
WEINAM CREEK PRIORITY DEVELOPMENT AREA DRAFT STRUCTURE PLAN REPORT

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1. INTRODUCTION

The Weinam Creek Structure Plan Report represents the vision for development within the Priority Development Area (PDA) around Weinam Creek. The report responds to the social, economic and cultural pressures and circumstances that imbue and overlay a place with meaning and identity over time.

This structure plan report provides key inputs to inform the preparation of a Development Scheme for Weinam Creek.

It lays the foundation for the design of this place into a strengthened centre and a transit facility for the Southern Moreton Bay Island (SMBI) residents. Weinam Creek can act as a focal place within the broader Redland Bay area delivering long-term, sustainable economic growth for Redland City Council.

This report outlines the objectives, principles and design ideas that have influenced the shape of the Development Scheme, providing the boundaries and parameters within which good development can occur.

1.1 Joint Statement of Objectives

Weinam Creek is the third PDA to be declared in Queensland by the State Government. The declaration provides an opportunity to support economic development and create mixed-use residential, tourism and retail based development at the gateway to the Southern Moreton Bay Islands.

The Weinam Creek PDA is approximately 42 hectares in size with the Queensland Government being a key landholder in the area. Development of the PDA will seek to reinforce Weinam Creek as a community focus and a regional gateway to the Moreton Bay Islands including Macleay, Lamb, Karragarra and Russell islands. Development will include opportunities for mixed-use and medium density residential development and will need to accommodate island transport needs.

Initial stakeholder scoping indicates interest from Translink and local transport providers, peak business associations, marina users, island and local residents.

Planning of the Weinam Creek PDA will be managed by Economic Development Queensland (EDQ) in partnership with Redland City Council. Redland City Council has responsibility for development assessment.

1.2 Vision for the Priority Development Area

Weinam Creek is a point of community focus and a regional Gateway to Moreton Bay. The bus stop and ferry interchange provide an integral link between the mainland, SMBI (Macleay, Lamb Karragarra and Russell islands) and the Greater Brisbane area. The area surrounding the marina features a mix of urban development with significant areas of open space along the foreshore.

The vision for delivery of the Weinam Creek PDA includes:

- > **New water transport services** and support facilities including a commercial ferry terminal, a marina, boat industries and marine services
- > **Relocation of the passenger terminal upstream** of the existing terminal and integration with bus interchange and carparking
- > **Providing for passenger ferries and bus services** to continue in their current location while allowing the opportunity to relocate the passenger ferry terminal and Translink Redland Bay Marina bus station upstream on the northern side of Weinam Creek. This relocation would occur after carpark areas on adjacent land to the proposed new ferry terminal are established and new carparking is provided
- > Improved **access to the waterfront** through the **consolidation of facilities**
- > **Improvements to public open spaces** linking Sel Outridge Park to Weinam Creek
- > **An accessible and connected place** with an efficient traffic circulation, board walks, cycling paths and a bus terminal
- > An upgrade to Redland Bay Ferry Terminal incorporating additional bus bays and upgraded passenger waiting facilities
- > A **sense of place** with communal areas to provide opportunities for social interaction and recreation activities such as parks and board walks
- > Opportunities for **mixed-use and medium density residential development** including a neighbourhood shopping centre comprising a supermarket and speciality retail, commercial offices, cafes, medium density residential apartments and a public carparking facility
- > Appropriate **infrastructure** that meets market expectations for safety, comfort, convenience, information and service delivery
- > **Embracing the waterfront location**, enhance areas presenting significant **views to Moreton Bay and the SMBI**
- > Protecting the local marine and land-based ecology including saltmarsh, mangroves and flying-fox colony.
- > Expanded marine service industries utilising opportunities provided by Weinam Creek as one of few creeks entering the bay between Southport and the Port of Brisbane.
- > Opportunities for **aboriginal stewardship and reconciliation**
- > Development with the potential to stimulate tourism to the islands, improving the SMBI economies and the wider sub regional economy.

1.3 Location

The Weinam Creek PDA is located on Moreton Bay at the intersection of Banana and Meissner Streets, Redland Bay, approximately 45kms south-east of the Brisbane CBD (see Figure 1). The site acts as a transit node for vehicular ferry and water taxi services between the mainland and residents, visitors and tourists accessing the SMBI.

The PDA covers a total area of approximately 42 hectares (36.2 hectares over land, and 5.8 hectares within Moreton Bay). It extends from Peel Street south to Moores Road and is bounded by Weinam Street to the west and Moreton Bay to the east.

On the edge of the PDA is a bus interchange and pedestrian ferry terminal with large expanses of associated short and long-term at-grade carparking. These facilities are integral in providing access for the SMBI residents to shopping, health, education, employment and entertainment opportunities throughout Redland City and the greater Brisbane area. The ferries link Macleay, Lamb, Karragarra and Russell Islands with the mainland. This link also allows visitors and tourists to access the islands.

The remaining area of the PDA features a mix of urban development, predominantly suburban in character, with significant areas of coastal processes along the foreshore. These areas vary from walkway corridors and small picnic areas to large sporting areas. This foreshore open space presents significant views to Moreton Bay and the SMBIs. Activities within this space include a vehicle ferry, low density residential uses, a small amount of maritime industry and boat ramp onto Weinam Creek itself, a small amount of retail and key community facilities.

Two environmental areas, one next to Sel Outridge Park and the other along Weinam Creek, extend west of the PDA. Both have fragmented pedestrian linkages. A pedestrian linkage exists along the foreshore with a break at the Weinam Creek mouth.

Facilities at the small marina on Weinam Creek include a jetty used by various commercial ferry operators servicing the Moreton Bay islands, recreation boat ramp facilities and long-term parking areas for SMBI residents to park their 'mainland' vehicle. The existing bus stop, is located within the marina carpark adjacent to the jetty building and is configured as a linear stop with space for up to three buses.

The site and the extent of the PDA boundary are shown in Figure 2.

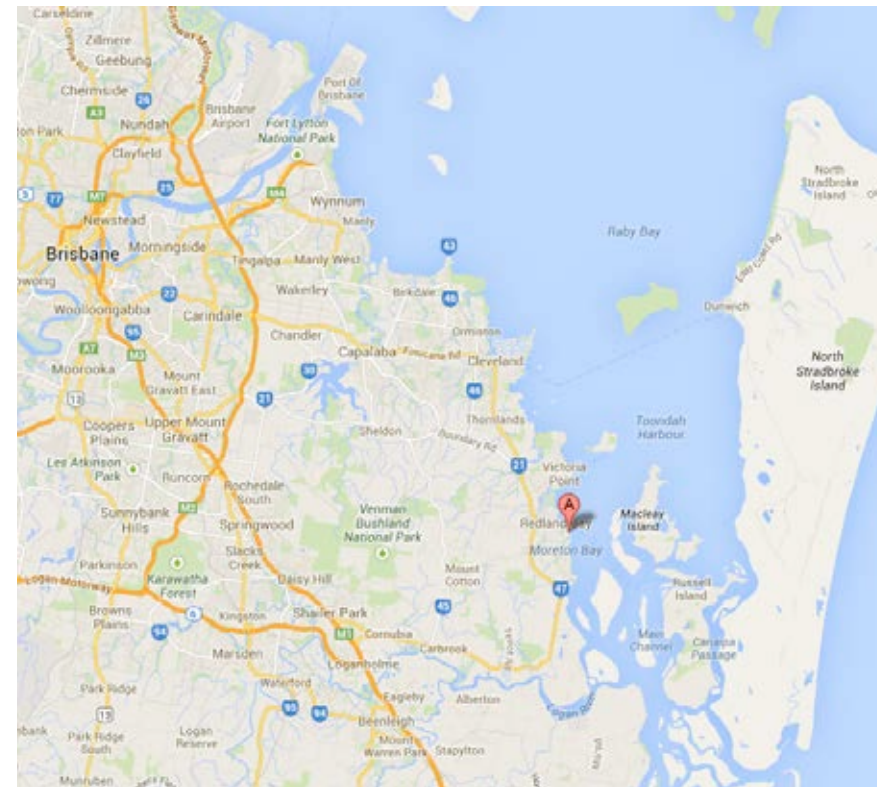


Figure 1. Weinam Creek PDA location plan



Figure 2. Weinam Creek PDA site aerial and boundary



Redland Bay Ferry Terminal



Parkland on Weinam Creek near the passenger ferry terminal



Neville Stafford Park



Existing marine services on Weinam Creek

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2. BACKGROUND ANALYSIS

2.1 Context

The Weinam Creek PDA sits within an existing urban fabric of land uses, community facilities, environment and open space areas, streets and infrastructure. These, along with the physical features of the site, set the context on which the proposed structure plan has been developed.

Urban Context

The Weinam Creek PDA is located on Moreton Bay just south of the Redland Bay Shopping Village, and surrounded immediately by predominantly low-rise residential development interspersed with a number of community facilities (see Figure 3).

The Redland Bay Shopping Village on Broadwater Terrace is currently designated as a Neighbourhood Centre although Council is moving for this to be elevated to a District Centre. This precinct, and the Redland Bay Hotel opposite, sit just outside the PDA boundary but is a key gathering place and retail area for the Redland Bay community and SMBI residents.

This precinct is serviced by bus from the passenger ferry terminal interchange and is about a 15 minute walk along the foreshore or via local streets.

This proximity means the retail and commercial offering at Weinam Creek has to be focused and complimentary to that both in the Redland Bay Shopping Village but also on the SMBIs.

In addition to the Redland Bay Shopping Village and within the PDA, there is a small café and convenience store located on the corner of Weinam and Banana Streets which serve the immediate residential area.

The PDA contains a number of community facilities — Redland Bay Police Station, Redland Bay Community Hall and the Redland Bay Amateur Fishing Club located along Weinam Street and the Coast Guard, Sea Cadets and Redlands Sea Dragons located along, and with direct access to, Weinam Creek.

In addition to the expansive foreshore and esplanade areas, the Weinam Creek PDA has large areas of open space to the north comprising Sel Outridge Park and Neville Stafford Park which are linked via formed pedestrian pathways.

Weinam Creek is part of a broader wetland and environmental area which extends further south to Cleveland-Redland Bay Road which is proposed to include pedestrian and cycle pathways, as well as a bridge over the mouth of the creek, as part of the Weinam Creek Wetlands Master Plan Report (April 2012) prepared by Lange Design for Redland City Council.

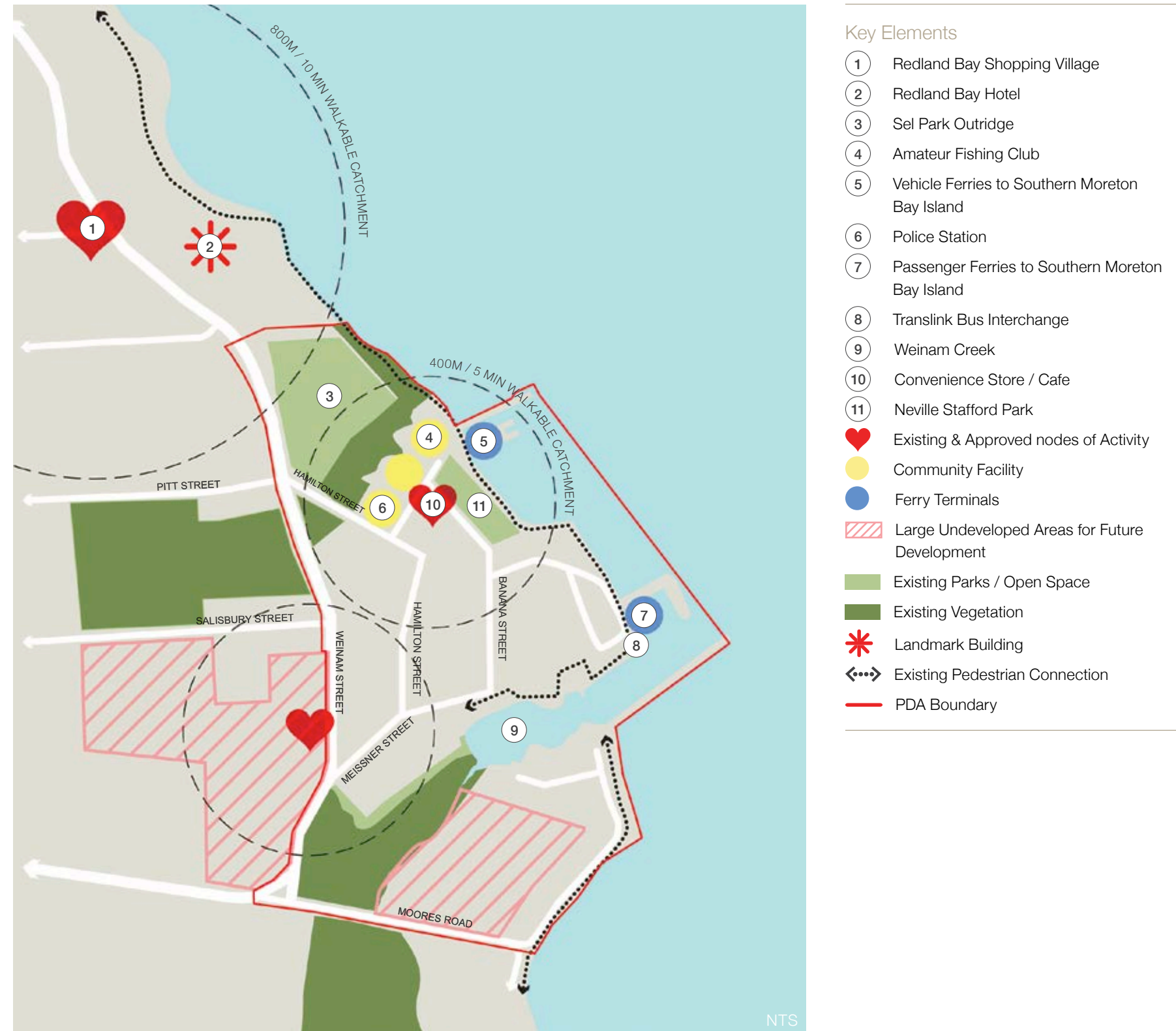


Figure 3. Context plan

Economic Context

Located around 26kms south-east of the Brisbane CBD, Redland City has a strong and diverse economy with a long history of strong economic performance. Gross Regional Product (GRP) has increased by an estimated 16% in the last six years to \$4.3 billion in 2012, and is forecast to continue this strong performance on the back of solid population and employment growth in the region.

The Redland City has an estimated resident workforce of 75,942 as at 2012 and has low unemployment levels. The region has a high level of local employment, which has increased by around 10% since 2006-07 to 44,996 in 2011-12. The key industry sectors by employment are retail trade (16.1%), health care and social assistance (14.2%), education and training (10%), and construction (8.4%) as at the 2011 Census.

Population growth for Redland City has historically been strong and is forecast to continue this trend over the long term. The estimated resident population for the broader Redland City LGA as at 2012 was 145,507 people. Over the past 10 years the Redlands region has increased in population at a strong average annual growth rate of 2.1% per annum.

Weinam Creek is situated at the southern end of the Redland LGA within the suburb of Redland Bay. It is an area that has a robust level of population growth, driven by coastal lifestyle factors with a small localised centre of employment, concentrated around the Redland Bay Shopping Village.

