Use Budget.
- Planning and design guidelines in this element.

4.13.3 Planning and design guidelines: Open Space

The following planning and design guidelines *must* be met:

- Unencumbered public open space must be provided generally in locations specified in Figure 11 NEIP Open Space Plan.

Unencumbered public open space is subject to equalisation. Each property owner in the North East Industrial Precinct must provide land or cash-in-lieu equal to 3.07% of the net developable area of the North East Industrial Precinct at a pro-rata rate equivalent to the net developable area of that property. Figure 11 and Appendix 7 of the North East Industrial Precinct, Precinct Structure Plan provide jointly the relevant details for each property. A property with greater than 3.07% unencumbered public open space will receive compensation for the value of the land above 3.07%. A property with less than 3.07% unencumbered public open space will be required to pay cash-in-lieu equal to the value of the land less than 3.07%

- A developer may elect to provide unencumbered public open space in addition to that shown on Figure 11 and Appendix 7 but it will neither be included in nor affect the equalisation scheme. It must be provided and embellished entirely at the cost of the developer.
- Design open spaces according to Crime Prevention by Environmental Design (CPTED) Principles to ensure user safety.
- Design open spaces to allow surrounding development to overlook the open space.
- Design open spaces to convey a character appropriate to the development precinct they are located in.
- Accommodate water treatment areas into the design of the open space as an amenity asset, where shown on Figure 11 NEIP Open Space Plan.
- Provide a water tapping for recycled and potable water
- A building which is to be connected to a potable water supply must also be connected to a reticulated recycled water supply for toilet flushing and garden watering.
- A masterplan for public open space to be transferred to Council must be prepared to the satisfaction of Council.

Guidelines for Specific Types of Open Space:

The following planning and design guidelines *must* be met:

Homestead Park:

- Prepare a contamination report and undertake mitigation works prior to ownership being handed over to the City of Greater Geelong.
- Provide for active recreation areas such as an AFL/ cricket oval, based upon the existing informal oval.
- Provide a formal, heritage themed landscape setting for the existing homestead 'Sunnyside'.
- Provide a range of landscape areas suited to a range of activities including: small social gatherings; larger group functions; active recreation such as cycling, informal AFL and cricket matches and; lunchtime seating in small groups.
- Provide interpretive elements conveying the past uses, features and history of the area.

Local Parks:

- Provide smaller parks within the urban fabric for recreation, passive open space and green relief. These spaces shall provide areas suited to small to medium group functions, lunchtime seating, and some informal smaller scale active areas.

Urban Parks/Plazas:

- Provide a high quality hardscape environment including seating, paved thoroughfares, sculpture and water features.
- Provide civic and cultural spaces at appropriate scales, according to the size of the plaza.
- Provide a well designed urban gathering space for informal and formal social opportunities.
- Enhance pedestrian movements and safety through traffic calming and compliance with applicable standards for equitable access.
- Provide open lawn spaces for informal seating where appropriate to the scale of the Park/Plaza.

EWLR Drainage Corridor / Linear Park:

- Establish a linear park incorporating water treatment and flood storage areas as required in the Flooding and Drainage element of the PSP.
- Provide a shared pedestrian and cycle path as required in Element 4.12 Transport and Movement of the PSP.
- Provide landscaping of the corridor that supports its flooding and drainage functions, provides visual amenity for the shared pedestrian/ cycle path and is capable of completely screening the built form of adjoining development precincts when viewed from the East West Link Road.
- Design landscape treatments in order to maintain visibility/ passive surveillance of the shared path from the service road.

The following planning and design guidelines *should* be met:

Homestead Park:

- Maintain a heritage character through formal landscape design, for example: strong tree lined pedestrian axes and the use of Phoenix palms.
- Encourage a landscape character of rolling lawns and formal gardens, including interpretive elements.

Local Parks:

- Incorporate public art into park design where possible.
- Design local parks so that they are integrated with local service nodes where applicable such that the park functions as an extension of the circulation and outdoor dining areas of the node.

FIGURE 11: NEIP OPEN SPACE PLAN



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Area subject to 100 Year Flood Event
  Development of area is subject to offset. Flood storage to be determined subject to detailed design
- Priority Tree Lined Streets - Major Vehicle Circulation
- Priority Tree Lined Streets - Major Pedestrian/Cycle
- Local Tree Lined Streets

Unencumbered Open Space

- NEIP Parks
- NEIP Urban Park/Plazas
- Local Node/Private Plaza

Encumbered Open Space

- Barwon River Riparian
- Other Encumbered Open Space

4.14 BIODIVERSITY

The biodiversity assessment revealed that there is negligible native vegetation in the NEIP area. As a first principle, the PSP proposes to avoid any loss of native vegetation in the NEIP. However, due to the agreed alignment of the EWLR some native vegetation will be required to be removed. The Armstrong Creek North East Industrial Precinct Native Vegetation Precinct Plan illustrates the proposed retention, loss and off-set areas in the NEIP.

An off-set area is proposed immediately north of the precinct boundary, near the proposed rehabilitated dam.

A Biodiversity Plan, including Native Vegetation Precinct Plan, has been prepared for the PSP area. A Conservation Management Plan has been prepared to manage habitat requirements in the PSP area.

Land within the Barwon River floodplain that will be affected by the precincts proposed drainage outfalls has been subject to a native vegetation assessment and habitat hectare calculation (Refer to Barwon River Floodplain Assessment Report, August 2009, Ecology Partners). Where possible, the location of these outfalls has minimised vegetation loss. Any loss of vegetation as a result of drainage outfalls is proposed to be off-set within the Barwon River corridor.

The development of the NEIP is to be in accordance with the requirements of the Native Vegetation Precinct Plan (NVPP) and the Conservation Management Plan (CMP) set out below.

4.14.1 Biodiversity Plan

The Biodiversity Plan sets out the biodiversity vision for the Precinct. The Biodiversity Plan uses information from the flora and fauna background technical reports for the Precinct (Ecology Partners Keystone Business Park Precinct Structure Plan Technical Background Report: Flora and Fauna August 2008 and Keystone Business Park Precinct Structure Plan Technical Background Report: Flora and Fauna values within the adjacent Barwon River floodplain September 2009), and negotiated outcomes with the Department of Sustainability and Environment (DSE) and the City of Greater Geelong (CoGG), to develop actions required within the NEIP Precinct Structure Plan (PSP) to protect biodiversity. The Biodiversity Plan also includes the Native Vegetation Precinct Plan (NVPP).

The following Figure 12: NEIP Biodiversity Plan, which maps existing biodiversity values within and adjoining the Precinct, indicates there are no agreed biodiversity protection and enhancement measures located within the Precinct, as the majority of the Precinct has been modified from its original condition, and the vegetation is now dominated by introduced flora species, and planted windrows and gardens. However, as identified in the NVPP, immediately adjacent to the Precinct a revegetation off-set site is proposed and all of the remaining native vegetation within the Barwon River floodplain is proposed to be retained, post-construction of the drainage structures (see the Planning and Design Guidelines below).

4.14.2 Native Vegetation Precinct Plan (NVPP)

The purpose of the NEIP Native Vegetation Precinct Plan is to:

- Specify the native vegetation to be protected and the native vegetation that can be removed, destroyed or lopped;
- Ensure that areas set aside to protect native vegetation are managed to conserve ecological values in accordance with the NEIP NVPP and NEIP PSP;
- Ensure that the removal, destruction or lopping of native vegetation specified to be protected is consistent with conserving the ecological values of these areas and is in accordance with the three-step approach to net gain as set out in Victoria's Native Vegetation Management – a Framework for Action 2002.
- Set out the works or other necessary actions required to off-set the removal, destruction or lopping of native vegetation.
- Streamline the planning approvals process through a landscape approach to native vegetation protection and management.

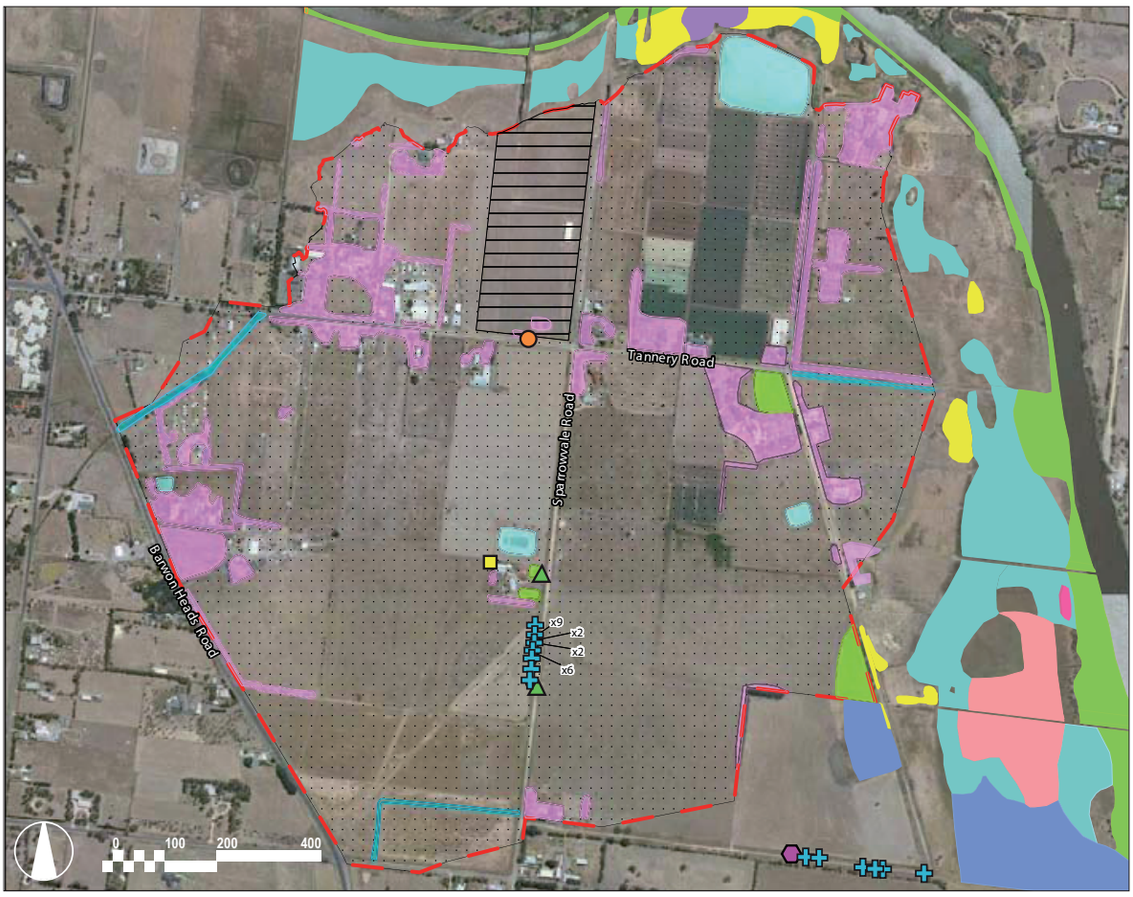
The Armstrong Creek North East Industrial Precinct – Native Vegetation Precinct Plan (May 2010) is an incorporated document in the Greater Geelong Planning Scheme.

4.14.3 Armstrong Creek North East Industrial Precinct Growling Grass Frog Conservation Management Plan (CMP)

The Armstrong Creek North East Industrial Precinct Growling Grass Frog Conservation Management Plan (CMP) has been prepared in response to recommendations outlined in the previous targeted survey report undertaken by Ecology Partners within the study area and from discussions with DSE. The CMP provides detailed information relating to the conservation and future management of the Growling Grass Frog, as a precautionary measure, to ensure the species can persist within suitable habitats, such as the Barwon River and floodplain in the future. A monitoring program is also proposed in the event that the species is discovered on-site during any proposed works.

The CMP is an incorporated document in the Greater Geelong Planning Scheme.

FIGURE 12: **NEIP BIODIVERSITY PLAN**



LEGEND

- Black Wattle
- Blackwood
- Golden Wattle
- Hedge Wattle
- Tangled Lignum
- Drain (Artificial)
- Dams
- Non-indigenous tree plantations & gardens
- Areas of scattered and isolated common indigenous flora species, but mostly introduced flora species are present, and therefore these areas do not meet DSE thresholds for native vegetation
- No native vegetation
- No Access
- Study Area
- Brackish Herbland
- Brackish Lignum Swamp
- Floodplain Riparian Woodland
- Plains Sedgy Wetland
- Saltmarsh
- Floodplain Reedbed
- Spiny Peppercress

4.14.4 Objectives: Biodiversity

The biodiversity objectives are:

- To plan for the long term conservation of areas of significant native vegetation and fauna habitat in accordance with the NEIP NVPP.
- To maximise the use of appropriate native vegetation with streetscapes, open space and landscaped areas.

Through their implementation they support 4.2 Key Objectives:

- 4, 7 and 8.

4.14.5 Implementation Strategies: Biodiversity

The objectives for Biodiversity are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Armstrong Creek North East Industrial Precinct – Native Vegetation Precinct Plan (NVPP) (May 2010).
- Armstrong Creek North East Industrial Precinct Growling Grass Frog Conservation Management Plan (CMP) (May 2010).
- Planning and design guidelines in this element.

4.14.6 Planning and Design Guidelines: Biodiversity

The following planning and design guidelines *must* be met:

- Retain and manage habitat features, such as planted introduced species, where appropriate;
- Enhance the habitat values within and surrounding the retained large dam in the north east of the NEIP if retained;
- Encourage the use of local indigenous species into nature strips, passive recreation areas, gardens and stormwater drainage and treatment facilities to reflect local environment/landscape and to augment adjacent natural areas; and
- Construct, where appropriate, wetlands and establish adequately vegetated and managed buffer strips adjacent to stormwater treatment facilities, which can also provide suitable habitat for fauna species, such as frogs.