Environmental Context

The Weinam Creek PDA is characterised by marine, intertidal and terrestrial ecological values that are valued by the community and protected at local, state and national levels. Intertidal mudflats and seagrass beds within the PDA are incorporated within the Moreton Bay Marine Park and Ramsar wetland, a wetland of international importance. These ecosystems provide foraging habitat for fish, but very limited habitat for migratory shorebirds, turtles and Dugong (*Dugong dugon*). Moreton Bay as a whole is recognised as a site of both national and international importance for migratory shorebirds, supporting a maximum abundance of nearly 36,000 migratory shorebirds that use intertidal mudflats and seagrass beds for feeding, and roost sites for resting. Marine plants within the PDA, particularly seagrass, mangroves and saltmarsh provide value to fisheries through provision of nursery habitat for fish and crabs, coastal protection from storm surge, and nutrient cycling.

Redland City supports part of a nationally significant Koala (*Phascolarctos cinereus*) population of relatively high density and genetic distinctiveness. The number of individuals in this population has declined by 68% between 1996 and 2010 due to habitat loss and mortality associated with urbanisation. Koalas in this population utilise scattered habitat trees and parkland within the urban environment, but only very occasionally within the PDA itself. Remnant vegetation in Weinam Creek provides a natural filter to improve water quality of runoff to the bay and supports one of the key flying-fox roost sites in the Redlands used seasonally by up to tens of thousands of flying-foxes, including as a maternity camp for birthing and raising their young.

Development of the Weinam Creek PDA will need to respect ongoing conservation of those values, with provisions for safe fauna movement, habitat protection and enhancement, maintenance of water quality, community education and engagement, and ongoing monitoring to manage and maintain environmental values through all phases of the development.

Movement Context

The PDA of Weinam Creek is a focal point as a residential area as well as being the major transit hub for access to the southern Moreton Bay Islands. This brings a unique mix of water based and land based travel modes. Movement context in such a location requires consideration of how transport from these two mode types can operate in partnership providing optimum accessibility for all users.

The key focus from a land-based perspective is providing direct connectivity to the rest of Redlands, and South East Queensland. The strategy for providing connectivity should focus on all modes of travel, including pedestrians, cyclist, public transport users as well as private cars. The issue for the water-based modes is how the existing ferry facilities coexist with the proposed development with effective operation, while not impacting detrimentally on local amenity.

Infrastructure Context

Transport

Transport infrastructure will be defined by two factors, the traffic capacity and active / public transport network. Road cross sections will be determined by the anticipated traffic volumes for the PDA and suitable capacity thresholds for each road classification. The active and public transport facilities will be driven by the need for an integrated and accessible network, with particular focus on connectivity between land uses and suitable roadside facilities, such as waiting areas which meet Translink standards.

Water and Sewer

Water and sewer services to the Weinam Creek PDA are required to meet minimum service standards adopted by Redland City Council. Required upgrades for servicing the PDA have proved simplistic for water and comparatively complex for sewer.

The PDA is supplied by the Serpentine Creek Demand Management Area, primarily via a 200mm main along Gordon Street. Water supply to the PDA will meet the desired standards of service with only minor infrastructure installed.

Two sewerage pump stations service the PDA on the north and south of Weinam Creek respectively, with the downstream network of pump stations, rising mains and gravity man network transporting the sewerage to the Victoria Point WWTP. The PDA will require new infrastructure upgrades and may slightly influence the timing and size of programmed upgrades.

Victoria Point WWTP currently has 1000EP remaining capacity available, which may be used in the near future due to other anticipated development in the catchment. The DEHP operating license is expected to be reached at this time, which will require license negotiations and/or alternate servicing.



Examples of existing marina developments

2.2 Site Analysis

Urban Design Site Analysis

A number of issues and opportunities for the Weinam Creek Structure Plan were identified as part of the initial site analysis. These are outlined below and summarised visually in Figure 5.

Access into the centre of the Weinam Creek PDA is via either Hamilton or Meissner Streets off Weinam Street which connects north back to the Redland Bay Shopping Village. Weinam Creek splits the PDA into two precincts with the southern area accessed via Moores Road.

On the foreshore, Redland Bay Ferry Terminal provides passenger ferries to the SMBIs, whilst the Bay Islands Vehicle Ferry caters for vehicles movements. These uses are separated by Neville Stafford Park, each with their own associated at-grade carparking areas. Whilst Weinam Street connects directly to the vehicle ferry, the street network throughout the PDA does not clearly direct vehicles to the passenger ferry terminal which is a major generator of trips in the area.

A Translink upgrade to the Redland Bay Ferry Terminal is proposed to incorporate additional bus bays and upgraded waiting facilities for passengers (see Figure 4).

At-grade parking associated with the passenger ferry terminal dominates a larger area close to the foreshore. Access, both vehicle and pedestrian, through this area is difficult due to the nature of the parking and street network. Whilst not a formal road, there is a loop street off Banana Street providing access to the passenger ferry terminal, bus interchange and short term parking. The long-term secure paid parking compound provided by Council is fenced with access from this loop street.

The boat ramp and associated trailer parking is also accessed directly from Banana Street. The configuration of this boat ramp means there are possible conflicts with pedestrians, trailers and vehicles within this area.

There is an additional long-term at-grade parking area located on Meissner Road provided by Council and also a number of private residents in the area charging vehicles to park on their private property.

Given the extent of parking in the Weinam Creek PDA, there is an opportunity for these areas to be rationalised to ensure the demand is met, whilst celebrating the foreshore and natural features of this area.

There is a café and small store located on the corner of Weinam and Banana Streets. This sits outside the 400m, 5 minute, walkable catchment of the Redland Bay Shopping Village providing convenience retailing for the immediate local community.

Community facilities are grouped in two precincts within the PDA. The Redland Bay Police Station, Redland Bay Community Hall and the Redland Bay Amateur Fishing Club are located along Weinam Street and the Coast Guard, Sea Cadets and Redlands Sea Dragons located along, and with direct access to, Weinam Creek. There are opportunities to improve access and links to and between these facilities to strengthen the offering of uses within the PDA.

Existing residential development west of Banana Street is typically 1-2 storey detached houses. The topography, and proximity to facilities, lends itself to conversion into higher density forms of development over time.

In addition to the residential and community uses in the Weinam Creek PDA, there are a number of marine industry uses located on the southern side of Weinam Creek, accessed via Moores Road. A small Council owned marina is also located within this area on the northern side of the creek.

Large areas of open space and parkland dominate the northern part of the Weinam Creek PDA. Sel Outridge Park contains a cricket pitch, direct foreshore access including some small picnic facilities and a small amount of off-street carparking as well as a distinctive row of large trees. This park, and the vegetated waterway corridor, provides opportunities for amenity and outlook for the surrounding development.

At Weinam Creek in the south, areas of subtropical coastal saltmarsh and mangroves exist. These need to be protected and considered as part of the redevelopment of the PDA. In addition, the marine environment needs consideration including any impact on seagrass.

As well as being part of a broader wetland system, this vegetated area at Weinam Creek also provides habitat for a flying-fox colony located on both sides of Moores Road. This area also provides an opportunity for amenity and to form part of the broader pedestrian and cycle network linking the open spaces areas within and outside of the PDA.

A pedestrian foreshore link exists in part within the Weinam Creek PDA but there are opportunities for this to be extended, and the conflicts with other uses, and vehicles, resolved. Particularly at the boat ramp launching point.

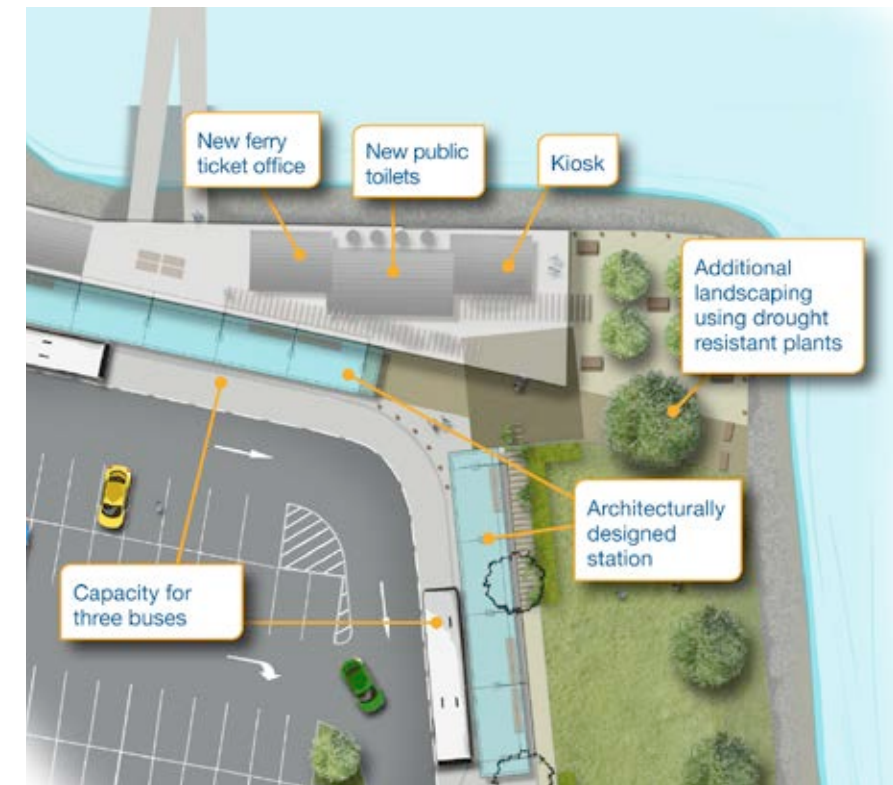
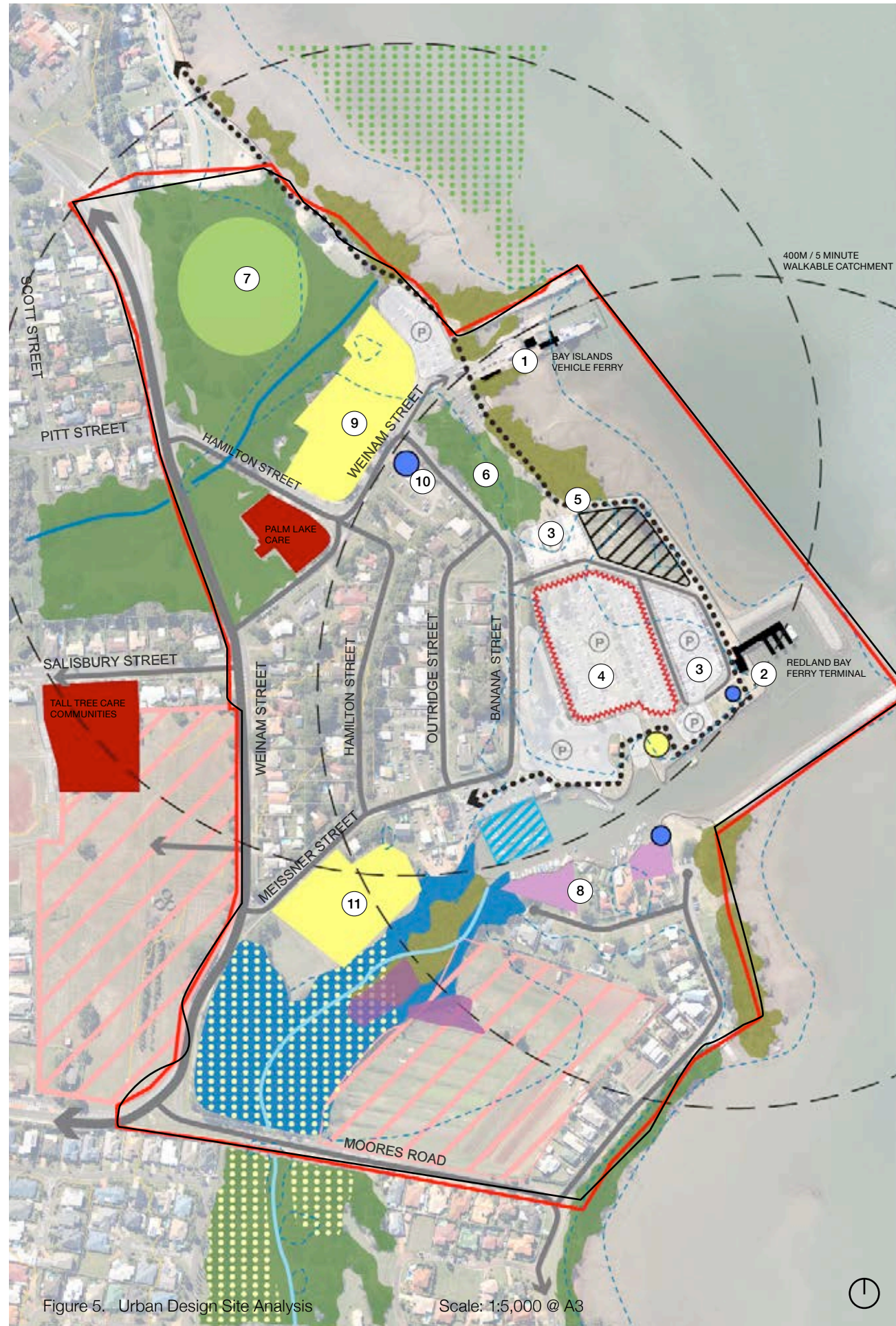


Figure 4. Proposed upgrade to Redland Bay Ferry Terminal (source: Translink)

- Higher Density Aged Care
- Community Facility
- Marine Industry
- Council Owned Marina
- Large Residential Sites, Mostly Undeveloped
- Interface To Be Resolved
- Existing Pedestrian Connection
- Existing Streets
- P Carparking
- Existing Vegetation
- Parkland
- Mangroves
- Flying-fox Camp
- Butterfly Habitat
- Saltmarsh
- Seagrass
- Storm Surge Line
- Previous Dredge Spoil Area
- PDA Boundary
- ① Vehicle Ferry Terminal
- ② Redland Bay Ferry Terminal / Translink Upgrade
- ③ At-grade Carparking Area
- ④ Secure Long Term Carparking Compound
- ⑤ Existing Foreshore Pedestrian Link
- ⑥ Neville Stafford Park
- ⑦ Sel Park Outridge
- ⑧ Existing Marine Industry Uses
- ⑨ Community Precinct
- ⑩ Existing Shop / Cafe
- ⑪ Council Owned Site



Environmental Site Analysis

Key ecological values and issues identified within the Weinam Creek PDA are shown in Figure 6 and include:

- > Subtropical coastal saltmarsh, although already protected in Queensland under the Fisheries Act, has recently been listed as a threatened ecological community under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
- > Intertidal and shallow sub tidal habitat, including extensive flats supporting seagrass, mangroves and saltmarsh, that are of importance to fish and fisheries
- > Seagrass (to the north of the PDA) and intertidal and subtidal foraging habitat of marginal importance to migratory shorebirds, dugongs and marine turtles within the Ramsar site of Moreton Bay
- > Koalas and Koala habitat trees
- > Important roost and maternity camp for three species of flying-fox
- > Potential habitat for the Nature Conservation Act listed Illidge's Ant-Blue Butterfly
- > Weinam Creek (high cultural heritage and environmental value)
- > Potential acid sulfate soils
- > Erosion-prone shorelines.

Economic Site Analysis

The population of Redland Bay SA2 (Redland Bay) was 14,284 in June 2012, up from 14,006 in June 2011 (2.0% growth). This strong growth is consistent with the growth rates across the broader Redland City region and the Greater Brisbane region. Current medium growth series forecasts indicate the Redland Bay population is expected to continue to record strong growth and reach 22,000 residents by 2031 (i.e. 1.9% per annum growth continuing through to 2031).

Redland Bay is the key access point to the Southern Moreton Bay Islands (SMBI) and population growth for this component of the region has been more modest and increasing off a relatively low estimated resident population base. In June 2011 the estimated resident population was 5,844, which increased to an estimated 5,914 in June 2012 (1.2% growth).