The following planning and design guidelines arising from the Biodiversity Plan (including the NVPP and CMP) *must* be met:

General

- Offset any indigenous flora values within the Precinct that are removed.
- Offset native vegetation losses incurred for the construction of narrow drainage structures proposed to be located in the adjacent floodplain.
- Create and maintain additional biodiversity values within the Precinct by preparing landscaped/ revegetated areas within scattered parks and nature strips, by creating a revegetation offset site, by creating landscaped drainage reserves, and by managing and minimising any impacts on the farm dam and the adjacent Barwon River floodplain.

Native Vegetation

The scattered shrubs on Sparrowvale Road and Tannery Road will be removed and off-set by revegetation in the proposed off-set site, north of the retained farm dam. The native flora species located within the low-lying area in the south east and within the proposed Homestead Park, are proposed to be off-set by revegetation within the proposed off-set site, north of the retained farm dam.

The thin strips of native vegetation that will be removed from the immediately adjacent Barwon River floodplain for the drainage structures will be off-set by protecting (securing) all of the remaining remnant native vegetation within the floodplain (adjacent to the Precinct).

Flora Species

There were no threatened flora species identified within the Precinct, and the scattered locally common flora species are proposed to be off-set by revegetation in the off-set area.

Fauna Species

There were no threatened fauna species identified within the Precinct. However, habitat for the threatened Growling Grass Frog is present within the study area, and fauna habitat within the farm dam will be enhanced, and stormwater structures will be created to be frog friendly. Further, non-native habitats, such as planted trees and shrubs, will be retained, where appropriate.

Conditions and Requirements for Subdivision, Buildings and Works Permits

Prior to the certification of plans of subdivision, Off-set Management Plan/s must be prepared, to the satisfaction of DSE and CoGG, off-setting all of the agreed losses of indigenous flora species. All flora species planted within the drainage reserves and passive recreation areas must be indigenous to the local area.

All recommendations outlined in the NEIP PSP Growling Grass Frog Conservation Management Plan (Ecology Partners, May 2010) must be incorporated into stormwater and drainage infrastructure, particularly if Growling Grass Frogs are located within the Precinct.

Impacts on native vegetation and fauna habitat within the immediately adjacent Barwon River floodplain should be minimised. Where native vegetation losses and fauna habitat are proposed (i.e., the proposed drainage structures), Off-set Management Plan's, to the satisfaction of DSE and CoGG, must be completed, and all of the remaining native vegetation must be retained and protected. If significant fauna habitat, particularly fish and frog habitat, is disturbed within the Barwon River floodplain during and after construction, appropriate investigation, monitoring, and salvage (if required), must be undertaken.

Barwon River Corridor

Due to the proposed vegetation losses as a result of the location of drainage outfalls in the Barwon River floodplain, there is a requirement to generate an area from the Otway Plain Bioregion for off-sets. At this stage Off-set Management Plans have not been prepared, but the intention is to off-set the proposed vegetation losses by protecting the remaining remnant vegetation, which will also address the like for like criteria.

Based on the current design plans, the populations of the Spiny Peppercress are being avoided and the Growling Grass Frog was not recorded.

A Flora and Fauna Guarantee Act 1988 (FFG) permit is unlikely to be required as the majority of the site is private land, but if there was disturbance to FFG Act listed species, such as the Milky Beauty-heads from road reserves (Brearleys Lane), then an FFG Act permit would be required.

4.15 HERITAGE

Cultural Heritage

Artefacts found in the NEIP are not considered to be in situ. As such, the PSP recommends the salvage and re-location of these sites within an appropriate area determined in consultation with the Registered Aboriginal Party (RAP) and AAV. The PSP proposes to celebrate the local Aboriginal history of this site through public art and interpretive trails across the site. This interpretation will be resolved in consultation with the RAP to ensure a genuine level of interpretation is achieved.

A Cultural Heritage Management Plan (CHMP) will be sought where required under the Aboriginal Heritage Act 2006.

The PSP provides general recognition of these heritage sites and recommends future development proposals have regard to their significance.

European Heritage

The PSP provides general recognition of these heritage sites and recommends that future development proposals have regard to their significance.

4.15.1 Objectives: Heritage

The heritage objectives are:

- To provide an appropriate response to heritage items that responds to the existing policy framework.
- To respect and celebrate heritage or historic items in the precinct.

Through their implementation they support 3.2 Key Objectives:

- 4 and 7.

4.15.2 Implementation Strategies: Heritage

The objectives for Heritage are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Planning and design guidelines in this element.

4.15.3 Planning and Design Guidelines: Heritage

Aboriginal Cultural Heritage:

The following planning and design guidelines *must* be met:

- For proposed construction work that may effect the registered cultural heritage sites: 7221-0933 to 7721-0934 and 7721-0936, due to the low scientific value of these sites the artefacts that make up these sites must be collected, analysed and labelled according to type and province including site numbers and GPS co-ordinates. With the involvement from the RAP applicants within the area, these artefacts should be reburied in appropriate space near the Barwon River.
- For proposed construction work in the rest of the precinct these construction areas must be subject to further investigation through a Cultural Heritage Management Plan for that area.

European Cultural Heritage

The following planning and design guidelines *must* be met:

- Site Cards for the following heritage sites must be lodged with Heritage Victoria by the Proponent of any development works upon land where the site is located:
  - the Australian Tannery Ruins;
  - the Sparrowvale Silo Ruins and Stables; and
  - the Barwonside Tannery Ruins.

4.16 DRAINAGE AND FLOODING

Figure 13 identifies the drainage proposals for the NEIP.

The proposed NEIP development (Keystone Business Park) will increase the impervious area of the site. This increased impervious area will lead to increased stormwater flows and run-off. The stormwater drainage system for the site is designed to convey the 1 in 10 year storm event, with a provision of overland surcharge routes for 1 in 100 year storm events. It is considered that the proposed drainage system, including retardation basins and selected allotment filling will mitigate the need for the "Land Subject to Inundation Overlay" (LSIO) that currently exists within the precinct boundary. As developable areas will be above the 1 in 100 year flood levels, the existing LSIO will be amended as development occurs.

To determine the extent and impact of drainage and flooding on the site, and deliver an appropriate strategy response flood models were created by Water Technology (Flooding Consultant). This modelling and subsequent report detailing the modelling results was produced in collaboration with COGG and the Corangamite Catchment Management Authority (CCMA). This modelling has informed the overall response contained in the PSP.

Retarding Basins

A runoff routing model (RORB) and discussions with CCMA & COGG were used to determine that two (2) retarding basins are required to be provided for the NEIP.

It was concluded from the modelling and discussions with the CCMA that due to the proximity of the site to the Barwon River retardation of flows on-site during flood events would not be of great flood mitigation benefit. It was also concluded that it was more beneficial to allow flows to exit the site before the peak flood of the River arrived adjacent to the site. Flow retardation is hence only provided at two (2) locations in the drainage system.

One retarding basin is located in the north-west corner of the site south of Tannery Road. This retarding basin is required to contain storage of 7,120m3 to cater for the critical 1 in 100 year 2 hour storm event. An area of 1.12 hectares is required for this retarding basin.

The second retarding basin is located south of the proposed EWLR connecting the linear wetland to the outfall channel in Reserve Road. This retarding basin is to contain storage of 4,235m3 to cater for the 1 in 100 year 2 hour storm event. An area of 0.64 hectares is required for this retarding basin.

The southern retarding basin is proposed to be located in open space adjacent to the proposed EWLR south of Gateway Avenue. To allow Gateway Avenue to be extended to the Horseshoe Bend Precinct, the southern retarding basin will be required to be split.

Design of the retarding basins and their outfalls to the Barwon River must be in accordance with the specifications in the 'Drainage Technical Report' Keystone Business Park PSP (August 2009) prepared by Water Technology.

The existing dam in the north east of the NEIP is proposed to be filled by localised run-off however it is not required for stormwater retarding. It is also proposed for incorporating into Public Open Space and provides a suitable habitat for the Growling Grass Frog.

Overland Flow Path

No formal overland flow path is required in the NEIP.

The proposed pipe network is able to convey the peak 1 in 10 year ARI flow without surcharging. Flows from storms greater than 10 year ARI will be conveyed through the proposed street network and bio-retention swales.

WSUD

The pollutants produced by the development will need to be treated onsite to avoid degrading nearby waterways. Water Sensitive Urban Design (WSUD) features have been recommended for the site as they will treat the stormwater from the development before it re-enters the existing receiving waters. WSUD components are a preferred option to treat the stormwater as they limit the need for conventional pipe and drain systems and improve water quality through natural processes.

Water quality treatment of stormwater is achieved using a treatment train of proposed WSUD features. The treatment train includes some or all of the following depending on the catchment:

- Rainwater tanks;
- Bio-retention swales;
- Wetlands;
- Retention basins;
- Rain-gardens.

This type of treatment train is used to progressively detain flows and allow sedimentation and nutrient filtrations to take place.

One wetland is proposed to the north of the EWLR to provide water quality benefits and habitat for the region. This wetland is proposed to become an attractive water feature and should be designed accordingly.

Stormwater Outfalls

Each drainage catchment discharges at the site boundary to the adjacent Barwon River. In order to minimise adverse impacts from these discharges it has been necessary to develop conceptual designs for the outfalls across the floodplain. Analysis of impacts of drainage outfalls into the floodplain has been undertaken by TGM Consultants, Water Technology and Ecology Partners in consultation with the CCMA, CoGG and DSE.

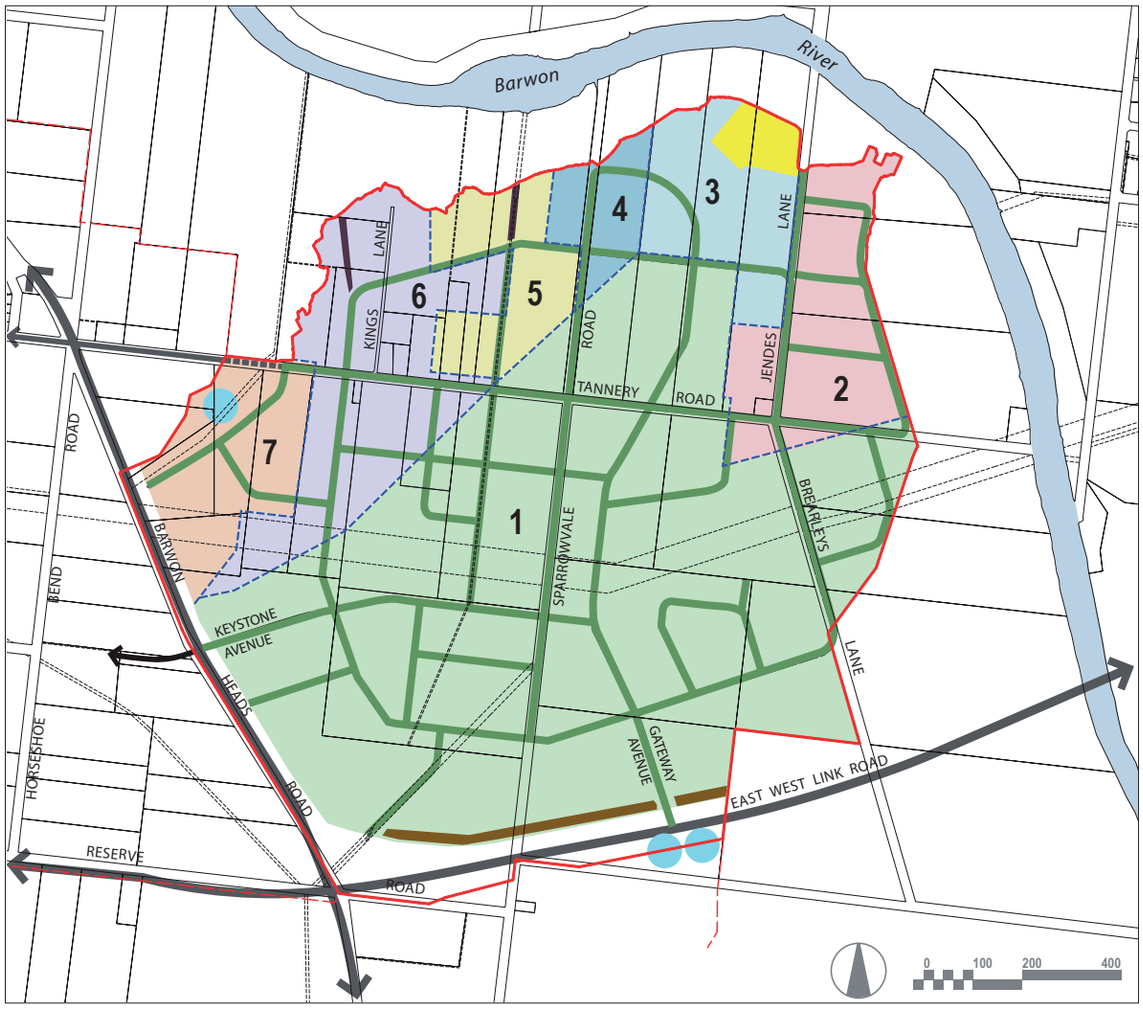
Nine indicative outfall locations have been identified and will be required to be constructed through the floodplain to enable the stormwater to be discharged from the NEIP to the Barwon River.

Each outfall has been designed to incorporate an initial rock chute followed by an open channel. The purpose of the rock chute is to reduce the outfall velocities from the piped drainage system before flow is discharged to the open channel. The open channels have been designed to minimise impacts on the existing topography, flora and fauna and facilitate the staging of the development. Where possible the outfalls impacts on any remnant vegetation, discharging directly to the Barwon River to avoid flooding of any existing salt marsh area. Existing drainage channels have been incorporated into the design, to minimise additional works on the floodplain.

The indicative sizing and treatment necessary for each of the outfalls has been determined based on modelling undertaken by Water Technology, and is contained in Table 14. The design of outfalls and associated swales is contained in the Drainage

Technical Report (August 2009) prepared by Water Technology, and must be complied with.