The main characteristics of the Redland Bay population (compared with Greater Brisbane) are:

- > A relatively high proportion of children (24% under 15 years vs 20.1% in Greater Brisbane)
- > A large population from the UK (9.2% vs 5.6% in Greater Brisbane)
- > Relatively high level of home ownership (73.9% either own or are buying their home vs 65.5% in Greater Brisbane)
- > Dominance of detached dwellings – 98% of all dwellings
- > Dominance of family households with very few lone person and group households.

Individual incomes for Redland Bay residents are in line with Greater Brisbane while average household incomes are 5.5% higher, reflecting the larger average household size, which translates to more households with more than one income earner. Incomes of SMBI residents are however considerably lower than those of residents in Greater Brisbane.

It is envisaged that Weinam Creek will support a mixed-use residential, tourism and retail based development. The importance of Weinam Creek and its ferry terminal is of particular significance as the gateway to SMBI, providing access for the island residents to shopping, health, education, employment and entertainment opportunities throughout the Redlands and the greater Brisbane area as well as tourists and visitors to the islands. It is therefore an important economic link between SMBI and the mainland. It has the potential to provide a regional focus for Redland Bay and act as a major destinational node for the area. The importance of this role will continue to increase on the back of strong population growth which is forecast to continue for the primary catchment of 3.5% p.a. to 2016 and 1.9% from 2016 to 2021.

The major driver for population and economic growth in the area that will influence the development of the site is the attractive coastal lifestyle.

Movement and Parking

There is currently significant traffic congestion at Weinam Creek around the ferry terminal and boat ramp facilities and carparks, particularly at weekends. The Weinam Creek PDA has a variety of stakeholders, with different needs and uses for the space. This demonstrates a need for better separation of pedestrian, vehicle and bus traffic.

Parking is a serious issue at the passenger ferry terminal with long term parking dominating the area. The existing parking conditions are shown in Figure 7. Carparking for island residents, local residents, visitors and service providers needs to be provided. There is considerable competition between SMBI residents and patrons of the boat ramp for carparks and for vehicle access into the Weinam Creek precinct. The existing carparking spaces around the ferry terminal are at or close to capacity.

Several intersections will require upgrading. In the north of the site the arrangement of Hamilton Street and Weinam Street does not provide a direct route to the ferry terminal / boat ramp that forms the centre of the PDA. Towards the southern edge of the site the existing intersections with the major link of Pitt Street / Gordon Street have poor visibility and would need upgraded for safety reasons if traffic volumes increased. The existing traffic conditions are shown in Figure 8.

In terms of pedestrian links, footpaths range in widths of between 1.2m to 2.5m shared paths. However, the standard of the walking and cycling network involves a number of road crossings and missing links, particularly along Hamilton Street where the footpath at Weinam Street does not extend to the major road at Pitt Street.

The area is a major transit hub, particularly for bus and ferry interchanges. Although there is a reasonable frequency of bus services, the waiting area at Redland Bay Ferry Terminal is small for the number of people utilising it and could be made more attractive and comfortable given its importance as a major hub. In addition the fragmented street network means that although all buses serve the ferry terminal, some only go through the north of the site and some the south. This is an inefficient routing which means that the existing bus services do not provide maximum penetration of the PDA.



LEGEND

Habitat:

- Potential Illidge's Ant Blue Butterfly
- Flying Fox Camp
- Subtropical & Temperate Coastal Saltmarsh
- Seagrass
- Mangroves
- Intertidal
- PDA Boundary

Koala Food Trees:

- Primary
- Secondary
- Other

Figure 6. Key ecological values within the Weinam Creek PDA



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2.3 Community

The purpose of engagement for the Weinam Creek PDA was:

- > To engage proactively with the community in advance of planning for the Weinam Creek PDA and inform residents of the PDA process
- > To inform residents of the constraints to development at Weinam Creek identified by consultants engaged by Council and EDQ
- > To report back issues already identified by residents through previous planning studies, to report any changes that may have mitigated these issues and seek community input on whether these issues were still current and if there were any additional issues outside of Council's knowledge.

Three different engagement techniques were used to maximise community knowledge and participation in this stage of the Weinam Creek PDA project. These were targeted stakeholder meetings, Open House community forums and online surveys.

Key Themes and Learnings

Potential to expand marine service industries — The site has a pre-existing four-lane boat ramp, ferry terminal and commercial slipway. There are large numbers of fishing enthusiasts, powered and unpowered boats already using the precinct. This and the very large number of boaties regularly travelling north into the bay from the Gold Coast makes Weinam Creek well positioned to service recreational and small-scale commercial marine industries.

Need for better traffic separation between boaties, islanders and public transport providers — there is currently significant traffic congestion at Weinam Creek, particularly on weekends.

Better carparking — Carparking continues as the greatest issue and constraint in this area. All stakeholders have raised the problem of carparking for island residents, local residents, visitors and service providers. A variety of options were listed including:

- > Remote long stay carparks linked to the ferry terminal by a shuttle service
- > Multi-deck carparks at Meissner Street or on the site of the current secure parking compound
- > Long-stay carparking on the current farmland off Moores Road.

SMBI residents are optimistic that the PDA will generate a sustainable long-term parking solution for all users.

Impact on Southern Moreton Bay Islands — In addition to ensuring that development does not compromise available parking for islanders, islanders noted that if Weinam Creek development brought more tourists to the islands there would need to be greater investment and better basic infrastructure (including sewerage) on the islands.

Preference for mixed-use waterfront precinct — Many residents suggested a mixed-use precinct on or near the waterfront that included cafes, boardwalks, restaurants and some residential development.

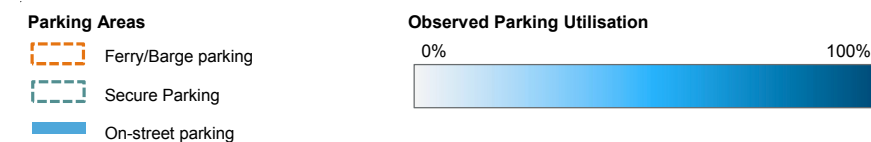


Figure 7. Existing parking conditions observed Monday 8 July 2013



Figure 8. Existing traffic conditions

Artificial beach — Residents and stakeholders noted the increasing popularity of unpowered boats including kayaks and dragon boats. They recommended an artificial beach as an ideal launch area for these vessels.

Aboriginal cultural heritage — The Aboriginal Cultural Heritage Act 2003 requires Council to exercise due diligence and reasonable precaution that activity does not harm Aboriginal cultural heritage. The views of the Quandamooka people through their recognised cultural body the Quandamooka Yoolooburrabee Aboriginal Corporation (QYAC) are key in assessing and managing any activity likely to excavate, relocate, remove or harm Aboriginal cultural heritage.

Marina — A variety of locations for a marina were indicated including:

- > Extending into the sea from the end of the current ferry terminal
- > In an excavated area at the top of Weinam Creek
- > In an excavated area off Moores Road and linking to the creek.

How do we achieve this vision? — Generally residents said that change should be funded through commercial development or by the State and/or Federal Government. Residents did not want any change that increased rates.

Issues summary

- > Stakeholders reported considerable competition between SMBI residents and boaties for carparks and for vehicle access into the Weinam Creek precinct. This congestion makes it difficult for boaties and the Water Police to access the boat ramp, especially on weekends. All stakeholders say any increase in population, island or mainland will make this problem worse. All stakeholders felt that this was an issue beyond Council's control and that help from State Government and the development sector was required.
- > Stakeholders said there should be better separation of pedestrian, vehicle and bus traffic. They also said there should be separation between parking for island residents and parking for boat trailers. These stakeholders suggested that the boat ramp, ferry and barge services could be located closer together.
- > Concern about impact on marine life resulting from any waterfront and on-water development. Seagrass, wetlands and mangrove damage was seen as the greatest constraint. Strong ecological values were also identified in terms of concern for wildlife unique to the area such as dugongs, turtles, native birds, pelicans and flying-foxes.
- > Barge service is too expensive. Community would like to see opportunity for competing barge service.
- > Many island residents are highly dependent on their mainland car to access health and other community services. Any change at Weinam Creek that increases the cost of storing a car on the mainland or that makes it difficult to store a car on the mainland would have a negative impact on island residents.
- > Lack of local employment and underutilised tourism opportunities were the key economic concerns from the majority of residents. The concern for the ability of local businesses to survive due to lack of daily parking was also strongly expressed. Regional access arose as an issue, with participants reporting that public transport from the Gold Coast to Weinam Creek currently takes three and a half hours.

Specific stakeholder issues

Quandamooka Yoolooburrabee Aboriginal Corporation

- > QYAC are the lead agency in assessing cultural heritage.

Redland Bay Water Police

- > Will require suitable berthing for new (larger) rapid response cruiser
- > Would prefer direct access to boat ramp that is separated from island traffic and boat traffic.

Southern Moreton Bay Islands Forum

- > The Weinam Creek PDA has the potential to stimulate tourism to the islands, improving the island economies. Council and State must recognise that development that promotes traffic from the mainland to the islands will increase demand on current island infrastructure and that improvements to island infrastructure should be considered alongside the PDA process to make the most of this opportunity.

Redland Bay Amateur Fishing Club

- > The boat club reports they have invested in their club house and would oppose any compulsory acquisition (that is, if compulsory acquisition was at some point in the future, proposed).
- > As members of Sunfish and as keen fishing enthusiasts the club also opposes any habitat destruction (if this were to occur in the future) that may impact the marine ecology.
- > The club reports that the entrance to Weinam Creek is dangerous in a south easterly wind.



Photos of participants at workshop 1

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3.2 Structure Plan Options

Three structure plan options were developed as a result of the discussion and further refinement following the options development workshop. These are used to describe the alternative futures for the Weinam Creek PDA and were further considered during workshop 2.

Option 1 — New Redland and SMBI Centre

The key elements of Option 1 are summarised below and shown in Figure 11.

- 1 Option 1 develops an urban centre and 2-300 berth marina as the focus of the precinct.
- 2 Land reclamation allows the construction of the marina and creates additional foreshore parkland against Neville Stafford Park.
- 3 Hamilton Road is extended directly through Banana Street to the foreshore creating an esplanade street. This change in the street network unlocks development parcels and improves the legibility for people moving to, from and within the PDA.
- 4 The esplanade street forms the main street with retail and mixed-use development overlooking the parkland to the north.
- 5 The extension of Hamilton Road creates opportunity for an additional community node within the precinct midway between the existing facilities on Weinam Street and along the creek.
- 6 The mixed-use core along the esplanade street and Banana Street are supported by increased residential density on Outridge and Hamilton Streets.
- 7 The vehicle and passenger ferry terminals remain in their current location. They continue to be linked by pedestrian connections along the foreshore and an improved street network.
- 8 At-grade parking within the Weinam Creek PDA is consolidated into a multi-deck structure located in the centre of the precinct and sleeved by development. Additional long-term parking is provided on Council's existing site on Meissner Street.
- 9 The Coast Guard and boat ramp also remain in their current location with the Sea Cadets and Redlands Sea Dragons relocated close by to strengthen this community node and provide improved access to Weinam Creek.
- 10 The marine industry uses located on the southern side of Weinam Creek remain and compliment the community uses opposite. They may also benefit from, and provide services to, the marina. Opportunities for additional small scale marine industry may exist on the northern side of the creek over time.
- 11 The southern part of the PDA is linked physically to the centre with a pedestrian bridge over the mouth of Weinam Creek. This connects into the improved foreshore path, linking key elements within the PDA.
- 12 The large undeveloped parcel on Moores Road is developed for residential with a new street connection to Auster Street. Higher density residential development is located along this new connection, taking advantage of the amenity provided by Weinam Creek and the associated saltmarsh and mangrove area.



Figure 11. Structure Plan Option 1

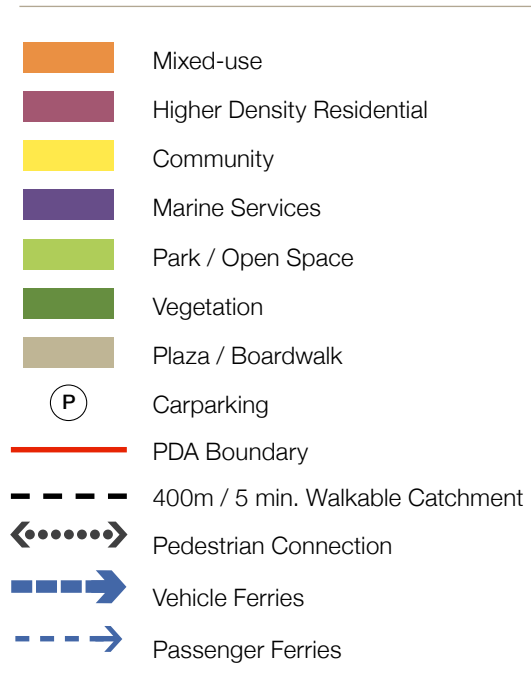


Figure 12. Structure Plan Option 2

Option 2 — Weinam Creek Village

The key elements of Option 2 are summarised below and shown in Figure 12.

- ① Option 2 develops new small mixed-use centre at the end of Banana Street and makes Weinam Creek the focus of the precinct.
- ② It is anticipated that the existing centre on the corner of Banana and Weinam Streets would continue in its current location servicing adjoining community facilities and Neville Stafford Park.
- ③ To achieve a critical mass of development on the northern side of Weinam Creek the existing boat ramp is relocated to the west in the location of the existing Sea Scouts.
- ④ The Sea Scouts can be relocated adjacent to the existing boat ramp where they can share the existing ramp with the Coast Guard.
- ⑤ A new esplanade street links provides a loop from Banana through to Meissner Street following the shoreline. This new esplanade improves the legibility of the development area and efficiency of bus services.
- ⑥ The vehicle and passenger ferry terminals remain in their current location. They continue to be linked by pedestrian connections along the foreshore and an improved street network.
- ⑦ At-grade parking within the Weinam Creek PDA is consolidated into a multi-deck structure located in the centre of the precinct and sleeved by development. Additional long-term parking is provided on Council's existing site on Meissner Street.
- ⑧ The marine industry uses located on the southern side of Weinam Creek are redeveloped over time as higher density residential uses with a public boardwalk along the edge of the creek. There may be opportunities for a small number of marina berths associated with this residential in Weinam Creek.
- ⑨ The southern part of the PDA is linked physically to the centre with a pedestrian bridge over the mouth of Weinam Creek. This connects into the improved foreshore path, linking key elements within the PDA.
- ⑩ The large undeveloped parcel on Moores Road is developed for residential with a new street connection to Auster Street. Higher density residential development is located along this new connection, taking advantage of the amenity provided by Weinam Creek and the associated saltmarsh and mangrove area.

Option 3 — Weinam Creek Marina

The key elements of Option 3 are summarised below and shown in Figure 13.