FIGURE 13: WATER SENSITIVE URBAN DESIGN PLAN



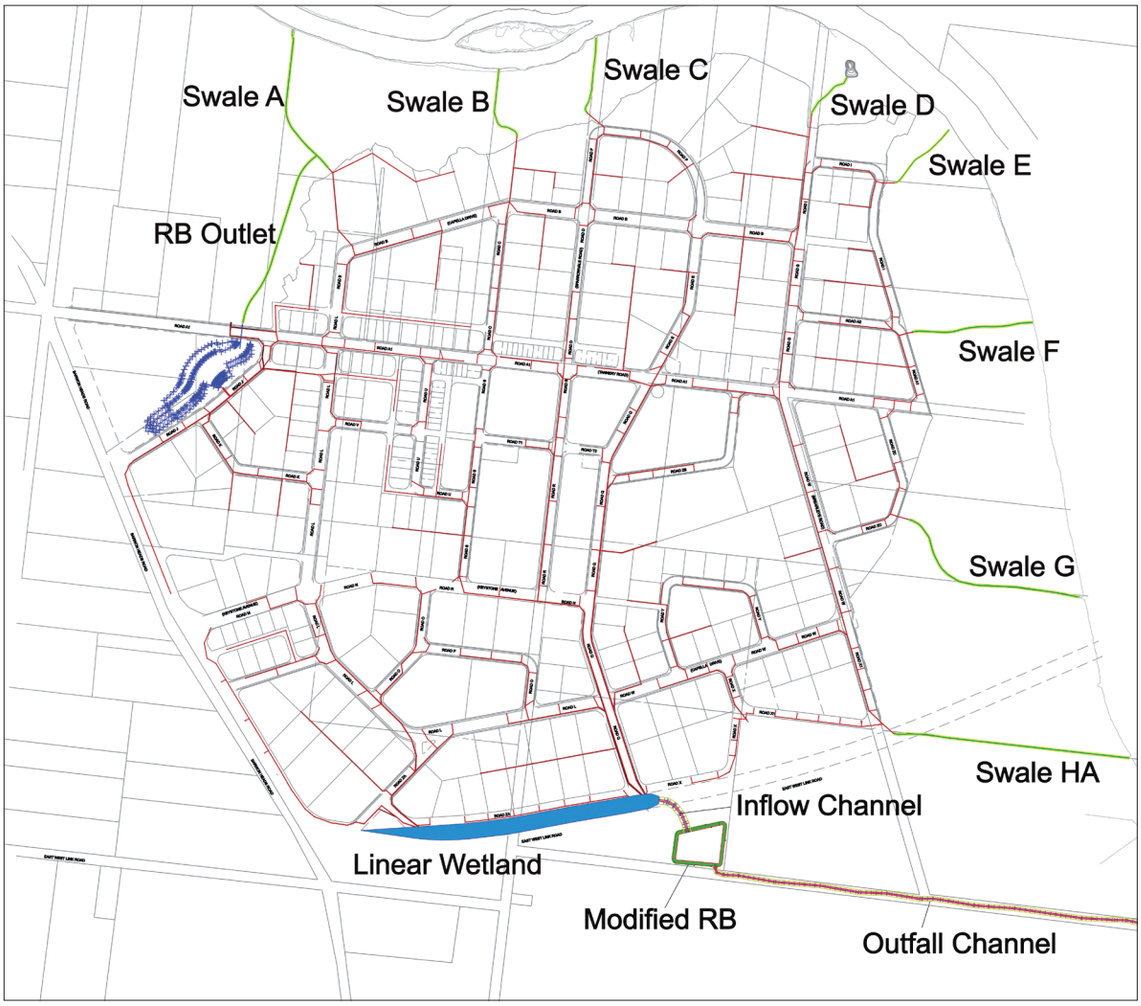
LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Wetland in Drainage Corridor
- Bioretention
- Raingardens (as required)
- Retention Basin
- Subcatchment Boundaries
- 1, 2, 3, 4, 5, 6, 7 — Subcatchments 1 - 7 respectively
- Existing Dam

TABLE 14: INDICATIVE OUTFALL SIZING

Catchment	Chute				Channel			
	Drop (m)	Length (m)	Top Width (m)	Depth (m)	Length (m)	Top Width (m)	Depth (m)	ARI Flow (year)
A	0.2	5.0	5.0	0.2	296	6.4	0.4	10
B	0.3	5.0	4.0	0.2	151	3.4	0.4	10
C	0.4	5.0	4.0	0.2	142	6.4	0.4	10
D	0.4	5.0	5.0	0.2	97	4	0.4	10
E	No chute required – Minimal grade and flow velocity				147	3.5	0.3	10
F					228	4.8	0.5	10
G					391	5	0.5	10
HA – Option 1					460	6.5	0.5	1
HA – Option 2					460	15	0.5	10
HB	0.2	5.0	6.0	0.3	Outfalls to outlet directly into Southern RB			
1A/1B/1C	0.3	5.0	12.0	0.4				
J1A/J1	0.3	5.0	7.0	0.4				
KA/KB (RB Outlet)	No chute required – Minimal grade and flow velocity				359	7.0	0.7	10
Southern RB Inflow					90	18.0	0.5	100
Southern RB Outflow					980	8.0	0.5	100

FIGURE 14: OUTFALL PLAN



4.16.1 Objectives: Drainage and Flooding

The objectives for drainage and flooding are:

- To mitigate the impact of development on waterways and downstream environments.
- To provide a stormwater management system that restricts flows to predevelopment levels.
- To provide retarding basins that allow for ecological functions as well as detention.
- To incorporate WSUD as part of an integrated management system.
- To encourage water reuse throughout the precinct.
- To add amenity to the streets and open spaces of the NEIP through the landscaping of water treatment areas.

Through their implementation they support 3.2 Key Objectives:

- 4, 7 and 8.

4.16.2 Implementation: Drainage and Flooding

The objectives for drainage and flooding are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- Figure13 NEIP Water Sensitive Urban Design Plan.
- Appendix 8 WSUD Typical Verge & Tree Cross Sections.
- Planning and design guidelines in this element.

4.16.3 Planning and Design Guidelines: Drainage and Flooding

The following planning and design guidelines *must* be met:

- Design all drainage and stormwater infrastructure in accordance with the Armstrong Creek Drainage Technical Report (August 2009) prepared by Water Technology and the Stormwater Servicing Strategy contained in the Essential Services Servicing Report, Version 2.4, prepared by TGM Consultants to the satisfaction of the Responsible Authority.
- Design all drainage outfalls into the Barwon River in accordance with the Drainage Technical Report (August 2009) prepared by Water Technology; the Stormwater Servicing Strategy contained in the Essential Services Servicing Report, Version 2.4, prepared by TGM Consultants; and the Native Vegetation Precinct Plan (May 2010) prepared by Ecology Partners.
- Ensure development is consistent with the Armstrong Creek Stormwater Management Policy (February 2009).
- Provide a retarding basin in the north-west of the precinct in accordance with Figure 13. This retarding basin must be designed to incorporate the features contained in Table 15.
- Provide a southern retarding basin and linear wetland along the Reserve Road reserve in accordance with Figure 13. This retarding basin must be designed to incorporate the features in Table 16.
- Incorporate WSUD in the road network as part of the integrated stormwater management system in accordance with typical cross sections contained in Appendix 8.
- Ensure Pioneer Developers develop solutions and catchment strategies that reflect the ultimate catchment strategy.
- Ensure developers design and deliver solutions that reflect ultimate catchment strategies.
- Temporary solutions will need to be negotiated with City of Greater Geelong on a case by case basis.

The following planning and design guidelines *should* be met:

- Ensure revegetation is consistent with the specifications outlined within the Growling Grass Frog Conservation Management Plan (May 2010) prepared by Ecology Partners.

TABLE 15: NORTHERN RETARDING BASIN DESIGN

Spillway Data	
Crest elevation (mAHD)	4.60
Effective length (m)	20.00
Pipe Data	
Upstream invert elevation (mAHD)	3.00
Number of pipes	2.00
Length (m)	35.00
Gradient (%)	1.00
Diameter (mm)	450.00

TABLE 16: SOUTHERN RETARDING BASIN DESIGN

Spillway Data	
Crest elevation (mAHD)	3.00
Effective length (m)	50.00
Pipe Data	
Upstream invert elevation (mAHD)	2.00
Number of pipes	1.00
Length (m)	35.00
Gradient (%)	0.03
Diameter (mm)	750.00
Basin Data	
Peak 100yr ARI Storage Level	2.71m AHD
Peak 100yr ARI Storage Volume	4235.00m^3
Peak Outflow	1.50 m^3/s

4.17 UTILITIES AND ENERGY

Water Supply and Recycled Water

Hydraulic modelling undertaken by Barwon Water has determined that all proposed stages of the NEIP can be supplied with reticulated water from the existing Bellarine Transfer Main in Tannery Road without the need for Stage 1 and Stage 2 of the Bellarine Transfer Main Duplication.

If large water users are attracted to the NEIP this duplication may need to be undertaken earlier. This may be subject to a 'bring forward contribution' in accordance with Barwon Water's Water Plan. Barwon Water has advised that the preliminary upper limit of this cost would be 40% of the 'as constructed cost' of the shared infrastructure.

Barwon Water will provide recycled water from the Black Rock Water Reclamation Plant. Provision of recycled water services to the Armstrong Creek Growth Area will require the construction of a new pump station at Black Rock, approximately 11.5 kilometres away, an 11ML recycled water tank to be located at Mount Duneed and a distribution network within the development.

The planned distribution network involves a dual pipe system, where the recycled water is intended to be used for toilet flushing, garden watering and public open space irrigation.

Barwon Water supports dual reticulation as a key component of sustainable urban development in new areas and would also encourage developers to explore water saving opportunities at the development scale through water sensitive urban design principles.

The PSP proposes to introduce a 3rd pipe across the site and has made provision for pipes that will accommodate the proposed integrated water cycle management options contained in Council's water management plan.

A servicing strategy has been prepared by TGM Consultants, outlining the construction requirements to appropriately service each stage of development (Refer to Background Report: Essential Services Servicing Report, Version 2.4, Sept. 2009). Subdivision applications should be consistent with these requirements.

Sewer

Barwon Water's overall sewerage servicing strategy for Armstrong Creek is to have a number of connections to their existing Southern Outfall Sewer Main that connects Geelong to the Blackrock Water Reclamation Plant (BWRP).

Barwon Water's preference is for a gravity system to be constructed however it is acknowledged that a number of sewerage pump stations will be required where the topography of the land does not facilitate a gravity connection directly to the existing system.

The PSP proposes a sewerage servicing strategy that includes three gravity catchments that drain towards individual pump stations. The sizing and location of these sewer and pump stations will be resolved subject to the final layout, industry type and lot numbers.

Due to the location of the EWLR alignment, the sewer confluence south of Reserve Road will need to be relocated. The sewer confluence currently sits within the future diamond interchange required at the intersection of Barwon Heads Road. Barwon Water has advised that it agrees to the proposed location of the EWLR and agrees to the relocation of the sewer confluence.

The PSP also proposes to extend Sparrowvale Road north of Tannery Road within the old road reserve alignment. Barwon Water purchased this unused road reserve which contains the ovoid sewer. Barwon Water has advised that they are not opposed to the reserve being converted into a road reserve subject to a series of conditions to ensure protection and access to their assets.

Electricity

The precinct contains 220kV overhead transmission line that bisects the precinct in an east-west direction. A minimum 40m easement is required for these powerlines. As these powerlines are beside Powercor 66kV lines they are contained within a total 60m easement.

The PSP will ensure that the easement is maintained and that development does not impact on maintenance access to this easement.

Developments in the NEIP must demonstrate adoption of sustainable energy practices including, as appropriate:

- Good solar orientation and use of thermal mass and insulation to minimize heating and cooling.
- Use of solar hot water where practicable and short pipe runs between hot water services and taps and fittings.
- Use of renewable energy systems where appropriate.
- The incorporation of co-generation (co-gen) or tri-generation (tri-gen) technology where appropriate.

Gas

The precinct will be serviced from a strategic main extended north along Horseshoe Bend Road then east along Reserve Road. SP Ausnet has programmed the connection to the Mt Duneed main for year 2 of its program of works to supply the Armstrong Creek Growth Area with the extension to the NEIP being completed in year 6 of the program.

SP Ausnet has advised that a limited supply can be obtained by connection with existing infrastructure located at the intersection of Marshalltown Road and Barwon Heads Road. Owing to the staging and timing of the development of the precinct, adequate supply will be provided to deliver early stages of the precinct ahead of programmed extensions.

Telecommunications

Providing high speed, uninterrupted connections to telecommunications is integral to the success of the NEIP business community. Telstra have identified that the NEIP has the capability to be a Telstra 'Smart Community' via the upgrade of existing facilities and the utilisation of trenches for cabling. Alternative providers are available for the installation of optic fibre.

4.17.1 Objectives: Utilities and Energy

The objectives for utility and energy are:

- To ensure utility allocations reflect various infrastructure needs within road reserves.
- To ensure capacity of service infrastructure to enable the timely development of the precinct.
- To provide for the use of recycled water within the precinct through the introduction of a 3rd pipe system (reticulated recycled water).
- To avoid adverse impact on the electricity transmission easement and ensure access requirements are maintained.

Through their implementation they support 3.2 Key Objective:

- 8.

4.17.2 Implementation: Utilities and Energy

The objectives for utility and energy are met by implementation of all of the following:

- Figure 4 NEIP Future Urban Structure Plan.
- The planning and design guidelines in this element.

4.17.3 Planning and design guidelines: Utilities and Energy

The following planning and design guidelines *must* be met:

Water Supply

- Provide water service infrastructure.
- Provide infrastructure to the satisfaction of the responsible authority for the delivery of recycled water to each lot.
- Roll out servicing as per the requirements contained in the relevant stage servicing strategy in the 'NEIP Essential Services Servicing Report', Version 2.4, prepared by TGM Consultants, Sept 2009.
- Each building must be connected to a reticulated recycled water supply system for toilet flushing and garden watering where connected to the lot.