- ① Option 3 creates a new 100-150 berth marina between the mouth of Weinam Creek and Moores Road in the location of the existing flying-fox colony, saltmarsh and mangroves.
- ② As with Option 2, a small centre is developed at Weinam Creek. The supporting denser residential uses focus the development towards the marina in the south and a number of undeveloped parcels around it. With this option there is less short to medium term pressure to relocate the existing parking areas that service the passenger ferry terminal.
- ③ It is anticipated the existing centre on the corner of Banana and Weinam Streets would continue in its current location servicing adjoining community facilities and Neville Stafford Park.
- ④ The existing boat ramp is relocated to the south of Weinam Creek and the Sea Scouts can be relocated adjacent to the existing boat ramp where they can share the ramp with the Coast Guard.
- ⑤ A new esplanade street links provides a loop from Banana through to Meissner Street following the shoreline. This new esplanade improves the legibility of the development area and efficiency of public bus services.
- ⑥ The vehicle and passenger ferry terminals remain in their current location. They continue to be linked by pedestrian connections along the foreshore and an improved street network.
- ⑦ Ultimately at-grade parking within the Weinam Creek PDA is consolidated into a multi-deck structure sleeved by residential development. Parking associated with the marina is developed on the Moores Road site where it can be integrated with residential development.
- ⑧ The marine industry uses located on the southern side of Weinam Creek are redeveloped over time as higher density residential uses. There may be opportunities for a small number of marina berths associated with this residential in Weinam Creek.
- ⑨ The southern part of the PDA is linked physically to the centre with a pedestrian bridge over the mouth of Weinam Creek. This connects into the improved foreshore path, linking key elements within the PDA. The bridge may constrain the height of boats that utilise the main marina.



Figure 13. Structure Plan Option 3

3.3 Assessment of Structure Plan Options

Workshop 2 — Options Selection and Refinement Workshop

The options selection and refinement workshop was held on Monday 9 September 2013 again with a number of key State and local stakeholders. The first part of this session took the three developed structure options and assessed them against a number of criteria in order to select a preferred structure plan option for the PDA. The second part of the workshop involved discussion and refinement of the preferred option.

Sessions for both the Weinam Creek and Toondah Harbour PDAs were held on the same day. The workshop agenda is shown in Figure 14.

Workshop 2 was again attended by the consultant team, representatives from Redland City Council and State Government agencies as listed below.

- > **Consultant team** — Deicke Richards, Jones Lang LaSalle, BAAM, frc environmental, Cardno and KBR
- > **Redland City Council** Councillors and officers including the following departments — City Planning and Assessment, Environment and Regulation, Corporate Governance, Communications, Water and Waste Infrastructure, City Infrastructure and City Spaces
- > **State agencies** — Economic Development Queensland, Translink, Transport and Main Roads, Maritime Safety Queensland, Environment and Heritage Protection, Natural Resources and Mines, National Parks Recreation Sport and Racing and State Development Infrastructure and Planning.

This workshop was also attended by representatives from QYAC.

The options and assessment criteria are detailed in the following sections.

Options Assessment

The assessment criteria were developed using a combination of elements detailed within the RCC's 2030 Community Plan and EDQ's Strategic Direction. It should be noted that the community plan is an extensive document so only relevant criteria were included and that the criteria has been adapted to suit the specific role of the PDA within the context of Redland City.

The structure plan options for Weinam Creek were initially assessed by the project team and then reviewed and recalibrated as part of the options assessment and refinement workshop with the additional stakeholders.

Table 1 details the assessment of the options.

Within the table each structure plan option has been assessed against each criteria on a sliding scale using shades of blue to indicate the score. A light blue cell indicates where an option does not meet the criteria and a dark blue cell indicates where an option strongly meets the criteria. The mid blue indicates a moderate score.

The cells within the table are coloured according to the score and a commentary of the rationale also provided within.

Workshop 2 — Options Selection & Refinement Workshop

8:00 am	Assemble in the venue (coffee provided)
8:30 am	Workshop welcome & introduction (plenary session) Project introduction (Scott Hutchison & Phil Smith) Participant introductions — all participants to introduce themselves Purpose of the workshop sessions — expected outcomes, what will be produced etc. (Phil Smith) Workshop agenda — how the workshop will be run, timing & report back stages, house rules etc.
8:45 am	Welcome from Redland City Council (plenary session) Welcome and introduction (Nick Clarke, General Manager, Organisation Services, Redland City Council)
Session 1: Toondah Harbour	
9:00 am	Presentation of structure plan options (plenary session) Heritage & Country (QYAC representative, 15 mins) Distillation of previous urban analysis (DR, 10 mins) Market / economics (JLL, 10 mins) Harbour & marina engineering (KBR, 10 mins)
9:45 am	Option selection & refinement (plenary session facilitated by DR) Review of options assessment table and updates as required. Facilitated discussion to select preferred structure plan option.
10:45 am	Detailed investigations (in 3 design teams) Further investigation and detailed design of specific elements of the preferred structure plan option.
12:00 pm	Report back (desktop review around the room) Each design team to give a 10mins. presentation of their team's approach. Discussion on implications for preferred structure plan option (if any).
12:30 pm	Lunch
Session 2: Weinam Creek	
1:00 pm	Presentation of structure plan options (plenary session) Heritage & Country (QYAC representative, 15 mins) Distillation of previous urban analysis (DR, 10 mins) Market / economics (JLL, 10 mins) Harbour & marina engineering (KBR, 10 mins)
1:45 pm	Option selection & refinement (plenary session facilitated by DR) Review of options assessment table and updates as required. Facilitated discussion to select preferred structure plan option.
2:45 pm	Detailed investigations (in 3 design teams) Further investigation and detailed design of specific elements of the preferred structure plan option.
4:00 pm	Report back (desktop review around the room) Each design team to give a 10mins. presentation of their team's approach. Discussion on implications for preferred structure plan option (if any).
4:30 pm	Wrap up / where to from here (plenary session)
5:00 pm	Workshop close



Figure 14. Workshop 2 agenda

Participants at Workshop 2

Weinam Creek
Structure plan options assessment table

Option 1
New Redland and SMBI Centre

Option 2
Weinam Creek Urban Village

Option 3
Weinam Creek Marina



Local and State Economy

Short Term Opportunities for Economic Growth
Long Term Opportunities for Economic Growth – 10 plus years

- New esplanade street and small mixed-use development next to existing ferry terminal
- Lower density residential south of Weinam Creek

- Boat ramp relocation may delay establishment of mixed-use centre
- Lower density south of Weinam Creek

- Comparatively less short term opportunity
- Boat ramp relocation may delay establishment of mixed-use centre
- Lower density south of Weinam Creek

- Marina stimulates denser residential growth subject to market acceptance
- Multi-deck carparking enables extension of mixed-use centre to north to join up with existing centre
- Boat ramp limits land for residential growth
- Reclamation areas to enable marina development

- Multi-deck carparking enable significant residential development on foreshore
- Lack of marina may provide comparatively less demand for high density residential
- High density residential subject to market acceptance
- Questionable viability of three centres at Redland Bay

- Marina and multi-deck carparking enable significant residential development on foreshore
- Boat height restriction in marina may limit some of the market
- Questionable viability of three centres at Redland Bay

Traffic and Parking

Street Efficiency
Effective Parking
Effectiveness of vehicle ferry services

- 11,000 VPD
- Extending Hamilton to Banana Streets enhances movement economy
- New esplanade street unlocks development parcels
- Street arrangement needs to better suit marina activity

- 5,700 VPD
- New esplanade street unlocks development parcels

- 5,500 VPD
- New esplanade street unlocks development parcels
- Requires upgrade of Meissner and Moores Road intersection initially

- 1,484 carparks required
- Existing parking consolidates

- 1,000 carparks required
- Existing parking consolidates in short term

- 1,090 carparks required
- Existing parking consolidates in short term

- Space for additional ferry ramp and associated parking

- Space for additional ferry ramp and associated parking

- Space for additional ferry ramp and associated parking

Environment and Heritage

Protect, Restore & Enhance Environment
Opportunities to interact with nature
Opportunities for Aboriginal stewardship and reconciliation

- Low marine environment impact from marina
- Protection of saltmarsh and flying-fox camp
- Low koala impact, easily offset
- Proximity of high-density residential to flying-fox camp may pose nuisance

- Low marine environment impact
- Protection of saltmarsh and flying-fox camp
- Low koala impact, easily offset
- Proximity of high-density residential to flying-fox camp may pose nuisance

- Significant impact on existing saltmarsh and flying-fox colony
- Significant impact on marine environment
- Removal of saltmarsh will result in decreased water quality due to lack of filtering
- Low koala impact, easily offset

- Direct access to bay tidal area possible with large park
- Flying-fox interaction possible

- Direct access to all existing ecosystems possible
- Flying-fox interaction possible

- Removal of salt mash reduces opportunities to interact with this ecosystem

- Requires clarification
- For consideration – ticketing centre permitting tourism, education, information centre, aquaculture & marine based tourism
- Need to acknowledge and respond to the heritage on the site

- Requires clarification
- For consideration – ticketing centre permitting tourism, education, information centre, aquaculture & marine based tourism
- Need to acknowledge and respond to the heritage on the site

- Considerable impact on Weinam Creek as a significant heritage site and piece of Country
- Requires clarification
- For consideration – ticketing centre permitting tourism, education, information centre, aquaculture & marine based tourism
- Need to acknowledge and respond to the heritage on the site

Table 1 Structure plan options assessment table

Weinam Creek
Structure plan options assessment table

Option 1
New Redland and SMBI Centre

Option 2
Weinam Creek Urban Village

Option 3
Weinam Creek Marina



Sustainable Transport	Effective Passenger Ferry & Bus Services	<ul style="list-style-type: none"> - Improved street efficiency good for bus service - Hamilton Street extension and esplanade loop street improves bus efficiency 	<ul style="list-style-type: none"> - No change - Esplanade loop street improves bus efficiency 	<ul style="list-style-type: none"> - Relocated ferry terminal may increase ferry trip length but improves residential catchment - More likelihood of conflicts between ferry traffic and other boating traffic
	Effective Cycle and Pedestrian Connectivity	<ul style="list-style-type: none"> - Continuous linkages, uninterrupted by traffic possible along edge of the bay - More direct pedestrian links into the middle of the site and to the north-west 	<ul style="list-style-type: none"> - Continuous linkages, uninterrupted by traffic possible along edge of the bay 	<ul style="list-style-type: none"> - Continuous linkages, uninterrupted by traffic possible along edge of the bay - Strong connection to the south
Community and Recreation	Effectiveness of community facilities	<ul style="list-style-type: none"> - Community facilities enhanced by close proximity of large centre 	<ul style="list-style-type: none"> - Some additional community facilities can be integrated with new mixed-use centre 	<ul style="list-style-type: none"> - Some additional community facilities can be integrated with new mixed-use centre
	Support for recreational boating (boat ramps & marinas)	<ul style="list-style-type: none"> - New marina and enhanced maritime industry - Consider relocation and expansion of boat ramp 	<ul style="list-style-type: none"> - New boat ramp 	<ul style="list-style-type: none"> - New marina - Pedestrian bridge may limit boat height
	Creating green recreational opportunities	<ul style="list-style-type: none"> - Increased parkland on foreshore 	<ul style="list-style-type: none"> - Increased parkland on foreshore 	<ul style="list-style-type: none"> - Increased parkland on foreshore but reduced passive recreation outlook through the removal of saltmarsh vegetation
Character and Livability	Vibrancy of centres and gathering places	<ul style="list-style-type: none"> - Large centre with variety of uses and greater opportunity for residential density in long term - New centre reinforces existing centre - Dispersed retail - Need to consider limits to 'out-of-centre' retail / commercial amounts 	<ul style="list-style-type: none"> - Improved vibrancy with new centre and recreation - Existing centre and new mixed-use centre separated 	<ul style="list-style-type: none"> - Improved vibrancy with new centre - Marina supports a vibrant residential community
	Strengthening Physical Character & Heritage	<ul style="list-style-type: none"> - Retention of existing maritime industry activities enables greater depth of legitimate character - Need to map heritage components 	<ul style="list-style-type: none"> - Improved character possible through careful interpretation of existing built form - Need to map heritage components 	<ul style="list-style-type: none"> - Improved character possible through careful interpretation of existing built form - Impacts on Weinam Creek heritage and vegetation - Need to map heritage components
Risk and Cost	Efficient cost of infrastructure	<ul style="list-style-type: none"> - Costly marina excavation - Cost and timing of changing carparking regime - Relocate and resolve boat ramp and carparking 	<ul style="list-style-type: none"> - Cost and timing of changing carparking regime - Relocate and resolve boat ramp and carparking 	<ul style="list-style-type: none"> - Costly marina excavation - Cost and timing of changing carparking regime - Relocate and resolve boat ramp and carparking - Relocation of ferry terminal and transit interchange
	Likelihood to succeed	<ul style="list-style-type: none"> - Staged marina improves apartment appeal - Unproven apartment residential market - Removal of free parking areas - Cost of maintenance dredging 	<ul style="list-style-type: none"> - Unproven apartment residential market - Removal of free parking areas 	<ul style="list-style-type: none"> - Lots of apartments in unproven market - Removal of free parking areas - Removal of saltmarsh, flying-fox colony and Weinam Creek heritage - Cost of maintenance dredging - Cost of pedestrian bridge, may limit market

Table 1 Structure plan options assessment table (continued)



3.4 Preferred and Refined Structure Plan Option

The assessment and discussions held as part of the options assessment and refinement workshop resulted in a preference for Option 1 for the Weinam Creek PDA structure plan which focused on a new centre with opportunity for a 300-400 berth marina.

Following the selection of the preferred option, a number of elements and items to refine the structure plan were discussed. These included:

- > Relocation of the existing boat ramp to the South or West of the PDA to create more opportunities for redevelopment at the core of the PDA and to reduce boating and centre traffic conflicts
- > Inclusion of a new Boating Club extending into the marina next to the existing passenger ferry terminal
- > Providing for some at-grade long term parking areas on the southern side of Weinam Creek on the vacant Moores Road site
- > Rationalising marina walls and wave breaks
- > Placing dredged material into a northern marine services groynes
- > Providing flexibility for the passenger ferry terminal to be relocated to the End of Banana Street where it can more effectively service at grade parking areas.

The refined structure plan option for the Toondah Harbour PDA is shown at Figure 15. This forms the outcome of workshop 2, subsequent stakeholder negotiations and the basis of the structure plan documented in Section 4.

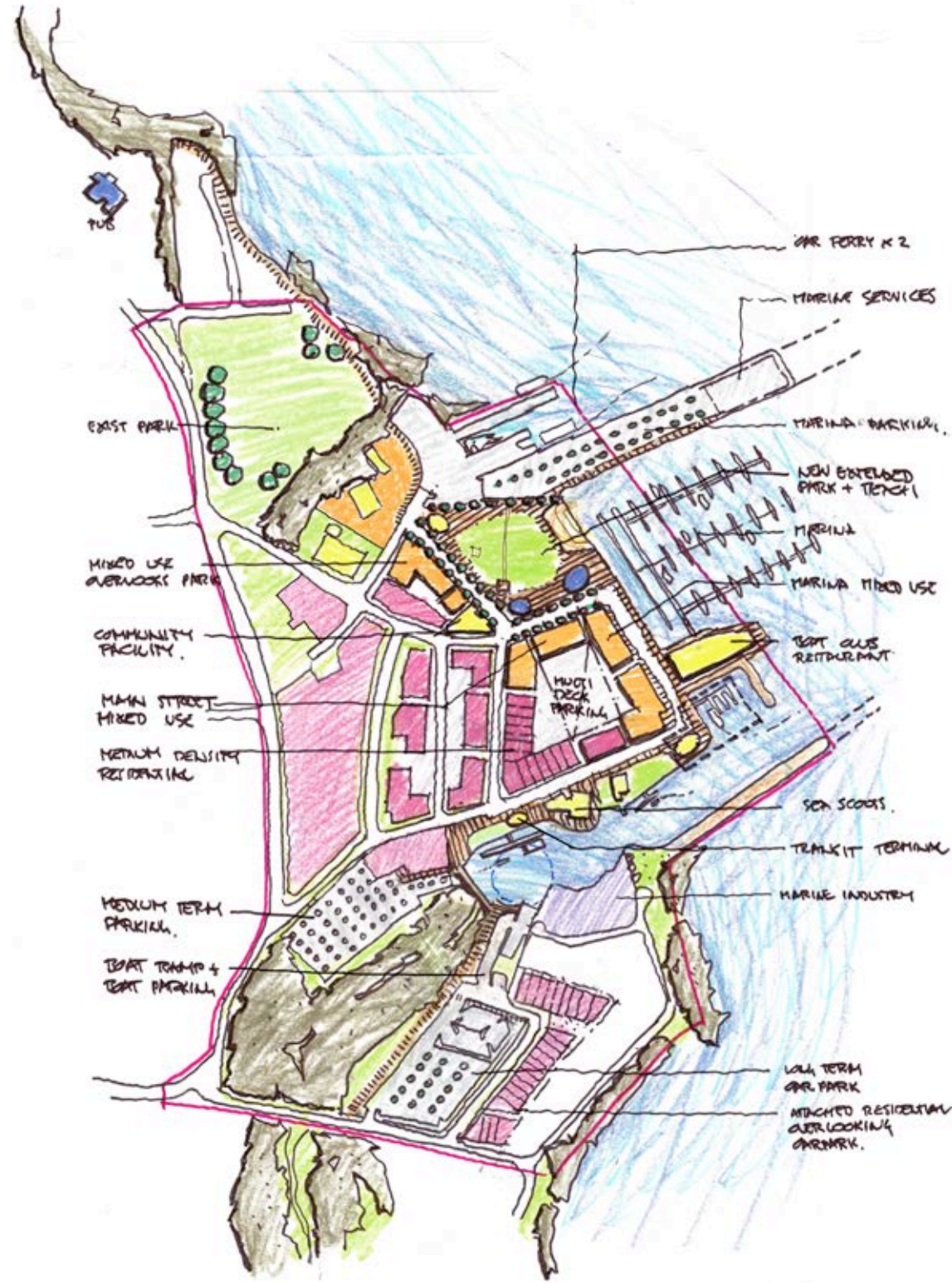


Figure 15. Weinam Creek PDA preferred structure plan option

4. STRUCTURE PLAN

The structure plan describes the physical economic responses within the PDA. It distills the analysis and design phases of the structure planning process into a concise structure for the Weinam Creek PDA. The structure plan has the following key elements:

- > Principles – the key design principles that have guided decision-making and within the priority development area
- > Economic strategy – the strategic economic initiatives that will drive growth within the PDA
- > Movement and access – an outline of the vehicle and pedestrian movement functionality also integrating car ferry and passenger ferry activity
- > Land use and urban form – the integration of built form opportunity with land use outcomes
- > Open space and public realm
- > Environmental strategy
- > Infrastructure strategy

The implementation of this plan is further explored in Section 5.

4.1 Design Principles

The many opportunities for change within the Weinam Creek PDA have broader economic implications for Redland City and the City's islands population. To guide the decision making around the opportunities the structure plan proposes four key design principles. Principles are relevant to all functional and experiential aspects of the priority development area. These are described and illustrated to the right.

Transformative Village

Weinam Creek has the potential to transform the community. It will lead the way for Redland Bay in establishing new and highly sought after housing and business choices, it will engage the Redland Bay community with the bay through a richer range of experience and activities.

Assessable Islands

Weinam Creek continues to be the key access point to the SMBI communities and associated waters. As these areas draw more permanent residents and temporary visitors over time, Weinam Creek will grow to offer a diverse range of facilities that enable convenient access to this part of the bay and engender value and understanding of its assets.

Embracing Communities

Weinam Creek strengthens an important role as provider of community services and as a meeting point for a diverse range of interest groups. Integrating these services and organisations at this location will improve their viability and effectiveness but also leverage growth of allied businesses. Physically the location of these uses will embrace the existing parkland.

Bay Side Landscape

People will flourish at Weinam Creek. The PDA brings together a number of favourable conditions for the establishment of a high quality garden setting on the edge of Moreton Bay. The extensive and diverse range of open space areas, from formal through to natural, offer an opportunity to deliver a rich tapestry of landscape experienced through the precinct.





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4.2 Overall Structure Plan

The overall structure plan for the Weinam Creek PDA provides for a new bay side community village with easy access to the SMBI communities (see Figure 16). It provides a range of recreational opportunities and community services.

1 The Esplanade

A new esplanade street connects Hamilton Street directly to the foreshore and back through to Meissner Street. This street provides easy and more legible access into the PDA and improves the functionality of public transport connections with the passenger ferry terminal. The esplanade street also removes conflicts between vehicle ferry traffic and general traffic on Weinam Street. Resultant redundant road reserves and truncated parcels are amalgamated and incorporated into the mixed-use frame.

2 Neville Stafford Park

At the heart of Weinam Creek is Neville Stafford Park. The park unites the economic and community activity of the PDA within a flourishing and desirable parkland setting. The park overlooks a new marina and includes a tidal area against the bay to provide opportunities to people to interact with the marine environment. On the edge of the park, a series of pavilions are located which contain a mixture of retail and community services. These pavilions are activated on all sides and allow people to move into, and around, the park with ease. The creation of this park can occur early in the redevelopment and encourages investment in the PDA whilst also transforming perceptions of potential of this location.

3 Mixed-use and Community Frame

A crescent of mixed-use building embraces Neville Stafford Park. At ground level these provide an active frontage of community uses, commercial and retailing servicing the SMBI and Redland Bay communities. Retailing is concentrated on the new esplanade street with its stronger movement economy. Frontages are linked by continuous awnings that provide shelter and a high level of pedestrian access between uses. Upper levels are predominantly residential with views to the bay beyond the park. The larger parcel to the south will include a multi-deck carpark providing short-term parking associated with the ferry movements and retailing.

4 Marina

A staged marina is established at Weinam Creek. The marina expands the range of recreational activities currently available at Weinam Creek and attracts a broader range of housing choices. The marina is designed to enable gradual expansion up to 400 berths and is accessed from the existing channel. A new boat club extends into the marina which can act as the primary licensed and function area for the PDA. The on-land component of the marina will include residential and marina mixed-use buildings that activate the esplanade street and overlook the marina. The northern edge of the marina is formed by a marina parking area and fenced dredge spoil disposal areas. It is anticipated that parking will be extended and dredge spoil disposal activity will be relocated to the end of the pier area each time suitable land is reclaimed.

5 Weinam Creek

Weinam Creek continues to provide for a diverse range of recreational and marine service activities associated with the bay and islands. The creek itself is an egalitarian focal point for boating. Boat ramps, mooring areas and slipways line the creek edges and there is constant activity in this area associated with boating. A new transit terminal is located at the western end of Weinam Creek along with a new Sea Scouts facility. The structure plan provides for the passenger ferries and bus services to continue in their current location while allowing the opportunity to relocate the passenger ferry terminal and Translink Redland Bay Marina bus station upstream on the northern side of Weinam Creek. This relocation would occur after carpark areas on adjacent land to the proposed new ferry terminal are established and new carparking is provided. A new pedestrian bridge links the northern and southern ends of Weinam Creek. The boat ramp is relocated to the southern side of the creek that improves access for recreational boat users. This location also reduces the conflicts between trailer boats and core PDA pedestrian and vehicle traffic.

6 Long-term Parking

The relocation of the passenger ferry service to the west on the mouth of Weinam Creek creates opportunities for convenient and affordable longer term parking areas at the edge of the PDA. In this location parking utilises less valuable land and has better accessibility to the trunk road infrastructure on the edge of the PDA.

7 Vehicle Ferry Precinct

A parking and vehicle ferry precinct is located in the northern part of the PDA and concentrates the vehicle ferry movements associated with access to the SMBI communities. The precinct is accessed from Weinam Street and keeps essential vehicle movements away from the highly pedestrianised parts of the development area. Facilities for two independent ferry operators are provided along with at-grade parking areas.

8 Residential Frame

Residential intensifies around the frame of the Weinam Creek PDA. This intensification will be ongoing and accommodate a range of housing solutions. Frame areas include housing on Moores Road, The Esplanade (south of Weinam Creek) as well as Hamilton, Banana and Weinam Streets. Frontage requirements are relaxed along Outridge Street to enable this street to provide vehicle service and access points to development fronting Hamilton and Banana Streets. Relaxing frontage requirements in Outridge Street will improve yield and outcomes on these properties.

9 Sel Outridge Park

Sel Outridge Park continues to provide active recreational choices that require more space than can be achieved at the core of the PDA. It provides opportunities to interact with the marine ecology and habitat areas to the south. The eastern edge of the park includes a north-south coastal linkage.

- Retail
- Mixed-use
- Medium – High Density Residential
- Community
- Marine Services
- Park / Open Space
- Vegetation
- Plaza
- Beach
- Dredge Spoil Disposal Area
- Community Node
- Existing Translink Redland Bay Marina Bus Terminal
- P Carparking
- PDA Boundary
- Boat Ramp
- Passenger Ferries
- Vehicle Ferries
- Future Passenger Ferry Terminals
- Future Translink Redland Bay Marina Bus Terminal
- 1 The Esplanade
- 2 Neville Stafford Park
- 3 Mixed-use and Community Frame
- 4 Marina
- 5 Weinam Creek
- 6 Long-term Parking
- 7 Vehicle Ferry Precinct
- 8 Residential Frame
- 9 Sel Outridge Park

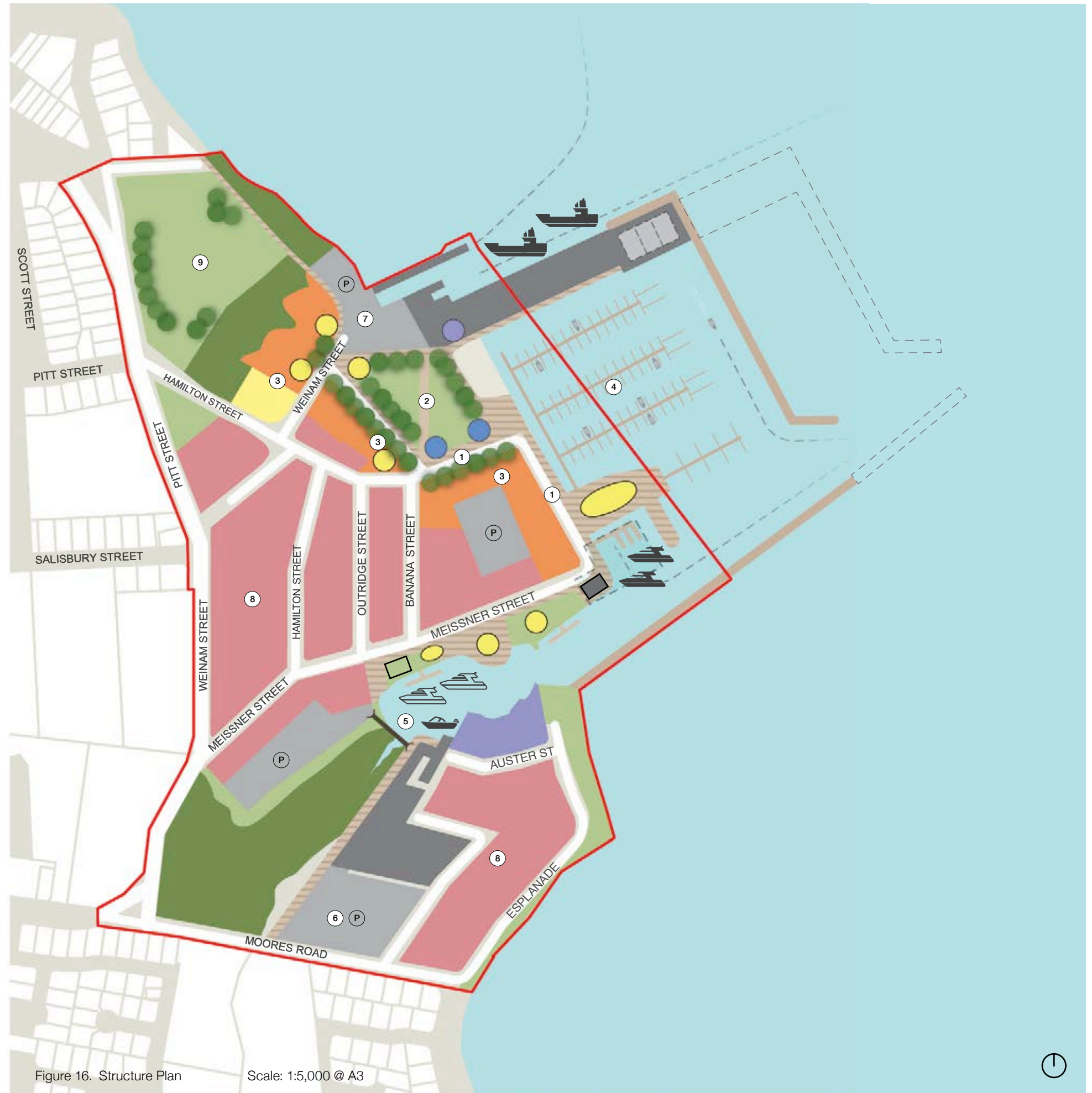


Figure 16. Structure Plan Scale: 1:5,000 @ A3

4.3 Economic Strategy

Retail Development Opportunities

Retail development within the PDA is a critical component of the urban renewal of Weinam Creek, helping to create activity, a sense of community and identity as well as supporting other commercial and residential activity.

Weinam Creek complements rather than competes with the existing nearby Redland Bay Shopping Village, which has been rezoned to develop as a District Shopping Centre, incorporating a large supermarket.

Achieving both local buy-in from its primary catchment of Redland Bay as well as providing services to residents of SMBI is critical to the success of a retail development at Weinam Creek.

While a full-line supermarket could be supported at Weinam Creek, Redland Bay Shopping Village is recommended as a superior location for such an anchor tenant. This is for a wide range of reasons including but not limited to: better retailing alignment with grocery shopping with other town centre uses; the ability to fully utilise high value waterfront land for higher and better uses delivering a stronger economic return; and enabling waterfront land to be utilised for activities that are consistent with the vision for the site in creating a strong mixed-use destination.

Retailing at Weinam Creek focuses on leisure / lifestyle and incorporates a restaurant / dining precinct of 800-900 square metres. Possible uses include day spas, health and beauty services, boating related retail products, leisure wear, specialty food retailing and local services to serve both residents and ferry patrons.

Café / dining precincts are difficult to support in isolation but are a core land use in most successful waterfront precincts. Leveraging the water views and north facing opportunities where possible will be important. Quality urban design and integration of the retail with the surrounding uses ensures maximum potential for activation and the highest possible levels of pedestrian connectivity with strong linkages to other activators on or adjoining the site. This is an important component of supporting strong retail turnover levels and creating an economically sustainable retail precinct at Weinam Creek.

The amount of retailing supportable depends on how much of a destination Weinam Creek can become. While the retail component is an important attractor to the site, it is considered it will not be the major attractor in its own right. Instead it will form a component of an integrated mixed-use precinct with other attractors including a marina, its waterfront location and tourism associated with Weinam Creek being the gateway to SMBI. This is supported by a high quality recreational amenity along the waterfront, together forming the cluster of key uses that are likely to create the destination appeal.

Residential Development

Redland Bay has experienced limited residential development in the past two years, but has seen strong growth over the past decade. Residential estates of note in Redland Bay include AMEX Corporation's Valencia Springs and Fiteni Homes' Redland Bay Grove. Longer term, the mooted development of areas south of Redland Bay, known as 'Shoreline', has the potential to provide significant population growth for an extended period of time for the suburb if it proceeds.

The market for apartments and units is expected to be shallow, at least in the short to medium term as 98% of all stock is detached housing. However, factors such as proximity to a new marina, water views, high quality amenity and proximity to services will all assist in building a market for denser residential development.