Sewer

- Provide adequate Sewerage Pump Stations (SPS).
- Relocate the sewer confluence in accordance with Appendix 9.
- Enter discussions with Barwon Water to ensure the extension of Sparrowvale Road does not impact on the operation and access to the ovoid sewer infrastructure.

Electricity

- Provide power supply to the NEIP via extensions to the existing infrastructure.

Gas

- SP Ausnet will provide the field regulator and a strategic main network through the growth area. Individual developers will be required to provide the reticulation network throughout the precinct.

Telecommunications

- Provide for optic fibre connections in NEIP.

5 DEVELOPMENT STAGING

Development stages have been proposed based on achieving an efficient and effective development pattern. Sequencing of development stages, other than as generally shown in Figure 15 is not proposed in the PSP but will be guided by a series of development principles set out below.

It is important that the initial stages reflect the vision and set the development theme for the entire project. Land with access from Barwon Heads Road will be a prime driver for the location of the initial stages.

Stage 1 will unlock the south-west corner of the NEIP, enabling commencement of construction of the key access road, designation of reservations for the duplication of Barwon Heads Road, and ensure the delivery of a high quality, well presented address to the key frontage of the NEIP in the short term. Access to any new allotment must be via a sealed road.

5.1 OBJECTIVES: DEVELOPMENT STAGING

The objectives for development staging are:

- To provide flexibility in land development and delivery of the precinct without compromising the overall vision.
- To provide core development cells early that seek to establish the development frame for the site.
- To respond to the timing and delivery of infrastructure and upgrades (i.e. Barwon Heads Road widening, EWLR delivery, service infrastructure upgrades etc).

5.2 IMPLEMENTATION: DEVELOPMENT STAGING

The objectives for development staging are met by implementation of all of the following:

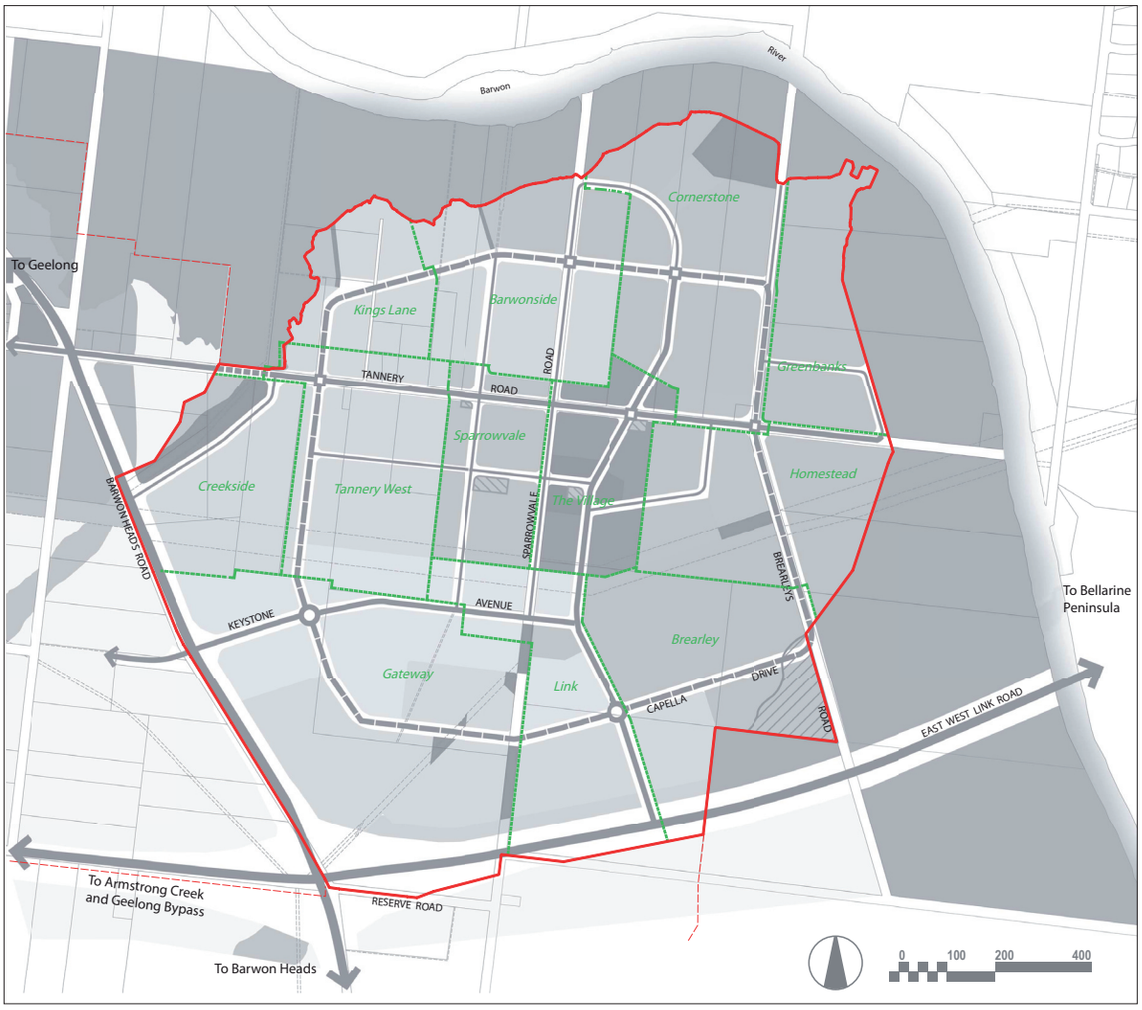
- Figure 4 NEIP Future Urban Structure Plan.
- Figure 15 NEIP Indicative Staging Plan.
- The planning and design guidelines contained in this section.

5.3 PLANNING AND DESIGN GUIDELINES: DEVELOPMENT STAGING

The following planning and design guidelines *should* be met:

- Ensure development stages refers to the indicative staging plan in Figure 15
- Approve development stages in accordance with the following principles:
  - Provision of service infrastructure.
  - Ability to be accessed and connect to the key road network.
  - Development must not unnecessarily disadvantage other stages from proceeding.
  - Ability to deliver the ultimate solutions for drainage.
  - Respect ultimate outcomes of public transport, walking and cycling networks.
- Determine the staging of the ultimate EWLR with VicRoads.
- Sub-stages may occur within each development stage defined in the Indicative Staging Plan, to follow existing land title boundaries. The boundaries of individual sub-stages are to be defined at time of subdivision application.

FIGURE 15: NEIP INDICATIVE STAGING PLAN



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Stage Boundary
- 'Creekside' Stage Name

6 PRECINCT INFRASTRUCTURE PLAN

6.1 DEVELOPER CONTRIBUTIONS

The development of the NEIP will contain a series of infrastructure items which will be shared across the developable area. The cost of these items will be apportioned amongst landowners in the NEIP, forming the basis of a Development Contributions Plan (DCP). All development will be rolled out in line with the requirements of the DCP. In addition to the DCP, infrastructure items that are required to realise the development potential of individual parcels will be the responsibility of those landowners. The NEIP DCP contains details of these infrastructure items.

Tables 17 and 18 contain all infrastructure items required to deliver the PSP. The tables clearly identify responsibility and timing of all items.

6.2 DESIGN GUIDELINES: DEVELOPER CONTRIBUTIONS

The following planning and design guidelines *must* be met:

- Construct roads to property boundaries as early as feasible where inter-parcel connections are indicated in the structure plan.
- Provide access to development via a sealed road approved by the Responsible Authority consistent with Figure 10 Road Network Plan.

TABLE 17: SERVICE INFRASTRUCTURE PROJECTS – INTERNAL TO THE NEIP

Infrastructure Group	Infrastructure Category	Project Title	Project Description	Lead Agency/ Coordinating Agency	Timing S = 2010-2012 m = 2013-2018 l = 2019+
Transport	Primary Arterial Road	Barwon Heads Road	Provision of Land - East Side	Vic Roads	Short Term
		East West Link Connection Road	Provision of Reserve by Developers	Vic Roads	Short Term
			Interim Constrcution (2 lane) by Developers	Vic Roads	Medium Term
			Full Construction	Vic Roads	Long Term
	Local Acesss	Tannery Road	Provision of land	Council	In stages as Development Proceeds
			Reconstuction to full industrial standard	Council	In stages as Development Proceeds
		Sparrowvale Road	Provision of land	Council	In stages as Development Proceeds
			Reconstruction to full industrial standard	Council	In stages as Development Proceeds
		Jendes Lane	Provision of Land	Council	In stages as Development Proceeds
			Reconstruction to full industrial standard	Council	In stages as Development Proceeds
		Brearleys Lane	Provision of land	Council	In stages as Development Proceeds
			Reconstruction to full industrial standard	Council	In stages as Development Proceeds
	Public Transport	Local Bus Network	Creation of routes, construction of bus stops and associated infrastructure	Department of Transport	Medium to Long Term
Social, Sport and Recreation	Neighbourhood Parks	Homestead Park	Acquisition of land	Council	Medium to Long Term
			Development of parkland	Council	Medium to Long Term
		North Eastern Neighbourhood Park	Acquisition of land	Council	Medium to Long Term
			Development of parkland around existing dam	Council	Medium to Long Term
		Neighbourhood Parks	Acquisition of land	Council	In stages as Development Proceeds
			Development of parkland	Council	In stages as Development Proceeds
	Shared Paths		Shared path network	Council	In stages as Development Proceeds
		River Walk Shared Path	Proposed river walking path breakwater to Barwon Heads' eco trail	CCMA/Council/DSE	Medium to Long Term

Infrastructure Group	Infrastructure Category	Project Title	Project Description	Lead Agency/ Coordinating Agency	Timing S = 2010-2012 m = 2013-2018 l = 2019+
Biodiversity	Vegetation Areas	Southern drainage corridor/linear parkland	Provision of land	Council	Short Term
			Landscaping	Council	Medium Term
Utility Infrastructure	Water	Armstrong Creek Feeder Main	300mm diameter connection to Bellarine Transfer Main	Barwon Water	Short Term
			Acquisition of land of pressure reducing valve	Barwon Water	Short Term
		Strategic Main	225mm main extensions from Loop Road to Precinct Boundary	Barwon Water	In stages as Development Proceeds
		Distribution Main	Loop Road 225mm diameter ring main	Barwon Water	In stages as Development Proceeds
	Sewerage	“south east” Sewerage Pump Station	Construction of a Sewerage Pump Station and rising main to service the “south east” catchment	Barwon Water	Short Term
		“north east” Sewerage Pump Station	Construction of a Sewerage Pump Station and rising main to service the “north east” catchment	Barwon Water	Medium Term
		Ovoid Sewer	Removal of abandoned Ovoid Sewer and easement - within allotments	Barwon water	Short Term
			Removal of abandoned Ovoid Sewer - proposed road reserve	Barwon Water	Medium Term
		Outfall Sewer Confluence	Acquisition of Land for Pressure reducing valve	Barwon Water	To match Barwon Water’s timeframes for proposed Outfall Sewer augmentation
			Relocation of sewer confluence to avoid EWLR	Barwon Water	To match Barwon Water’s timeframes for proposed augmentation (Stage 1)
	Storm Water	Southern Drainage Corridor	Construction of southern drainage channel, detention basin and outfall	Council	Short Term
		Storm Water Outfalls and Swale drains	Constuction of outfall drainage works including a pipe network, channels, water retardation and water quality facilities.	Council	In stages as Development Proceeds
		Retention Basin	Constuction of the “north east” retention basin	Council	Long Term

TABLE 18: SERVICE INFRASTRUCTURE PROJECTS – EXTERNAL TO THE NEIP

Infrastructure Group	Infrastructure Category	Project Title	Project Description	Lead Agency/ Coordinating Agency	Timing S = 2010-2012 m = 2013-2018 l = 2019+
Transport	Primary Arterial Road	Barwon Heads Road	Keystone Avenue Intersection with Barwon Heads Road, widening and duplication	Vic Roads	Short Term
			Keystone Avenue Intersection with Barwon Heads Road - intersection upgrade (traffic signals)	Vic Roads	Medium Term
			Duplication - divided road	Vic Roads	Long Term
			Provision of Land - West side	Vic Roads	Long Term
		East West Link Connection Road	Provision of Reserve by Developers	Vic Roads	Short Term
			Interim Construction (2 lane) by Developers	Vic Roads	Medium Term
			Full Construction	Vic Roads	Long Term
	Public Transport	Marshall Railway Station	Upgrade of existing facilities and infrastructure	Department of Transport	Short to Medium Term
Biodiversity	Vegetation Areas	Flora and Fauna	Establishment of new Growling Grass Frog habitat within the open space corridor within the Barwon River flood plain	Council/DSE	-
Utility Infrastructure	Sewerage	“south west” Sewerage Pump Station	Constuction of a Sewerage Pump Station and rising main to service the “north west” catchment	Barwon Water	Long Term
	Recycled Water	Armstrong Creek Recycled Water Scheme	Trunk Mains/treatment plants	Barwon Water	Unknown
	Power	Geelong East Zone Substation	Upgrading of existing east Geelong Substation	Powercor	Long Term
		HV augmentation	augmentation of Barwon Heads Road HV	Powercor	Short Term
		Sub transmission	Sub transmission upgrades 66kV	Powercor	Medium to Long Term
		Zone Substation	Provision of Zone Substations	Powercor	Medium Term
	Gas	NEIP Connection	Connection to low pressure main in Marshalltown Road	Sp Ausnet	Short Term
		Armstrong Creek Urban Growth Supply	Connection to the Mount Duneed high pressure main	Sp Ausnet	Medium Term
	Telecommunications		Extension of existing network	Telecom	Short Term