The market will be price sensitive and the majority of apartments / units in the initial stage will need to be priced competitively given the local demographic profile, particularly product aimed at the investor market.

With medium density product being a new market within the early stages of development, an incremental approach to increasing density will ensure product is financially viable and market supportable as well as being brought on-line as the retail and recreational amenity becomes established. The structure plan has small lot terrace and townhouse packages followed by smaller apartment projects of around 20 units with views over water, which are delivered as part of a mixed-use scheme over the core of the waterfront retail precinct.

Marina Development

A marina at Weinam Creek would provide direct access to open water and the Southern Moreton Bay Islands (SMBI). It also has the potential to provide a strong anchor to an attractive precinct, incorporating retailing (convenience based; leisure / lifestyle; cafes and restaurants), a tavern, housing and marine related uses.

The main market for wet berths will come from boat owners with vessels at least 10 metres in size, from Redland LGA and to a lesser extent, from Logan LGA and Brisbane South. Weinam Creek may be preferred to alternative locations such as Manly Boat Harbour due to its smaller scale.

A marina of around 200 berths is considered supportable over the next 15-20 years, with demand coming from existing nearby boat owners with a preference for Weinam Creek over their existing berth as well as expected growth in boat ownership in the main catchment of Redland LGA, Logan LGA and Brisbane South.

The structure plan marina can be staged to take into account the growing demand for marina berths as the population base increases.

The marina appears particularly well suited to the site due to: 1) financial feasibility due to existing deeper water conditions requiring less dredging and pre-existing infrastructure; 2) ability to stage appears easier compared with Toondah Harbour; and 3) ability to develop the marina as a stand-alone component is considered a major plus that enables the marina to be staged as market demand conditions support it.

Other Development Opportunities

The main location for health services in Redland LGA is at Cleveland (two hospitals and supporting allied health services). With solid population growth, there is expected to be future demand for a more comprehensive medical and health services clinic at Redland Bay, such as a GP Super Clinic. A GP Super Clinic is expected to require a site of around 5,000 square metres. Weinam Creek could accommodate such a facility.

There is not considered to be significant scope for Weinam Creek to support visitor accommodation in the short to medium term. Even if Weinam Creek attracts some tourist visitation, it is expected that the market will primarily be day-trippers not requiring overnight accommodation. Visitors looking for a longer stay are more likely to be attracted to one of the nearby islands, particularly North Stradbroke.

There is a major opportunity for future retirement living with Redland LGA set to experience very strong growth in its population aged 65 and over (from 21,496 in 2011 to 52,728 in 2031, an increase of 31,252). This will support additional retirement villages / accommodation.

Over 3,000 additional retirement units will be supportable across Redland LGA to 2031. With large sites in the northern suburbs of Redland LGA becoming rarer, a sizable proportion of this demand could be accommodated in Redland Bay, including Weinam Creek.

Over time, integrated communities including retirement living and other complementary uses, multi storey complexes and small clusters of retirement units are likely to be demanded by an ever evolving sector. The lifestyle / leisure attributes of Weinam Creek are well suited to attract this important market sector.



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Indicative illustrative perspective looking west

4.4 Movement and Access

The movement and access strategy focuses on providing for better traffic separation between boaties, islanders and public transport providers. The strategy also focuses on providing maximum connectivity to the PDA.

The strategy is designed to improve pedestrian movement through the site and align this with the transport options provided in the PDA. A balance is achieved between the place and movement function of streets. Streets within the PDA have multiple functions. Where movement functions of a street conflict with place functions, the place function should take priority.

The Weinam Creek access and movement network (shown in Figure 17) has been designed to:

- > Promote pedestrian movement as the priority form of movement within, to and through the PDA
- > Provide a legible network of streets, spaces and linkages within the PDA
- > Make future infrastructure adapt to the urban environment and conditions, not adapting the urban environment to the infrastructure
- > Provide safe and attractive connections to adjoining uses and places in particular facilitating a coastal edge connection from the north to the south of the PDA
- > Deliver direct and effective public transport connections and facilities that promote the PDA as a convenient destination and interchange point for services connecting with the islands
- > Ensure that public and passenger transport access is legible and clear and well connected to key services in the PDA
- > Actively manage on-site carparking to encourage alternative forms of travel to and from the PDA without creating impacts on the existing SMI residents
- > Reduce the visual impact of long term parking areas in the PDA while maintaining effective access to passenger ferry services.
- > Carefully arrange the street network and land uses and achieve a grid system of street connections. Ensure access to the site does not detrimentally impact on the amenity and safety of residents and visitors to the site will be a priority;
- > Use industry best practice with regards movement to ensure optimum accessibility for pedestrians, cyclists and public transport users;
- > Integrate land uses to ensure that the facilities, including parking, for boat ramp and ferry terminals are closer together
- > Sufficient parking facilities are provided for the ferry patrons without the area being dominated by parking.

Key elements of the access and movement network are detailed in the following sections.

Street Network

A workable street network is achieved by improving the street connectivity to the heart of the site. Key infrastructure includes:

- > The extension of Hamilton Street to create a direct link to the mixed-use, marina and public transport areas
- > An esplanade, providing improved access to the waterfront and an easing to traffic congestion. This allows for a one way public transport route which will improve the frequency and efficiency of the route.
- > Sites with frontage to Hamilton and Banana Street have additional access from Outridge Street at the rear for private vehicle and servicing. Front doors and principle pedestrian and visitor access to the properties will be from Hamilton and Banana Street.

Pedestrian and Cyclists

The Weinam Creek PDA is a walkable and very active urban environment, rich in transport options. A network of footpaths, open space, plazas, boardwalks and mid block linkages and bikeways provide high levels of connectivity internally and externally.

The pedestrian and cyclist network is well connected to land and water transport facilities to ensure excellent access to buses and ferries for longer journeys. Long-term parking areas associated with the passenger ferry service are well lit, secure with passive surveillance from adjoining streets and public walkways.

Pedestrians are well catered for with generous footpaths and boardwalks. Pedestrian spaces next to primary active frontages will be comfortable and protected from the sun and rain by awnings and street trees reflecting the subtropical feel and nature of the place.

Conflicts between pedestrian movement and marina access will need to be managed. It is imperative that views are retained therefore marina access points will enable clear views of the marina from the promenade and the surrounding development. The minimum width of the pedestrian waterfront promenade is to be 4.5m.

Formal road crossings are provided along the preferred pedestrian desire lines such as the intersection of Banana Street and the new esplanade street.

The major pedestrian and cycle facilities which are critical to the success of the PDA include:

- > Completed links in the pedestrian and cycle network, key missing links include sections of Banana Street, Weinam Street and Hamilton Street;
- > General improvements to pedestrian connectivity along the waterfront, including opening up the area currently occupied by the carparking and providing access along the southern edge of Weinam Creek;
- > A pedestrian and cycle connection to the south of the Weinam Creek by way of a pedestrian / cycle bridge. This incorporates the area bordering Moores Road into the PDA, providing links to the residential areas, southern waterfront and proposed long term parking
- > New connections are well integrated with the existing path network.

- Park / Open Space
- Vegetation
- Plaza
- P Carparking
- PDA Boundary
- Street Network
- Street with Focus on Private Vehicle and Servicing Access
- Cycle Path
- Pedestrian Connection
- Indicative Carpark and Service Access Point
- Existing Translink Redland Bay Marina Bus Terminal
- Boat Ramp
- Passenger Ferries
- Vehicle Ferries
- Future Passenger Ferry Terminals
- Future Translink Redland Bay Marina Bus Terminal



Figure 17. Movement and Access Plan

Scale: 1:5,000 @ A3

Land Use and Public Transport

A range of measures will contribute to the shift from private vehicle trips that will achieve a high usage of sustainable transport modes. These include:

- > The relocation of the public transport hub and passenger ferry facilities to the south west corner of Weinam Creek allows for these facilities to be integrated with the proposed new carparking spaces bordering Meissner Street and north of Moores Road
- > The esplanade loop allows for a one way public transport route which improves the frequency and efficiency of the route. The use of this loop allows all public transport services to provide full penetration of the PDA, this allows for all residents and users to access public transport services with minimum walking distances
- > Direct and immediate transfers between ferry and bus services maximises sustainable transport opportunities
- > The structure plan provides for the operation of passenger ferries, the Translink Redland Bay marina Bus station and community uses and allows for long term opportunity to relocate these upstream after carpark areas on adjacent land to the proposed new ferry terminal are established and carparking is provided.

Table 2 Indicative Parking Requirements of the PDA

Parking Type	Description of User	Location	Parking Rate	Indicative Parking Spaces
Short Term	Customers of the retail and commercial centre (including visitors to the marina / waterfront) of the PDA with allocation for staff	Sleeved parking bordered by the new Esplanade and Banana Street at the foreshore	5 spaces per 100sqm	212 spaces [^]
Medium Term	Marina Parking	To the north of the marina built on reclaimed land into the bay.	0.6 spaces per berth	240 spaces [*]
Medium Term	SMBI Residents, this level of parking would allow for day / overnight parking for user of the ferry who are using their cars to travel to work etc	To the south of Meissner Street and to the east of Weinam Creek.	Total of 967 spaces are currently allocated for passenger ferry patrons (calculated from total provision minus marina & boat ramp spaces)	At least 500 spaces [†]
Medium Term Parking	Provision of parking at for the users of the boat ramp.	To the immediate south of Weinam Creek, accessed via Moores Road	90 spaces per boat ramp	90 spaces [#]
Long Term Parking	Provision of secure long term parking for SMBI residents who require secure parking facilities	Bordering Moores Road between the residential and wetland area.	Total of 967 spaces are currently allocated for passenger ferry patrons (calculated from total provision minus marina & boat ramp spaces)	At least 500 spaces [†]

[^] Assuming the preliminary yields calculations are correct; mixed-use areas comprise 4,230sqm GFA

^{*} Assuming 400 berth marina

[†] Total existing passenger ferry spaces provided, to be retained at minimum, between long term and medium term facilities

[#] Assuming a single boat ramp

Table 3 Street hierarchy and function

Road Classification	AADT	Equivalent Residential Lots	Design Speed	Number of Lanes	Carriageway Width	Minimum Verge Width	Reserve Width
Access Street	1,000	100	30 km / h	2	6m	4m	15m
Local Collector	<3,000	300	40 km / h	2	7m	4m	18m
Trunk Collector	3,000 – 10,000	1,000	50 km / h	2	11 to 14m	4 to 6.5m	19 to 27m
Sub-arterial	<15,000 – 20,000	2,000	60 km / h	2 or 4	12 to 20m	4 to 6.5m	20 to 33m



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4.5 Land Use and Built Form

Land uses at Weinam Creek are intended to reflect the complimentary nature of this centre to the existing Redland Bay Shopping Village and the role it plays in providing key land based services to the SMBI community. Within this mix there is a focus on community services, health services and residential along with ancillary commercial and retail uses.

Land Use

Land uses and their location within the village (see Figure 18) will deliver the following outcomes:

- > Generate economic activity within the existing and future development markets
- > Be transit supportive — maximise use of active and public transport by locating workers and residents within walking distance of the transit options and convenience retailing
- > A mix of land use that promotes activity weekdays and at weekends
- > Retail destination activities providing for the ancillary convenience needs to PDA residents as well as providing opportunities for cafes, restaurants and marina related retailing. These will be concentrated on the new esplanade street where it overlooks the Neville Stafford Park and new marina
- > Commercial uses provide employment related to community facilities and services on Banana Street overlooking Neville Stafford Park
- > A range of residential housing options, which contribute to village activation and generate ongoing economic activity
- > Marina berths and associated access ways
- > Public open space to bring the broader community in contact with Moreton Bay and adjoining habitat areas
- > Marine services areas and marine based community facilities meeting the service needs of the marina and ferry traffic.

Ultimately, the private sector will be developing the PDA and deliver the land use mix. Due to the varied and cyclical nature of property markets, developers will need a certain level of flexibility to accommodate changing demand and supply. However, they will be required to deliver the outcomes described above.

The proposed land use location and mix is based on advice and research of the current market conditions.

Height and Intensity

The Weinam Creek PDA will be characterised by building forms generally ranging in height from 3-7 storeys. Taller buildings generally cluster around Neville Stafford Park and towards the marina. These are generally mixed-use containing retail, residential and employment opportunities. Building heights in storeys are shown in Figure 18.

Built Form

Buildings are not the same from roof to street level — they have a distinct bottom, middle and roof. Buildings with continuous undifferentiated facades from top to bottom are not appropriate. Building façades may maintain a zero setback to these streets for the full height of the building provided that some form of differentiation is maintained between bottom (podium), middle and top. This may include changes in storey height, the inclusion of a building waist, materials etc.

Ground levels are built to the street frontage adjacent to Neville Stafford Park and the marina. On-site carparking areas, loading bays and service areas are either integrated within or under buildings and sleeved by active frontages, or are located away from the public realm behind buildings. The use of large blank screens to mask loading areas is not appropriate. Basement carparking is unlikely due to geological constraints.

Perimeter buildings reinforce street edges regardless of their inherent land use and provide year round weather protection along all active street frontages. Regardless of height, buildings maintain a strong relationship with the street by defining the public realm through podiums or other façade elements. Towers in plazas are not acceptable.

Gateways and Landmarks

To improve legibility a clear hierarchy of spaces and streets within the Weinam Creek PDA is proposed. The hierarchy relates to the pattern of movement creating a clear legible structure. The following urban design ideas are integrated into the layout for the PDA.

The main vehicle access into the PDA, Hamilton Street from the north and Meissner Street from the south, are rationalised and link to the new esplanade street. Buildings and landscaping along these streets will be part of the sequence of entry to the site. At the core of the site these streets open up to Neville Stafford Park, Weinam Creek and the new marina. A new landmark building will mark the heart of the PDA on the corner of Banana street and the new esplanade street as shown in Figure 18.

Frontages

Three frontage types are proposed to deliver built form with a graduation of definition and activity from high to low. The frontage types proposed are primary active frontages, secondary active frontages and tertiary frontages.

Primary Active Frontage

Primary active frontages refer to ground level facades which face streets, plazas and boardwalks. They are built up to, or near, the public realm edge, are generally parallel to streets alignment and contain uses characterised by high pedestrian footfall such as retail. They are visually and physically permeable containing many windows and entrances. They do not include blank walls, louvre grills for plant rooms or parking areas and rows of fire escapes. Upper floors of a primary active frontage provide opportunities to overlook the street, increasing surveillance and reinforcing the active frontage. The location of primary active frontages within the PDA is illustrated in Figure 18.

Secondary Active Frontage

Secondary active frontages are located away from major gateways and more intense pedestrian spaces. In these areas, buildings are setback slightly from their front alignments to define streets and public spaces. Frontages contain landscaping and well-detailed and articulated access points at frequent intervals along pedestrian networks. Awnings are generally not continuous with an emphasis on key entry points. Secondary frontages may be activated by commercial uses or residential uses. Entries are emphasised through architectural and landscape treatment, pedestrian movement paths, awnings and height. The location of secondary active frontages within the PDA is illustrated in Figure 18.

Tertiary Frontage

Tertiary frontages in the PDA maintain strong street setbacks but allow for servicing and other activities where they do not impact upon pedestrian movement and access. These frontages are generally against lanes or areas of vegetation. The location of tertiary frontages within the PDA is illustrated in Figure 18.