7 OTHER INFORMATION

7.1 ACRONYMS AND ABBREVIATIONS

AAV	Aboriginal Affairs Victoria
ACEP	Armstrong Creek East Precinct
ARI	Annual Recurrence Interval
BWRP	Blackrock Water Reclamation Plant
CAA	Geelong Central Activities Area
CCMA	Corangamite Catchment Management Authority
CHMP	Cultural Heritage Management Plan
CoGG	City of Greater Geelong
DCP	North East Industrial Precinct Development Contributions Plan
DoT	Department of Transport
DPCD	Department of Planning & Community Development
DSE	Department of Sustainability
EWLR	East West Link Road
FFG	Flora and Fauna Guarantee Act (1988)
FO	Flood Overlay
G21	Geelong Region Alliance
GAA	Growth Areas Authority
LSIO	Land Subject to Inundation Overlay
MUSIC	Model for Urban Stormwater Improvement Conceptualisation
NDA	Net Developable Area
NEIP	North East Industrial Precinct
NVPP	North East Industrial Precinct Native Vegetation Precinct Plan
PSP	Precinct Structure Plan
RAP	Registered Aboriginal Party
RORB	Run-Off Routing model
SIIDP	Social Interagency Infrastructure Delivery Plan, February 2009
ACUGP	Armstrong Creek Urban Growth Plan
UGZ1	Schedule 1 to the Urban Growth Zone
WSUD	Water Sensitive Urban Design

7.2 GLOSSARY

1 in 100 year flood levels /1 in 100 ARI	In relation to land, is the area that may be flooded by the Barwon River topping its bank in a rainfall event that has a 1 per cent chance statistically of occurring in any year or, looking at it another way, is the area that statistically would be affected by such a flood on a once in 100 years average return interval (ARI).
Bio-retention swale	A shallow open rain with vegetation planted within, that conveys stormwater whilst allowing infiltration of the water into the soil and removal of silt and pollutants by the vegetation. It thus plays a role in conveying, reducing and cleaning urban run-off water.
Buffer strips	A planted separation zone around a natural area, water body or stormwater treatment device that provides habitat for fauna.
Building disposition	The way a building is located spatially on an allotment or area of land. This determines a building's proximity to the street and adjoining allotments, and how it relates to vehicle access points, service areas, and on-site carparks.
Building envelope	The maximum area and volume of space that a building may occupy on its allotment, that can be achieved within the boundary setbacks and building height limit designated for that lot.
Co-gen and Tri-gen	Simultaneous production of energy
Collector road	A type of road that collects vehicle traffic from local access streets (a number of local access streets will connect with a collector road) and conveys this traffic to the distributor road system (the network of arterial and larger roads).
Co-location	Locating land uses adjoining each other or very nearby to enable complementary programs, activities and services and shared use of resources and facilities.
Community facilities	Infrastructure provided by government or non-government organisations for accommodating a range of community support services, programs and activities. This includes facilities for education and learning (such as childcare, technical or trade colleges, adult learning centres), health and community services (such as doctors, dentists and specialist health services); community (such as civic centres and libraries), arts and culture (such as galleries, museums, performance space), sport, recreation and leisure (such as public open space, swimming pools and other recreation), justice (such as law courts), voluntary and faith (such as places of worship) and emergency services (such as police, fire and ambulance stations).
Desire line	The most direct or easily navigated route from one point to another (typically for vehicles or pedestrians through a space or urban area to a popular destination).
Developer	The proponent for the proposed development of land or the planning permit applicant for a proposed new land use or development.
Development	Includes: a) the construction or exterior alteration or exterior decoration of a building; and b) the demolition or removal of a building or works; and c) the construction or carrying out of works; and d) the subdivision or consolidation of land, including buildings or airspace; and e) the placing or relocation of a building or works on land; and f) the construction or putting up for display of signs or hoardings.

Development staging	Development of a precinct in defined increments (stages), the order of which is usually decided by the availability and timing of service infrastructure and market demand for a particular type of land use.
Development Contributions Plan	Document that sets out the contributions expected from each proponent to fund infrastructure and services. Refer to Part 3B of the Planning and Environment Act 1987.
Encumbered land	Land within a precinct that is constrained for development purposes by existing road reserves, easements, by drainage reserves (retarding basins, wetlands or drainage corridors), or by planned future road acquisitions.
Encumbered open space	Land for open space that is constrained for development purposes as listed under encumbered land.
Finer grain use	Smaller scale land uses having smaller floor plates, smaller frontages to pubic streets, and thus enabling a continuous line of varied and adjoining building facades with few and narrow breaks between them.
Flood overlay	An area of land designated in the planning scheme as being inundated by flooding by a major waterway.
Floorspace	The floor area of a building or group of buildings measured in square metres
Frontage	The section of property boundary of an allotment that is shared with a public street (and not a lane).
G21 Region	Borough of Queenscliffe, City of Greater Geelong, Colac Otway Shire, Golden Plains Shire, Surf Coast Shire
Integrated infrastructure delivery plan	Planning for timely delivery of infrastructure and services
Job/employment self-containment	The provision of employment areas close to residential areas so that a high proportion of people can work in the local area thus avoiding long commuter trips.
Service Infrastructure	Electricity, telecommunications, water, sewage, and recycled water facilities required to support the development of an area.
Land subject to inundation overlay	An area of land designated in the planning scheme as being inundated by periodic flooding by a minor waterway.
Local service nodes	Refer Section 5.4
Native vegetation precinct plan	A plan relating to native vegetation within NEIP that must be implemented in conjunction with the PSP. The NVPP is incorporated into the Planning Scheme and listed in the schedule to Clause 52.16.
MUSIC (Model for Urban Stormwater Improvement Conceptualisation)	A software tool that simulates the behaviour of stormwater in urban catchments. MUSIC is the preferred tool for demonstrating the performance of stormwater quality treatment systems within the urban areas.
Net developable area	Total amount of land within the NEIP that is made available for development, including allotments and proposed roads. It excludes any encumbered land and unencumbered open space.
Passive open space	Public open space that is set aside for parks, gardens, linear corridors, habitat conservation, natural systems, nature reserves, public squares and community gardens that are made available for passive recreation, play and unstructured physical activity including walking, cycling, hiking, revitalisation, contemplation and enjoying nature.

Place-making	The creation of a new urban area that has a strong sense of place: a positive, appealing and unique character that encourages people to live, work, visit, and conduct business there.
Planning scheme	Greater Geelong Planning Scheme
Public acquisition overlay	An area designated in the planning scheme as being required for future use by a public agency.
Proponent	The proponent for the proposed development of land or the planning permit applicant for a proposed new land use or development.
PSP guidelines	Guidelines for the compilation of Precinct Structure Plans determined by the Growth Areas Authority.
Rain-garden	A small basin to receive urban run-off water that is planted with vegetation and provides cleaning of run-off water by vegetation and infiltration into the soil. Refer figure 35 WSUD Typical Street Tree Cross-sections.
Retarding basin	A basin for temporary storage of stormwater run-off to reduce the load on drains and improve landscape viability.
Service providers	Agencies responsible for provision of electricity, telecommunications, water, sewage, and recycled water infrastructure, its operation and maintenance (e.g. Barwon Water).
Specialised activity centre	Refer Precinct 6 Retail Centre
Walkable catchment	The actual area within a 200m, 400m or 800m direct line distance of a retail centre, local service node, public transport stop or open space. A 200m distance is equivalent to a 2 minute walk, 400m to a 5 minute walk and 800m to a 10 minute walk.
Walkable neighbourhood	An urban area designed to support walking as a viable, convenient, safe and appealing alternative to private vehicle use for carrying out people's daily activities.
Water Sensitive Urban Design	A sustainable water management approach that aims to provide water-quality treatment, flood management to reduce the pollution carried to our waterways and more sustainable urban landscapes. Key principles include minimising water resistant (impervious) areas; recharging natural groundwater aquifers (where appropriate) by increasing the amount of rain absorbed into the ground; encouraging onsite re-use of rain; encouraging on-site treatment to improve water quality and remove pollution and using temporary rainfall storage (retarding basins / wetlands) to reduce the load on drains and improve landscape viability.

7.3 SUPPORTING INFORMATION

- *Armstrong Creek Urban Growth Plan – Volume 1*, May 2008, updated May 2010 (CoGG)
- *Integrated Infrastructure Delivery Plan*, 10 March 2009 (CoGG)
- *Social Interagency Infrastructure Delivery Plan*, February 2009 (CoGG)
- *Civil Interagency Infrastructure Delivery Plan*, February 2009 (CoGG)
- *Phase 1 Contamination and Geotechnical Technical Background Report*, 25 August 2008 (Golder Associates)
- *Armstrong Creek NEIP Development Contributions Plan*, May 2010 (Urban Enterprise)
- *Keystone Business Park - Economics Needs Assessment*, 19 August 2009 (Conics)
- *Keystone Business Park Precinct Structure Plan Technical Background Report: Flora and Fauna values within the adjacent Barwon River floodplain*, September 2009 (Ecology Partners)
- *Keystone Business Park Precinct Structure Plan Technical Background Report: Flora and Fauna*, August 2008 (Ecology Partners)
- *Keystone Business Park Marshall Precinct Structure Plan (Heritage Assessment)*, May 2009 (Terraculture Heritage Consultants)
- *East West Link Road Briefing Paper Assessment of Proposed Final Alignment*, 23 April 2009 (Coomes Consulting Group)
- East West Link Road Briefing Paper Technical Background Reports, April 2009 (Coomes Consulting Group)
- Keystone Business Park Precinct Structure Plan Essential Services Servicing Report Version 2.6, 3 September 2009 (TGM Group)
- Keystone Business Park Precinct Structure Plan Transport Impact Assessment GM17831, 31 August 2009 (GTA Consultants)
- *Transport and Road Network Feasibility Stage Road Safety Audit*, September 2009 (CPG Australia)
- *Drainage Technical Report North East Industrial PSP*, August 2009 (Water Technology)
- *Review of Drainage Technical Report Version V2 Final*, 3 October 2009 (Neil M Craigie).

APPENDICES

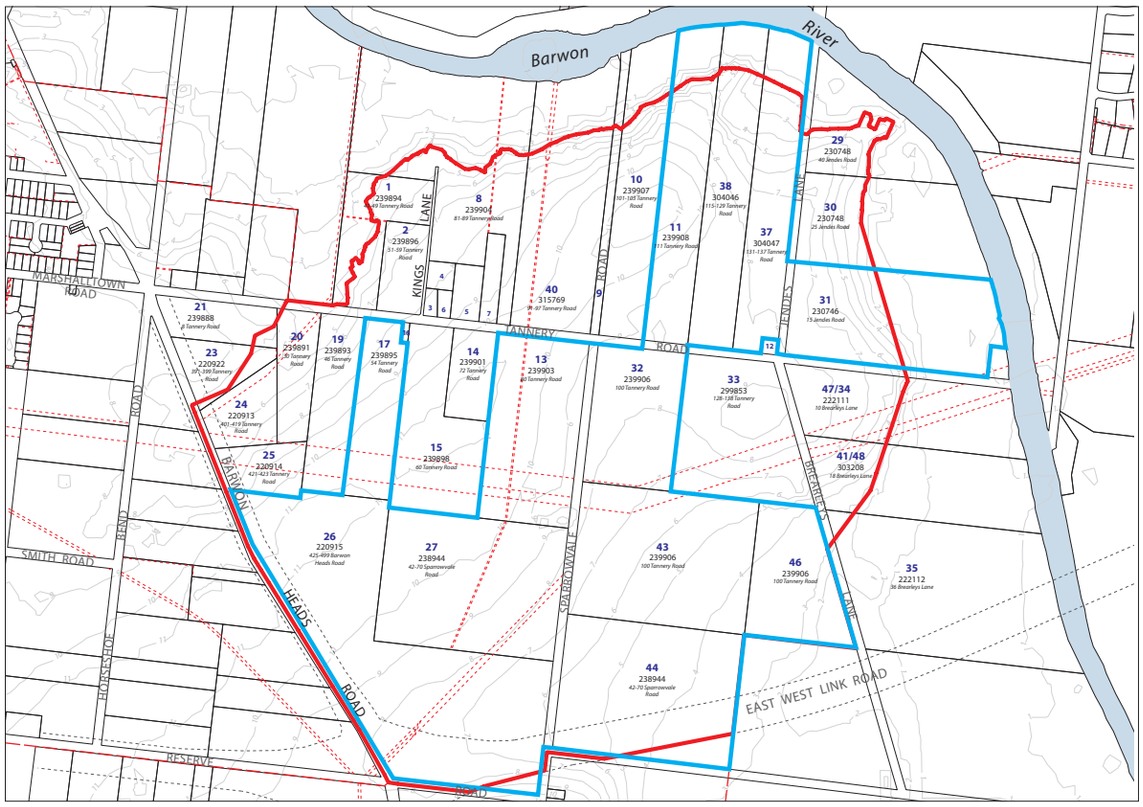
APPENDIX 1
PROPERTY SPECIFIC LAND USE BUDGETS

						PROPERTY LAND U			
						Within NEIP			
Parcel ID	Prop Key	Address	Parcel Area ha	Outside NEIP ha	NEIP Area ha	Road Acquisition # ha	Existing Easements ha	Drainage ha	
1	239894	41-49 Tannery Road	4.048	1.692	2.356		0.006	0.098	
2	239896	51-59 Tannery Road	2.025		2.025			0.017	
3	239899	61 Tannery Road	0.182		0.182				
4	239900	63-67 Tannery Road	0.376		0.376				
5	239900	63-67 Tannery Road	0.817		0.817				
6	239900	63-67 Tannery Road	0.198		0.198				
7	239902	75-79 Tannery Road	0.810		0.810				
8	239904	81-89 Tannery Road	13.800	8.434	5.365		0.035	0.011	
10	239907	101-103 Tannery Road	6.841	1.578	5.263				
11	239908	111 Tannery Road	7.234	1.256	5.978				
12	304048	139 Tannery Road	0.123		0.123				
13	239903	80 Tannery Road	8.693		8.693		1.405		
14	239901	72 Tannery Road	2.022		2.022				
15	239898	60 Tannery Road	6.398		6.398		1.258		
16	239897	58 Tannery Road	0.070		0.070				
17	239895	54 Tannery Road	4.132		4.132		0.667		
19	239893	46 Tannery Road	3.897		3.897		0.592	0.022	
20	239891	30 Tannery Road	2.492	0.022	2.470		0.141	0.400	
21	239888	8 Tannery Road	2.352	2.161	0.192			0.007	
23	220922	391-399 Barwon Heads Road	2.100	1.631	0.468	0.033	0.004	0.190	
24	220913	401-419 Barwon Heads Road	2.304		2.304	0.195	0.575	0.038	
25	220914	421-423 Barwon Heads Road	2.018		2.018	0.206	0.923		
26	220915	425-499 Barwon Heads Road	21.834	0.365	21.469	5.186	0.304	0.865	
27	238944	42-70 Sparrowvale Road	12.328		12.328		0.400	0.104	
29	230748	40 Jendes Lane	5.597	3.888	1.709				
30	230748	25 Jendes Lane	8.100	5.064	3.036				
31	230746	15 Jendes Lane	10.082	5.254	4.828				
32	239906	100 Tannery Road	6.282		6.282		0.206		
33	299853	128-138 Tannery Road	8.265		8.265		1.540		
35	222112	36 Brearleys Lane	14.685	14.475	0.210				
37	304047	131-137 Tannery Road	7.119	1.247	5.872			1.057	
38	304046	115-129 Tannery Road	7.469	1.070	6.400			0.721	
40	315769	91-97 Tannery Road	10.642	2.696	7.946		0.140	0.080	
43	239906	100 Tannery Road	12.119		12.119		1.052		
44	238944	42-70 Sparrowvale Road	12.228	1.019	11.209	3.003		1.164	
46	239906	100 Tannery Road	5.805		5.805				
34+47	222111	10 Brearleys Lane	7.865	4.227	3.638		0.833		
41+48	303208	18 Brearleys Lane	8.056	5.914	2.142		0.377		
Total			**231.409**	**61.991**	**169.417**	**8.622**	**10.457**	**4.773**	

ND USE BUDGET

				NDA by Precinct							
	Open Space ha	NDA ha	Proposed new road reserves ha	1: Industry ha	2: Campus ha	3: MIBA ha	4: Frame ha	5: Village ha	6: Centre ha	% of Parcel ha	Total ha
8	0.491	1.760	0.084	1.674						95%	1.674
7	0.034	1.974	0.788	1.186						60%	1.186
		0.182	0.018	0.164						90%	0.164
		0.376	0.000	0.376						100%	0.376
		0.817	0.038	0.779						95%	0.779
		0.198	0.017	0.181						91%	0.181
		0.810	0.024	0.786						97%	0.786
1	0.003	5.316	0.622	4.529			0.160			88%	4.689
		5.263	0.724	2.260	1.921			0.358		86%	4.538
	0.237	5.740	0.937		4.159			0.644		84%	4.803
		0.123	0.052				0.071			58%	0.071
	0.238	7.050	1.118			0.946	4.986			84%	5.932
		2.022	0.243	1.779						88%	1.779
		5.141	0.245	3.830		1.066				95%	4.896
		0.070	0.003	0.068						96%	0.068
		3.465	1.026	2.363		0.076				70%	2.439
2	0.109	3.174	0.236	2.938						93%	2.938
0	0.451	1.478	0.281	1.193						81%	1.193
7	0.185	0.000	0.000							0%	0.000
0	0.228	0.013	0.013							0%	0.000
8	0.099	1.397	0.418	0.983						70%	0.983
		0.890	0.066	0.823						93%	0.823
5		15.114	1.817	8.724		4.573				88%	13.297
4		11.825	2.316	4.505		5.003				80%	9.509
		1.709	0.028		1.681					98%	1.681
		3.036	0.076		2.960					97%	2.960
		4.828	0.991		3.837					79%	3.837
	0.151	5.926	1.242					3.684	1.000	79%	4.684
	1.840	4.885	0.624		1.530		2.730			87%	4.260
		0.210	0.052		0.158					75%	0.158
7		4.815	0.475		3.966		0.374			90%	4.340
1	0.550	5.129	0.926		3.692		0.278	0.232		82%	4.202
0	0.263	7.463	1.158	3.794	1.910		0.628			85%	6.333
	0.588	10.479	1.532	0.662	6.313	1.956				85%	8.931
4		7.042	1.212	5.407		0.422				83%	5.828
		5.805	0.564		5.242					90%	5.242
		2.806	0.218		2.588					92%	2.588
		1.765	0.096		1.669					95%	1.669
3	**5.469**	**140.097**	**20.281**	**49.001**	**41.625**	**14.043**	**9.228**	**4.918**	**1.000**		**119.816**

APPENDIX 2
NEIP TITLES PLAN



LEGEND

- NEIP Boundary
- Adjoining Precinct Boundaries
- Existing Easements
- Road Acquisition
- Keystone Business Park - Controlled Land

NOTES

Property details that are unable to be displayed on the site plan are listed below.

3 239899, 61 Tannery Road
4 239900, 63 - 73 Tannery Road
5 239900, 63 - 73 Tannery Road
6 239900, 63 - 73 Tannery Road
7 239902, 75 - 79 Tannery Road
9 239905, 99 Tannery Road
12 304048, 139 Tannery Road
16 239897, 58 Tannery Road

APPENDIX 3
EMPLOYEES BY PRECINCT AND INDUSTRY TYPE

		PRECINCT						
Industry Type	**emp/m² by Industry Type**	**1. Industry**	**2. Campus**	**3. MIBA**	**4. Village Frame (no.)**	**5. Village**	**6. Retail Centre**	**Total (no.)**
Manufacturing	1 per 30	200	133	67	0	0	0	400
Construction	1 per 250	340	360	60	32	8	0	800
Wholesale, retail trade:	1 per 20	20	40	50	75	75	140	400
- Keystone Retail Centre		0	0	0	0	0	140	140
Transport and Storage	1 per 300	310	150	67	33	0	0	560
Communication	1 per 15	0	67	80	120	53	0	320
Finance, property, business service:	1 per 30	0	1150	333	333	167	17	2000
- Finance and insurance services		0	0	0	0	0	0	0
- Rental, hiring and real estate services		0	33	133	133	84	17	400
- Professional, scientific and technical services		0	1117	200	200	83	0	1600
Public Administration, Defence	1 per 30	0	330	33	100	17	0	480
Community Services	1 per 50	0	600	0	120	80	0	800
Recreation, arts, other services:	1 per 250	20	420	120	60	20	0	640
- Arts and recreation services		0	8	8	20	4	0	40
- Accommodation and food services		0	52	52	40	16	0	160
- Other services		20	360	60	0	0	0	440
Targeted economic signatures	1 per 30	0	1000	333	200	67	0	1600
Total		**890**	**4250**	**1143**	**1073**	**487**	**157**	**8000**
Emp/m² by precinct		1/213m²	1/82m²	1/79m²	1/57m²	1/43m²	1/21m²	1/89m²

Source: Conics

APPENDIX 4
GROSS FLOOR AREA BY PRECINCT AND INDUSTRY TYPE

		PRECINCT						
Industry Type	**Predominant Use Category**	**1. Industry**	**2. Campus**	**3. MIBA**	**4. Village Frame (no)**	**5. Village**	**6. Retail Centre**	**Total (m^2)**
Manufacturing	Industrial	6000	4000	2000				12000
Construction	Industrial	85000	90000	15000	8000	2000		200000
Wholesale, retail trade:	Retail	400	800	1000	1500	1500	2800	8000
- Keystone Retail Centre							2800	2800
Transport and Storage	Industrial / Commercial	93000	45000	20000	10000			168000
Communication	Commercial		1000	1200	1800	800		4800
Finance, property, business service:	Commercial		34500	10000	10000	5000	500	60000
- Finance and insurance services			0	0	0	0	0	0
- Rental, hiring and real estate services			1000	4000	4000	2500	500	12000
- Professional, scientific and technical services			33500	6000	6000	2500		48000
Public Administration, Defence	Commercial		9900	1000	3000	500		14400
Community Services			30000		6000	4000		40000
Recreation, arts, other services:		5000	105000	30000	15000	5000		160000
- Arts and recreation services	Commercial		2000	2000	5000	1000		10000
- Accommodation and food services	Commercial		13000	13000	10000	4000		40000
- Other services	Industrial / Commercial	5000	90000	15000				110000
Targeted economic signatures	Industrial / Commercial		30000	10000	6000	2000		48000
Total		**189400**	**350200**	**90200**	**61300**	**20800**	**3300**	**715200**

Source: Conics

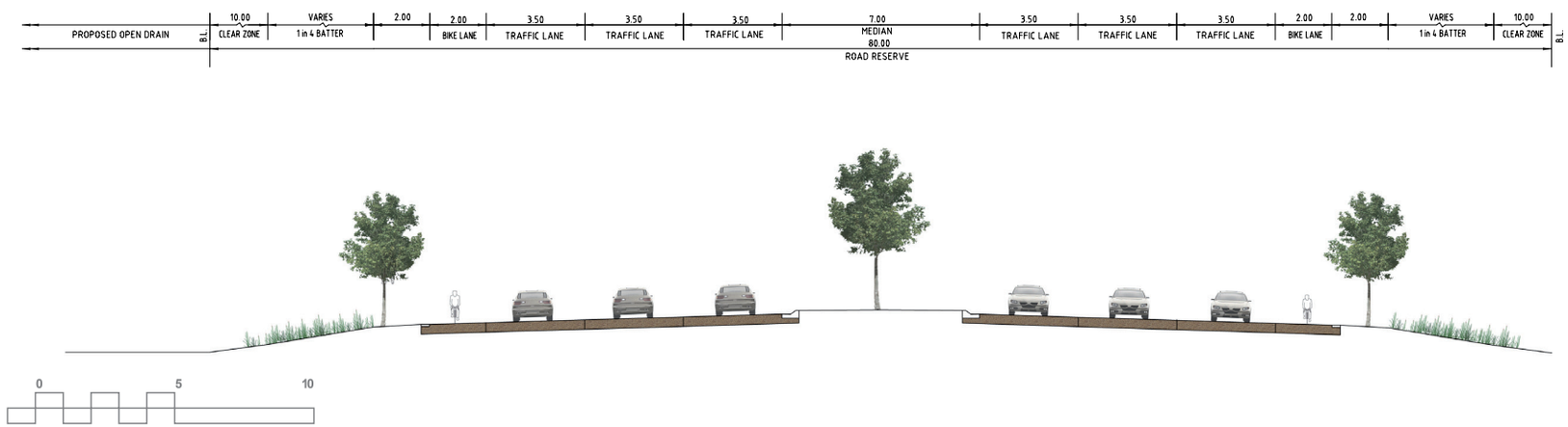
APPENDIX 5
PREFERRED STREET TREES

ARMSTRONG CREEK – PREFERRED STREET TREE SPECIES LIST			
Road / Area Type	**Botanical Name**	**Common Name**	**Minimum planting space requirements (Nature strip width)**
Aterial Road	Angophora costata	Smooth bark apple myrtle	3m
	Bracychiton populneus	Kurrajong	2m
	Corymbia ficifolia	Red-flowering gum	2m
	Platanus acerifolia	London plane tree	3m
	Quercus robur	English oak	3m
Collector Road	Acacia melanoxylon	Blackwood	3m
	Bracychiton populneus	Kurrajong	2m
	Corymbia ficifolia	Red-flowering gum	2m
	Eucalyptus melliodora	Yellow box	3m
	Eucalyptus sideroxylon	Red ironbark	2m
	Eucalyptus scoparia	Wallangarra gum	2m
	Melia azedarach	White cedar	2m
	Quercus robur	English oak	3m
	Ulmus parvifolia “Todd”	Chinese elm	2m
Industrial Area	Angophora costata	Smooth bark apple myrtle	3m
	Bracychiton spp.	Various species	2m
	Callistemon salignus	Willow bottlebrush	2m
	Corymbia citrriodora	Lemon-scented gum	3m
	Corymbia maculata	Spotted gum	3m
	Eucalyptus melliodora	Yellow box	3m
	Fraxinus angustifolia “Raywood”	Claret ash	2m
	Melia azedarach	White cedar	2m
	Platanus acerifolia	London plane tree	3m
	Quercus palustris	Pin oak	3m
	Tristaniopsis laurina	Water gum	2m
	Ulmus glabra “Lutescens”	Golden elm	2m
Activity Centre	Gletisia triacanthus “Shademaster”	Honey Locust	3m
	Fraxinus angustifolia “Raywood”	Claret ash	3m
	Magnolia grandiflora “Exmouth”	Magnolia	3m
	Quercus robur “fastigata”	Fastigated english oak	3m

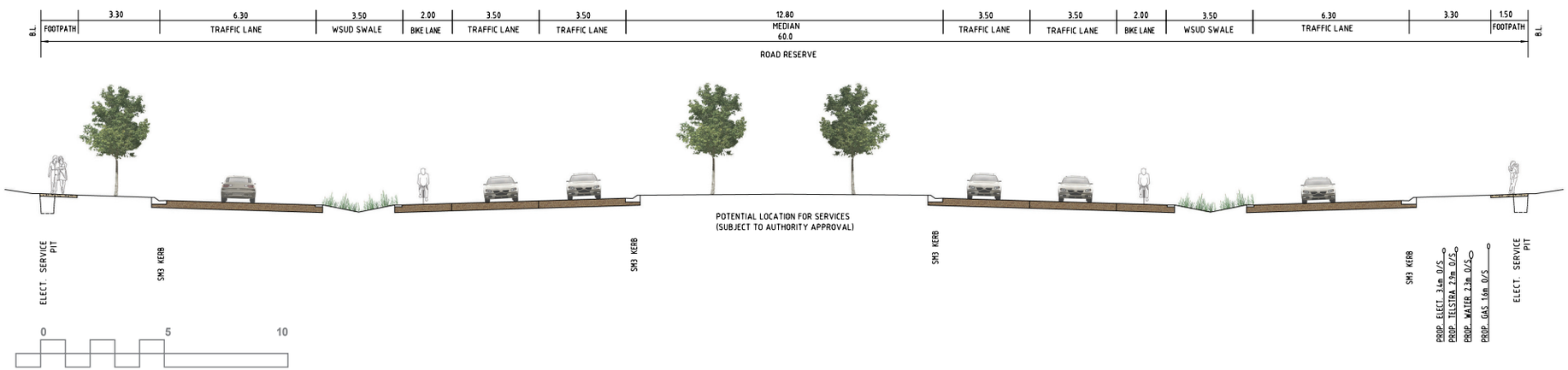
Note: Ensure that any significant vegetation located along road reserves is only supplementary planted with indigenous species specific to the original ecological vegetation class.