- Retail
- Mixed-use
- Medium – High Density Residential
- Community
- Marine Services
- Park / Open Space
- Vegetation
- Plaza
- Beach
- ✱ Landmark Building
- Community Node
- P Carparking
- PDA Boundary
- Reclamation / Dredge Spoil
- Primary Active Frontage
- Secondary Active Frontage
- Tertiary Frontage
- Pedestrian Entry Point
- 7 Maximum Height in Storeys

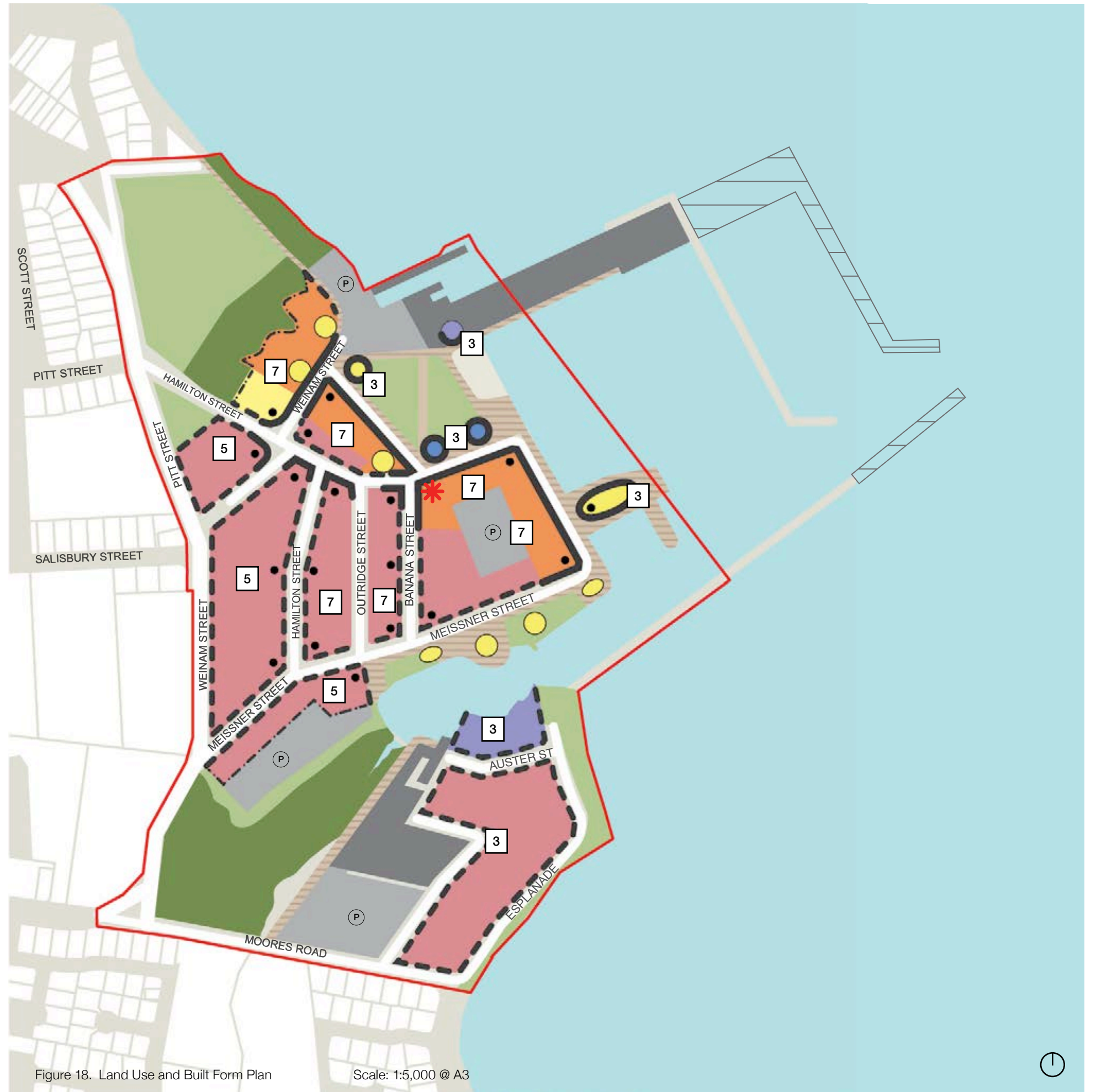


Figure 18. Land Use and Built Form Plan

Scale: 1:5,000 @ A3

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Building Interface

The interface between buildings and streets is important to create a vibrant centre. Figure 19 provides an example of typical interfaces which aim to:

- > Activate the street
- > Visually and physically connect the buildings to the street
- > Ensure carparking and service areas are screened.

Built Form Typologies

A variety of retail, mixed-use and residential uses within the PDA ensures a suitable mix and intensity of population and activity. Several built form typologies are required to cater for these uses in a compatible manner, deliver street activation and amenity and support the differing intensities of development. Figure 20 provides examples of built form typologies which may be developed as part of the Weinam Creek PDA, including:

- > 3–7 storey medium rise mixed-use housing over retail / commercial
- > 3 storey lift / walk up
- > Sleeved multi-deck carpark
- > 2–3 storey row house / live / work.

Character

Subtropical design

South East Queensland is Australia's only subtropical metropolitan region. The buildings within the Weinam Creek PDA will exhibit a strong urban and subtropical character.

Building design will be climatically responsive, and will:

- > Incorporate light and shade providing well detailed and articulated façades
- > Be orientated to promote seasonal solar access
- > Enable cross ventilation and support a naturally ventilated and comfortable environment
- > Provide weather protection and sun shading (including eaves and overhangs) into façades and roof forms
- > Have visible and expressive roof forms
- > Integrate indoor and outdoor spaces through the use of balconies, courtyards and large windows creating open façades.

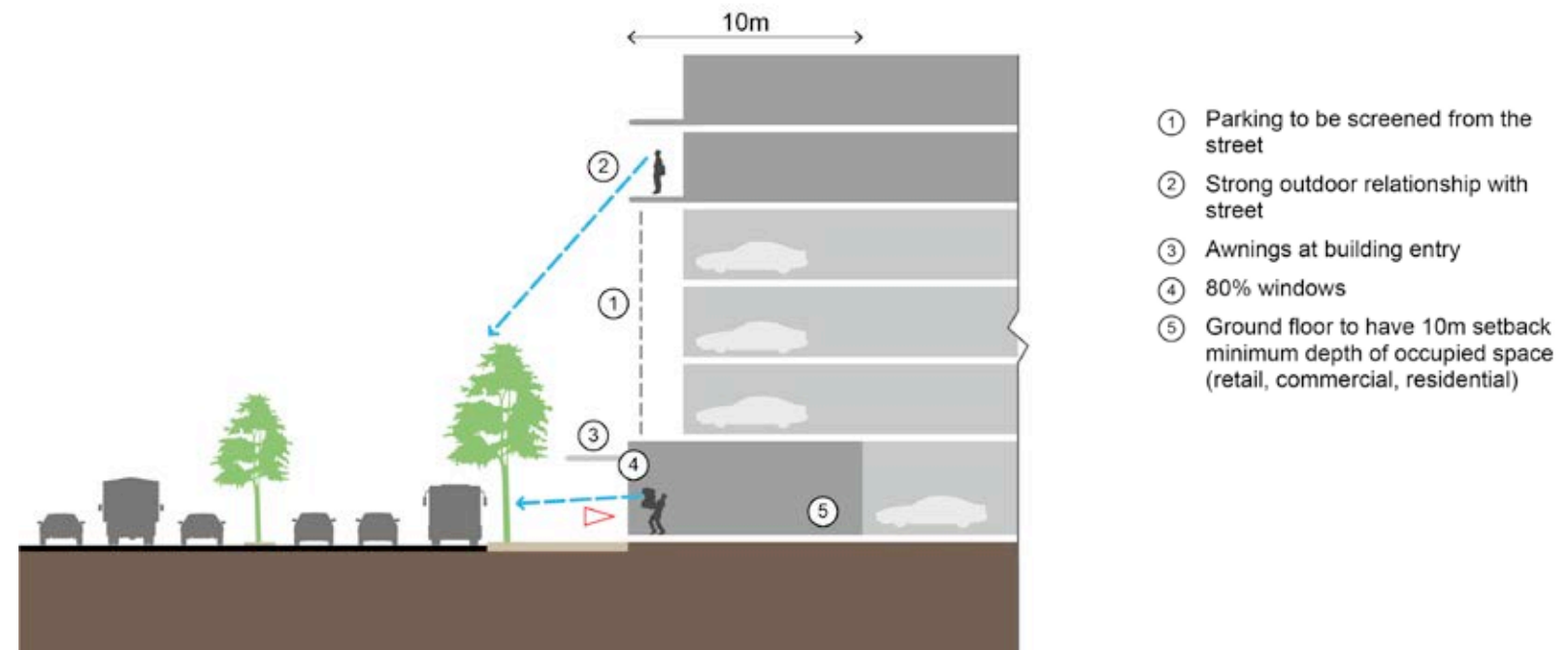
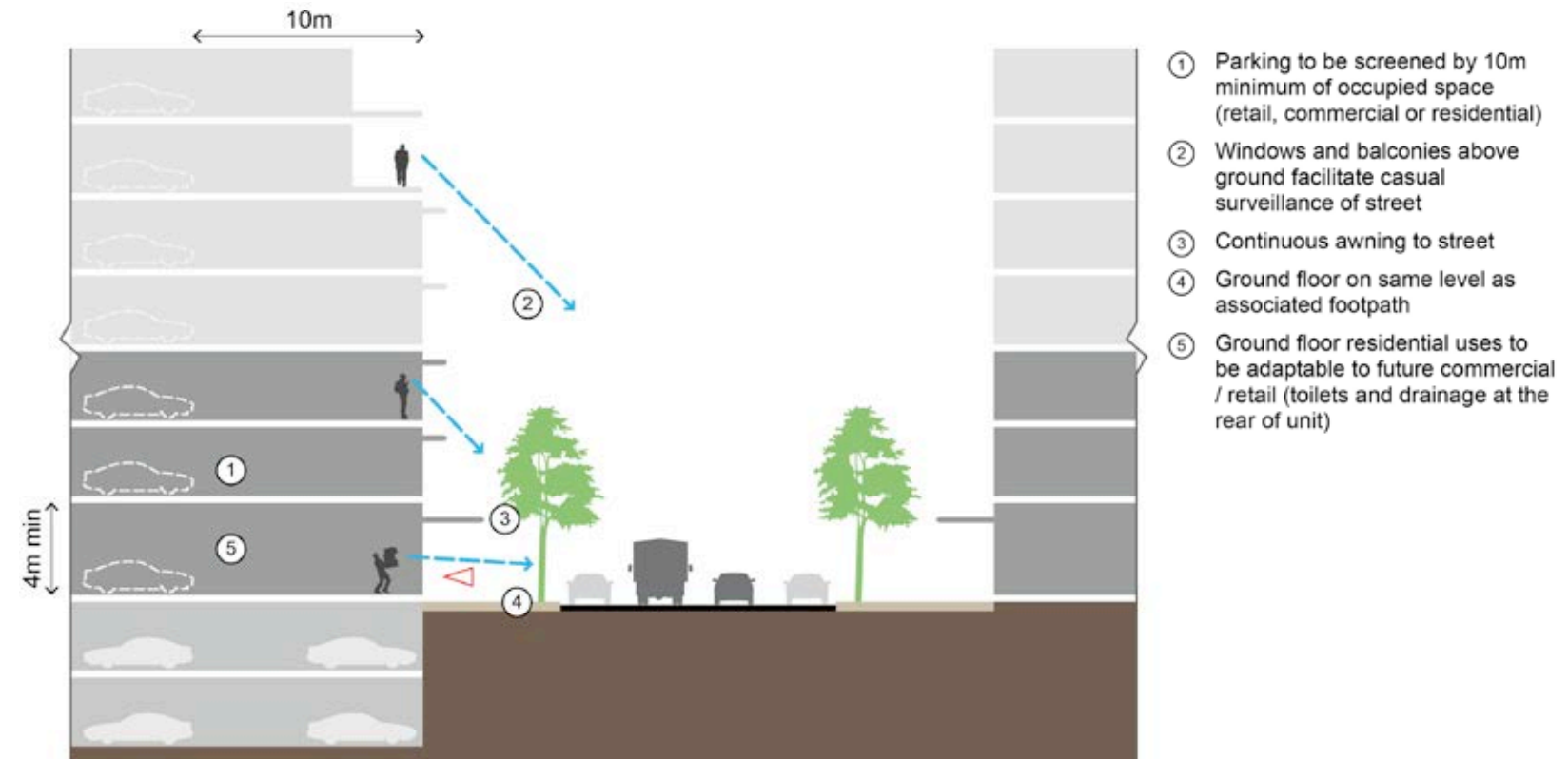
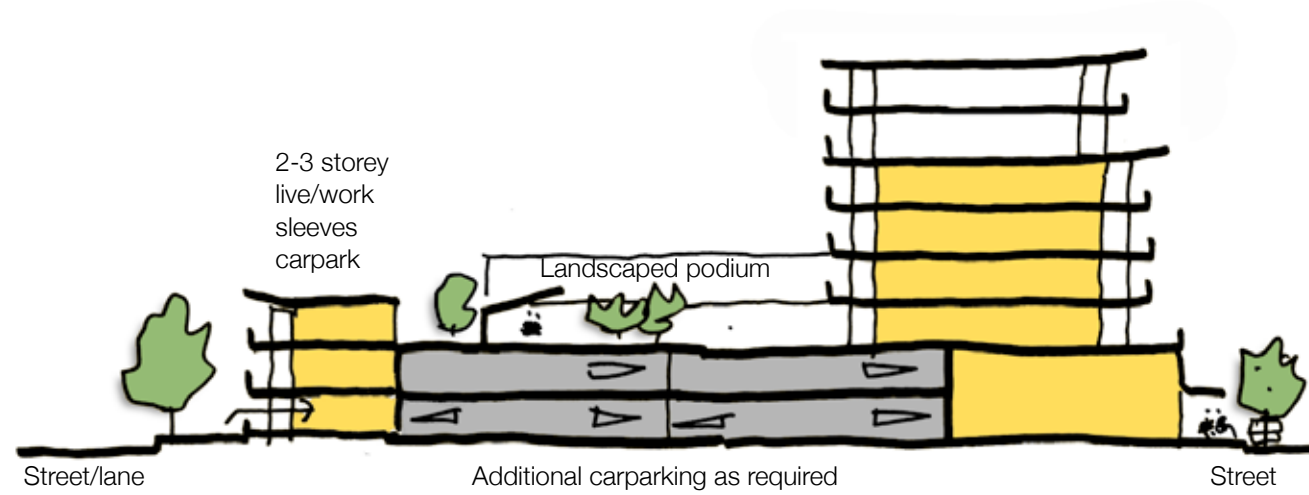


Figure 19. Typical Building Interface

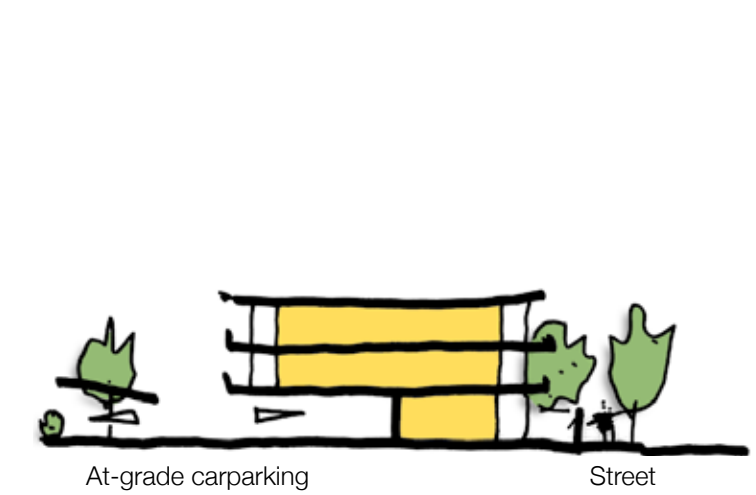
3-7 Storey Medium Rise Mixed-use Housing over Retail / Commercial