APPENDIX 6
ROAD CROSS SECTIONS

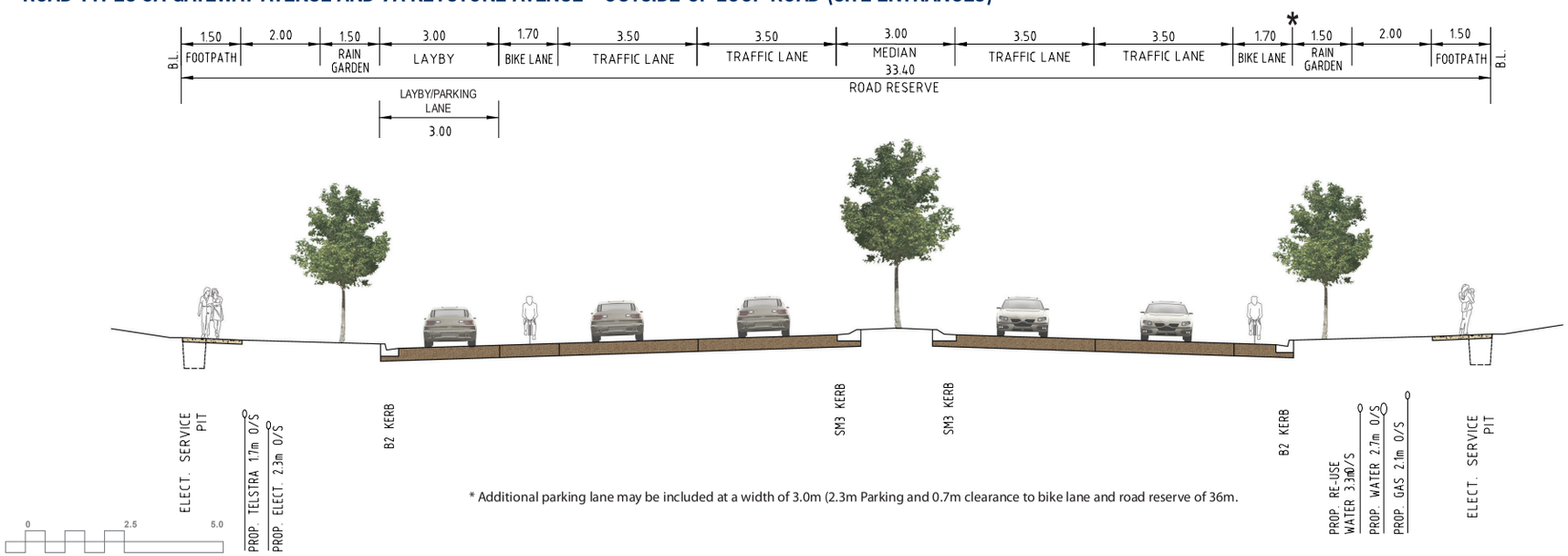
ROAD TYPE 1 – EAST/WEST LINK ROAD



ROAD TYPE 2 – BARWON HEADS ROAD

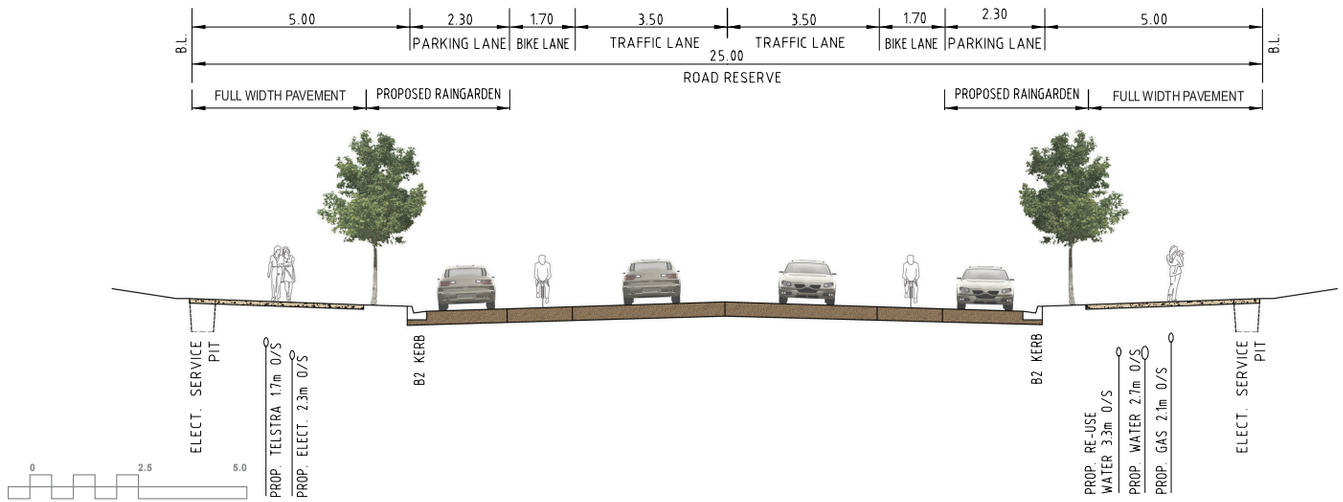


ROAD TYPES 3A GATEWAY AVENUE AND 7A KEYSTONE AVENUE – OUTSIDE OF LOOP ROAD (SITE ENTRANCES)

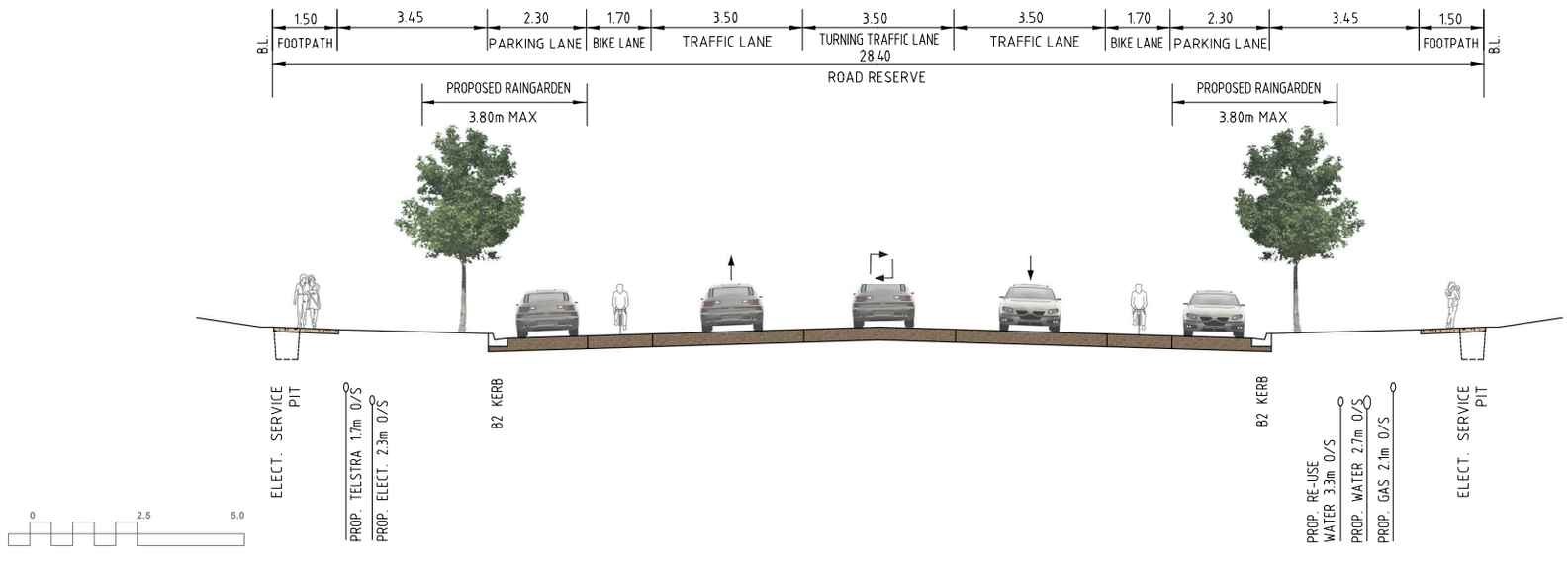


* Additional parking lane may be included at a width of 3.0m (2.3m Parking and 0.7m clearance to bike lane and road reserve of 36m.

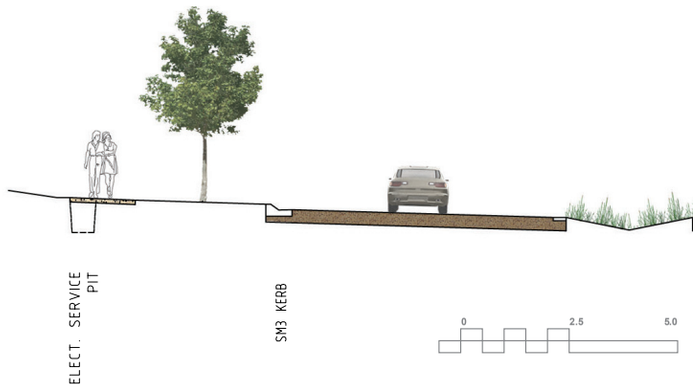
ROAD TYPES 3B GATEWAY AVENUE AND 7B KEYSTONE AVENUE – INSIDE OF LOOP ROAD (MAIN STREET SECTION)



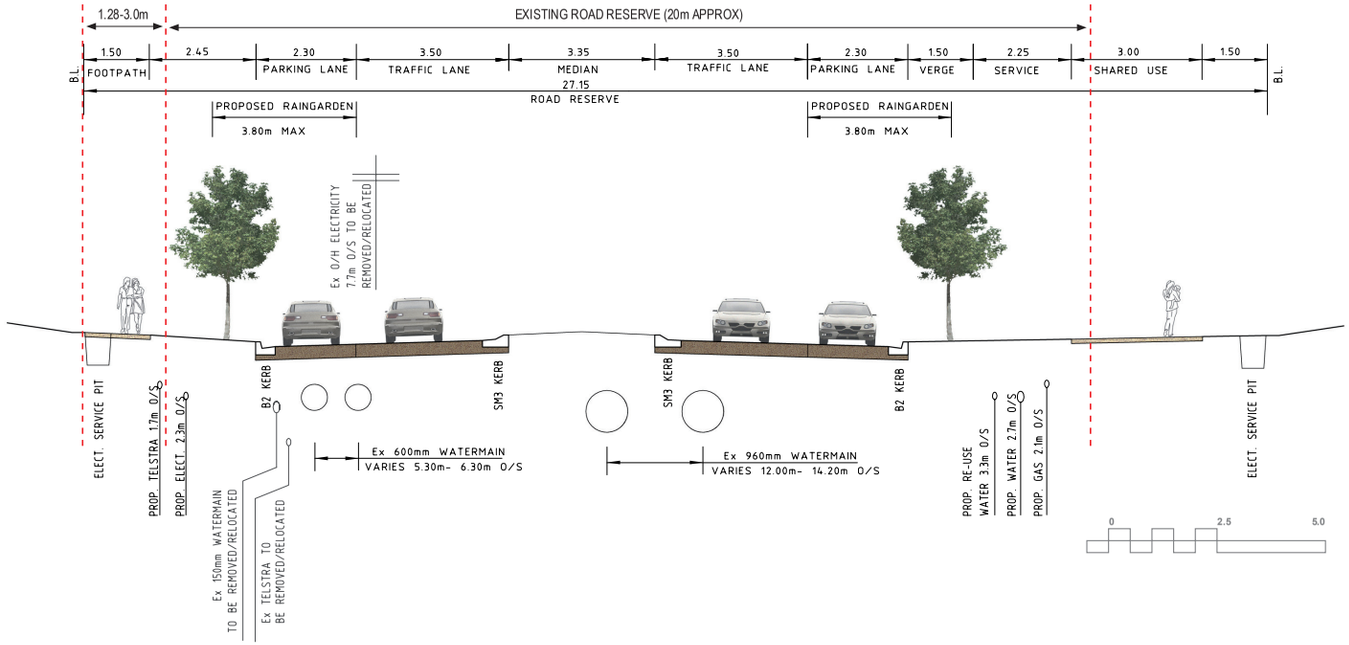
ROAD TYPE 4 – LOOP ROAD



ROAD TYPE 6A – SERVICE ROAD TO BARWON HEADS ROAD



ROAD TYPE 8 – TANNERY ROAD



ROAD TYPE 9A – LOCAL ACCESS ROAD (INDUSTRIAL)

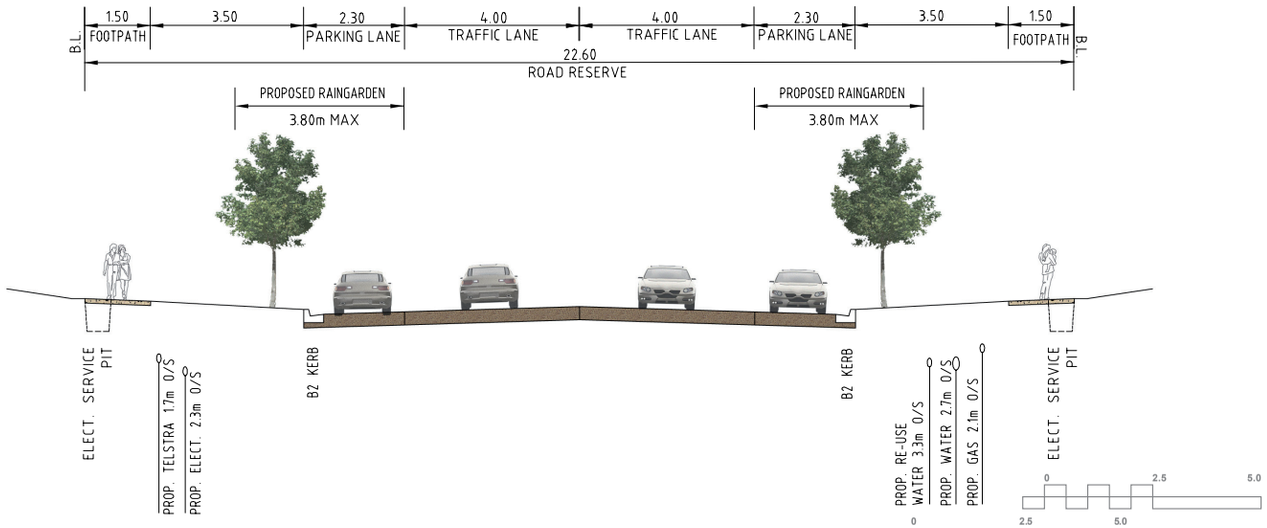


FIGURE 28 – ROAD TYPE 9B – LOCAL ACCESS ROAD (CAMPUS BUSINESS)

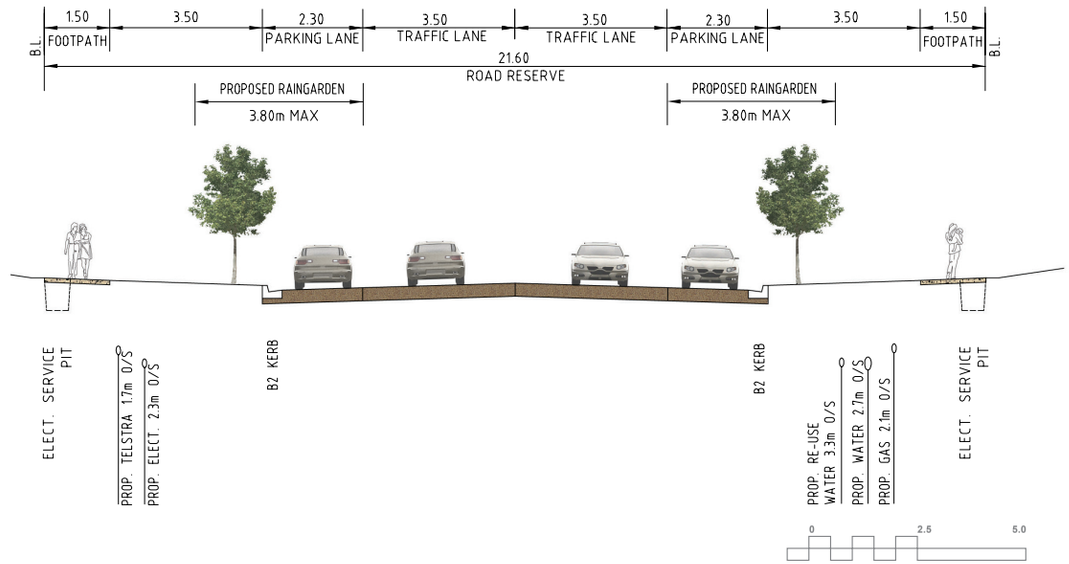
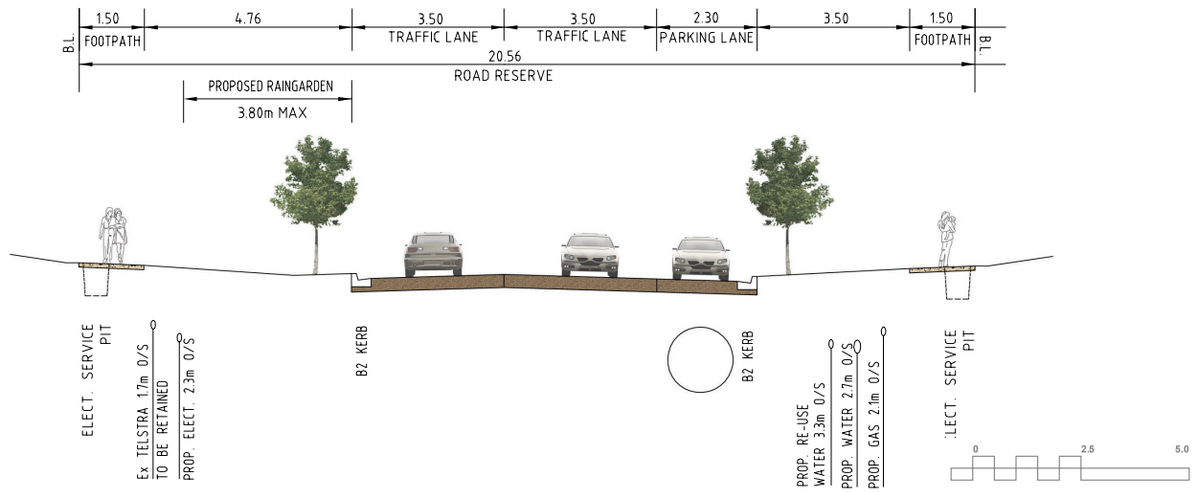


FIGURE 29 – ROAD TYPE 10 – SPARROWVALE ROAD – SERVICE STREET AND WATER TREATMENT CORRIDOR

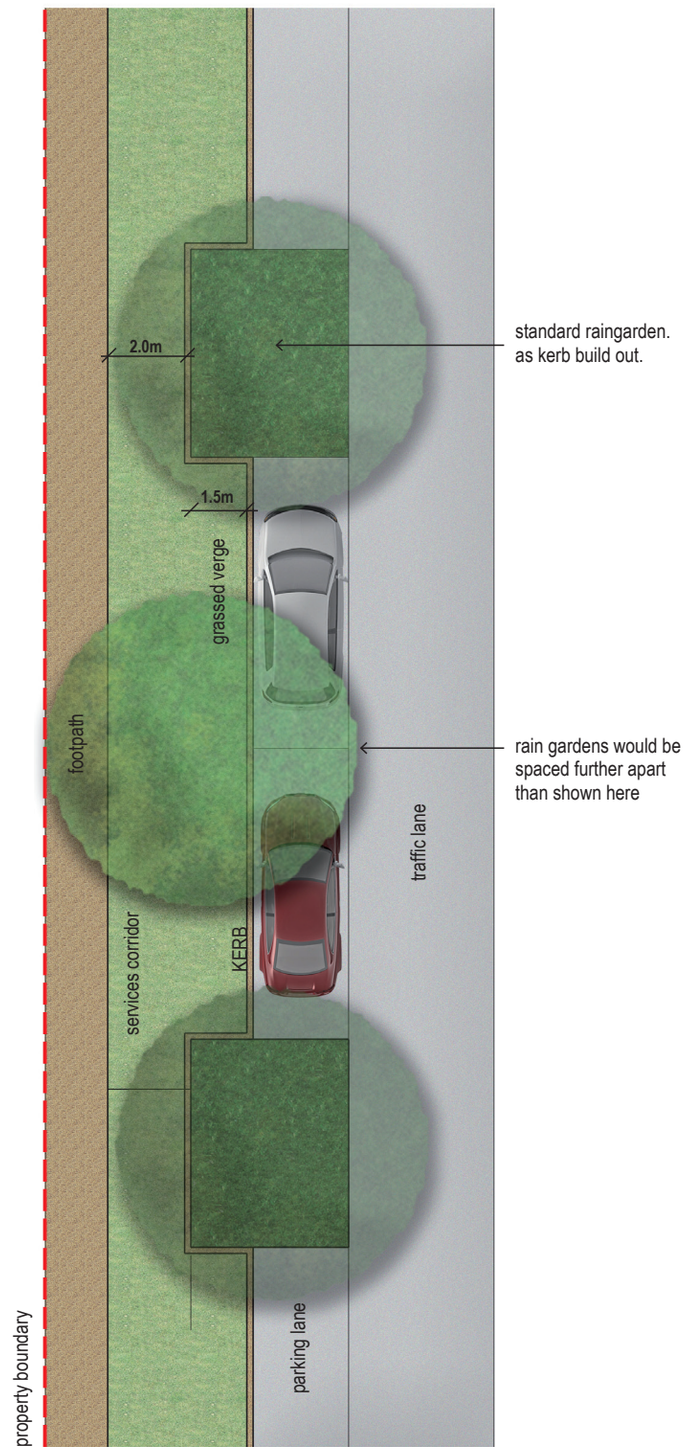


APPENDIX 7
NEIP PROPERTY SPECIFIC PASSIVE OPEN SPACE CONTRIBUTIONS SUMMARY

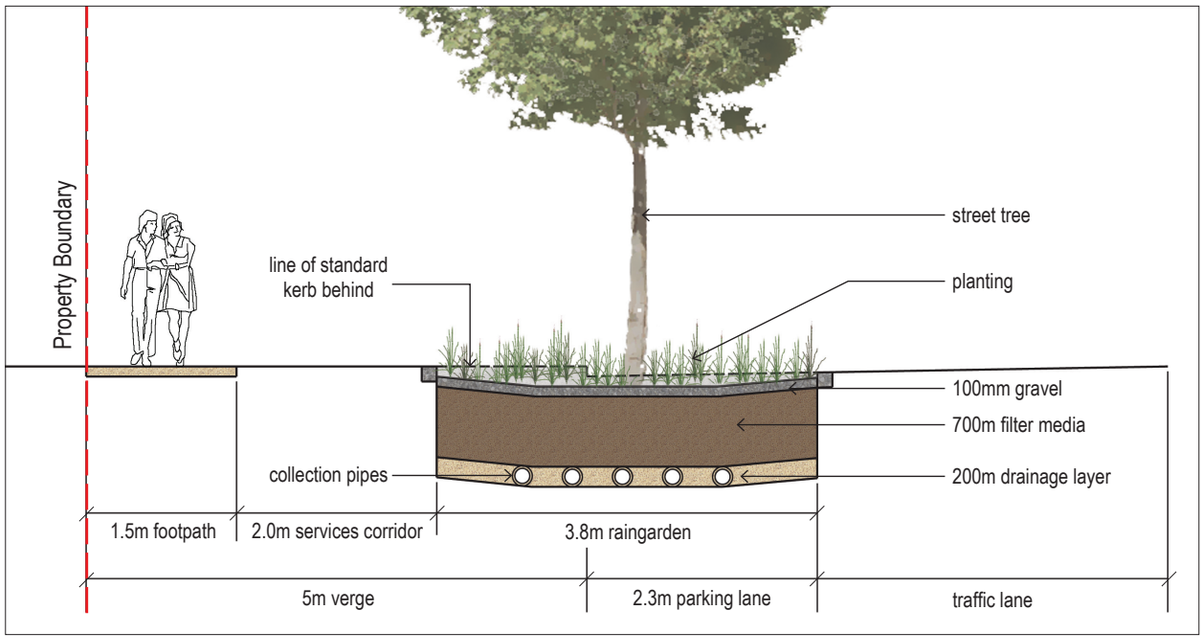
Parcel ID	Prop Key	Address	Measured Parcel Area (ha)	Inside NEIP area (ha)	Open Space (ha)*	Percentage of Area Inside NEIP	Type of Open Space (ha)
1	239894	41-49 Tannery Road	4.0480	2.3560	0.4923	20.90%	Local Park
2	239896	51-59 Tannery Road	2.0250	2.0250	0.0348	1.72%	Local Park
8	239904	81-89 Tannery Road	13.8000	5.3660	0.0034	0.06%	Local Park
11	239908	111 Tannery Road	7.2340	5.9780	0.2373	3.97%	Local Park
13	239903	80 Tannery Road	8.6930	8.6930	0.2378	2.74%	Urban Park/Plaza
19	239893	46 Tannery Road	3.8970	3.8970	0.1067	2.74%	Local Park
20	239891	30 Tannery Road	2.4920	2.4700	0.4511	18.26%	Local Park
21	239888	8 Tannery Road	2.3520	0.1915	0.1851	96.65%	Local Park
23	220922	391-399 Barwon Heads Road	2.1000	0.4680	0.2278	48.68%	Local Park
24	220913	401-419 Barwon Heads Road	2.3040	2.3040	0.0994	4.32%	Local Park
32	239896	51-59 Tannery Road	6.2820	6.2820	0.1515	2.41%	Urban Park/Plaza
33	299853	128-138 Tannery Road	8.2640	8.2640	1.8400	22.27%	Local Park
38	304046	115-129 Tannery Road	7.4690	6.3990	0.5497	8.59%	Local Park
40	315769	91-97 Tannery Road	10.6410	7.9450	0.2630	3.31%	Local Park
43	239906	100 Tannery Road	12.1190	12.1190	0.5874	4.85%	Local Park
TOTAL			**93.7200**	**74.7575**	**5.4674**		

Note: Refer parcel ID in Appendix 2: NEIP Titles Plan

APPENDIX 8
WSUD TYPICAL VERGE AND TREE CROSS SECTION PLAN



TYPICAL VERGE PROFILE (NOT TO SCALE)



TYPICAL VERGE PROFILE (NOT TO SCALE)

APPENDIX 9
CONFLUENCE RELOCATION PLAN