2 levels above ground, parking sleeved by street facing uses



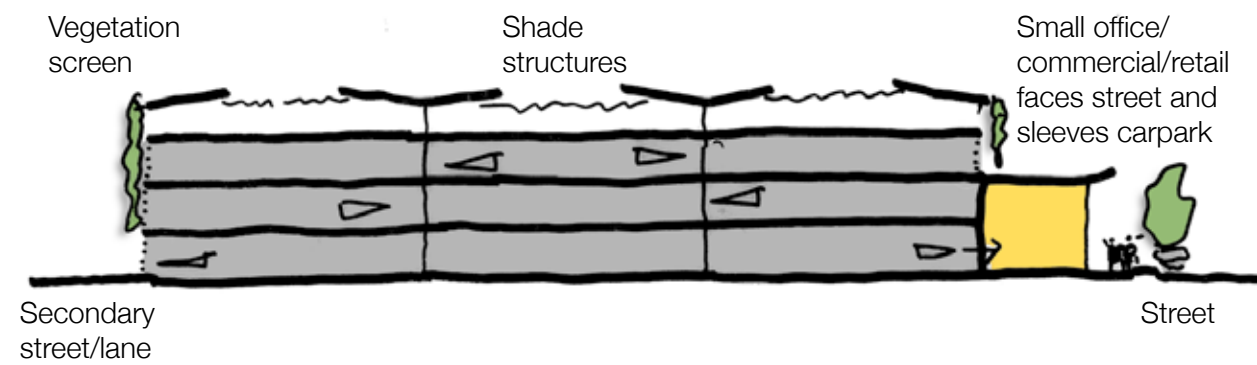
3 Storey Lift / Walk Up

Parking at-grade at rear under building and in car ports



Sleeved Multi-deck Carpark

Car access from rear



2-3 Storey Row House / Live / Work

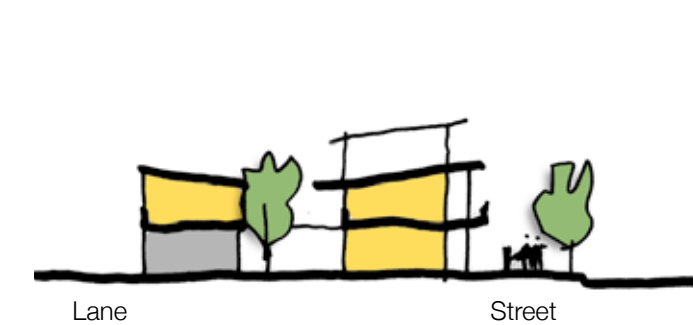


Figure 20. Built Form Typologies

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Land Budget

The following land budget table gives an indication of potential population capacity within the Weinam Creek PDA. It is based on a number of assumptions including number of residents / dwelling and average dwelling sizes within the PDA.

No.	Description	% of Total Area	Area (m ²)	Residential (Dwelling Units)	Residential Population (2.0pp/dwelling)	Residential GFA (120m ² /unit)	Retail GFA (m ²)	Commercial GFA (m ²)	Marine Services GFA (m ²)	Community Use GFA (m ²)	Total GFA (m ²)	Total GFA/ Area (Plot Ratio)
1	Public Streets	23.45	97,161	0	0	0					0	0.00
2	Recreational Parkland and Plazas	16.89	69,996	0	0	0				200	200	0.00
3	Environment—Vegetation	11.72	48,550	0	0	0					0	0.00
6	Retail	0.72	2,974	0	0	0	500				500	0.17
7	Mixed-Use	6.46	26,773	114	228	13,680	2,500	2,000			18,180	0.68
8	Mixed-Use	1.87	7,740	59	118	70,80	1,500	1,500		500	10,580	1.37
9	Mixed-Use	1.85	7,678	50	100	6,000		1,000		1,000	8,000	1.04
10	Community	0.71	2,957	0	0	0				1,800	1,800	0.61
11	Residential	1.78	7,358	100	200	12,000					12,000	1.63
12	Residential	2.51	10,393	130	260	15,600					15,600	1.50
13	Residential	5.93	24,588	200	400	24,000					24,000	0.98
14	Residential	1.67	6,920	55	110	6,600					6,600	0.95
15	Residential	0.91	3,762	60	120	7,200					7,200	1.91
16	Residential	6.17	25,583	76	152	9,120					9,120	0.36
17	Maritime Services	1.34	5,541	0	0	0		2,500			2,500	0.45
18	Carpark, Boat Ramp & Vehicle Ferries	14.81	61,366	0	0	0		300			300	0.00
19	Boat Club	1.20	4,965	0	0	0		0		2,000	2,000	0.40
		100.00	414,305	844	1,688	101,280	4,500	4,500	2,800	5,500	118,580	
Water Areas												
4	Environment—Water		42,917									
5	Marina		17,734									

Key Statistics

Population: 1,688

24.3 dwellings / ha*

(excluding maritime services and carparking / vehicle ferry services)

28.6% passive and recreational open space#

NOTES:

* Density is based on all areas within the PDA excluding areas that have regional purpose such as Moreton Bay, vehicle and ferry services associated with the SIMBI Islands, boat ramp and maritime services.

Passive and recreational open space includes areas of parkland and areas of environment vegetation on land.

The land budget is based on 2–3 storey built form generally.

Residential population assumes 2.0 people per dwelling unit on average across the PDA.

Residential GFA assumes an average of 120m² of residential GFA per dwelling unit across the PDA.

- Retail
- Mixed-use
- Medium – High Density Residential
- Community
- Marine Services
- Park / Open Space
- Vegetation
- Plaza
- Beach
- Community Node
- PDA Boundary
- Land Budget Boundaries

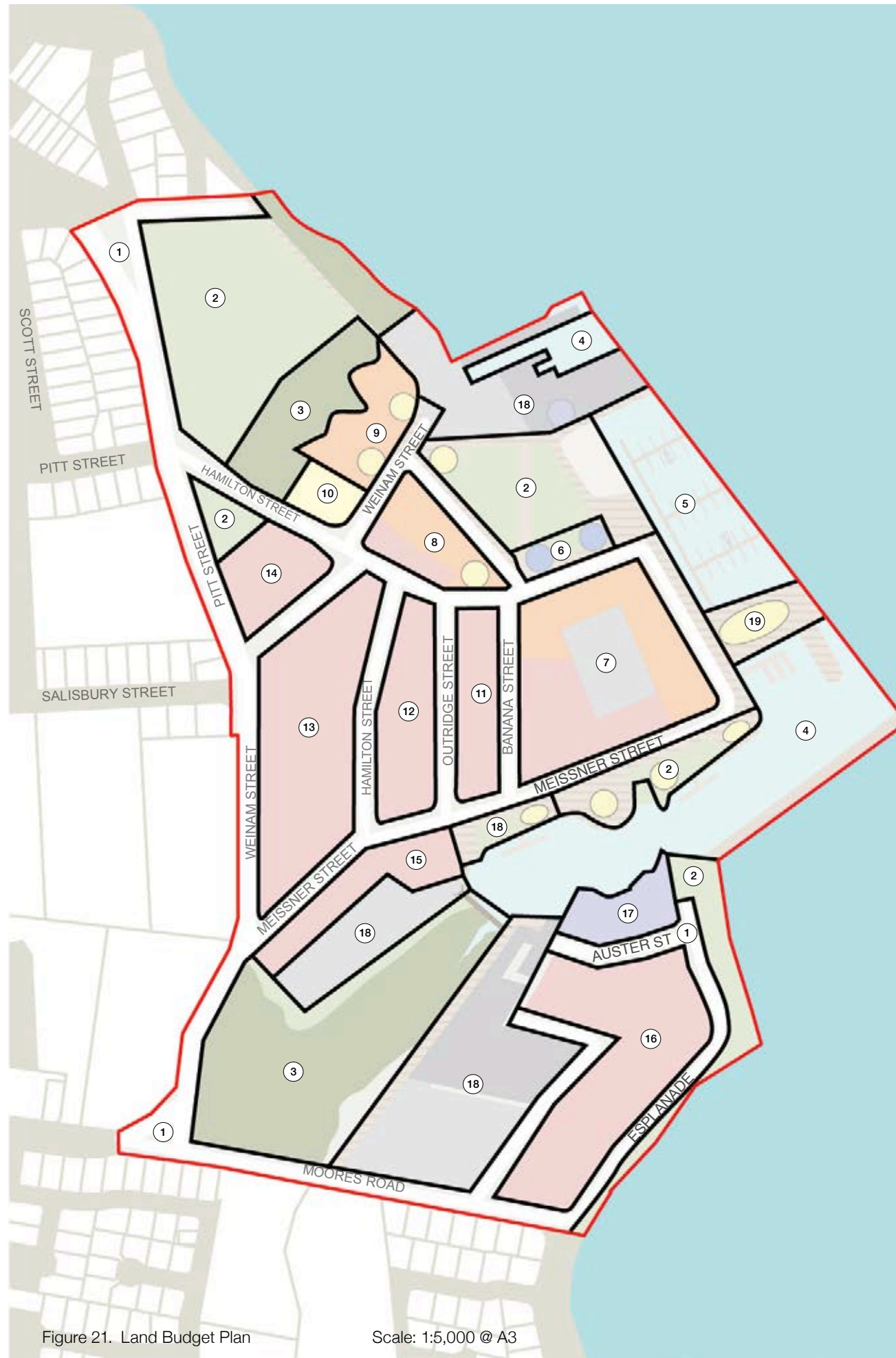


Figure 21. Land Budget Plan

Scale: 1:5,000 @ A3

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4.6 Open Space and Public Realm

The aim of the public realm strategy for the Weinam Creek PDA is to create a range of relaxing spaces with a strong sense of place and rich variety of recreational opportunities. The public spaces of the PDA will provide places that are both active and vibrant. They will be well loved by the Redland Bay community and enable them to interact with Moreton Bay and water based recreational pursuits. They will also provide opportunities for interaction between the island and mainland communities.

This will be achieved through colourful and traditionally designed spaces that link together to form an effective network. Visitors and local users will be offered many alternative routes of travel between each.

Key places and spaces within the PDA are shown in Figure 22 and summarised as follows:

1 Neville Stafford Park

This is a generous open space area in the centre of the PDA where the island and mainland community can meet and relax. The park will be a colourful garden overlooking the tidal area of Moreton Bay. Uses will activate the park and there will be convenient points of access. Detailing within the park will acknowledge the history and heritage of the area.

2 Marina and Boardwalk

Despite the tight scale of the marina and the proposed intensity of the development surrounding it, the boardwalk will become a unique and memorable aspect of Weinam Creek. It will facilitate exchange and be a vibrant space with genuine marina based activities. The boat club will be integrated with the boardwalk solution.

3 Sel Outridge Park

This traditional park provides active recreational choices that require more space than can be achieved at the core of the Weinam Creek PDA. It provides opportunities to interact with the marine ecology and habitat areas to the south. The eastern edge of the park includes a north-south coastal link.

4 Weinam Creek Edge

This busy edge of Weinam Creek brings together a number of gathering spaces, community facilities and a new pedestrian ferry terminal. It is a point where the SMBI community can safely and conveniently access mainland services. Pathways radiate out from this space to other key parts of the PDA including the southern side of Weinam Creek and Neville Stafford Park.

Spaces will be constructed using forms and textures and materials which tangibly relate to the character and features of Moreton Bay, its history and development as a place. A base pallet of materials and colours unify spaces and reinforce a clear identity.



- Park / Open Space
- Vegetation
- Plaza
- P Carparking
- PDA Boundary
- Pedestrian Connection
- Street Network
- Key Pedestrian Realm
- 1 Neville Stafford Park
- 2 Marina and Boardwalk
- 3 Sel Outridge Park
- 4 Weinam Creek Edge



Figure 22. Open Space and Public Realm Plan

Scale: 1:5,000 @ A3

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4.7 Environmental Strategy

Habitat trees important for koala (*Phascolarctos cinereus*) are widely scattered across the PDA as a component of the urban environment, but are relatively isolated from more important koala habitat approximately 1km to the west of the PDA and a minor corridor along Weinam Creek to the south of the PDA. Habitat trees within the PDA appear to be visited infrequently by koalas. Koala habitat trees within the PDA comprise 74 primary food trees and at least 112 other habitat trees. Development and contingent offsetting measures ensures no net loss of koala habitat trees, particularly primary food trees available to the local koala population and no net increase in koala mortality, particularly from vehicle strike.

Habitat that may support Illidge's Ant-Blue Butterfly *Acrodipsas illidgei* occurs in mature coastal she oak (*Casuarina glauca*) and grey mangrove (*Avicennia marina*) trees in Weinam Creek, in the south-east corner of the PDA. Field surveys are required to confirm the presence or absence of this species and its habitat will be maintained and enhanced. This habitat is being conserved and enhanced as part of the PDA scheme to reduce any impact in the wetland habitats in the creek.

A flying-fox roosting camp currently exists in the Weinam Creek swamp, primarily on the northern side of Moore's Road, but occasionally spilling over to the southern side of Moore's Road when very large numbers of flying-fox are present. This is one of the key flying-fox roost sites in the Redlands used by tens of thousands of flying-foxes of three species: Black Flying-fox, Grey-headed Flying-fox and Little Red Flying-fox. The development will not result in negative impacts to the roost. Interpretive signage may encourage appreciation of the ecological assets of the roost, and discourage disturbance of the camp and resultant potential for conflict with local residents.

Intertidal habitat within the PDA consists largely of bare rubble and sand ('bare', but supporting highly productive benthic microalgae), with a seagrass bed immediately north of the PDA boundary. This habitat is of marginal value to migratory shorebirds due to the nature of the substrate, proximity to existing sources of disturbance, and large distance to suitable roost habitat.

Dugongs, dolphins and marine turtles may occur within 1km of the PDA and are susceptible to boat strike, causing injury and death (Maitland et al. 2006). The seagrass beds comprise species that are consumed by Dugong and marine turtles (particularly *Chelonia mydas*); however, the seagrass in the PDA is considered of lower quality relative to seagrass surrounding the bay islands, and on the eastern side of Moreton Bay. Increasing the marine traffic during construction, or as a direct result of the development of a marina and ferry terminal, without sufficient planning and mitigation measures, could lead to increased boat strike of federally listed species.

Remnant vegetation communities within the PDA comprise RE 12.5.2 with an 'endangered' status under the Vegetation Management Act 1999 (VM Act), estuarine wetland (RE 12.1.1) with an 'of concern' status, and mangroves (RE 12.1.3) and (RE12.1.2) with a 'least concern' status under the VM Act. A portion of this remnant vegetation is mapped as essential habitat for Wallum Froglet *Crinia tinnula* under the VM Act. The structure plan considered these constraints. Further detailed levels of planning will ensure development has regards to the environment and seeks to first avoid, then minimise and mitigate impacts arising from development.

Elements of the environmental strategy are shown in Figure 23.

4.8 Infrastructure Strategy

Marine Infrastructure

The existing marine infrastructure experiences significant upgrades. Assumptions and findings on the extent of the required infrastructure are set out below:

Design of Marina

- > The marina is developed in stages
- > Each stage with a balance between cut (dredging) and fill volumes to avoid the cost and other issues associated with the import or export of large volumes of material
- > Initially a small marina is placed to the north. It has protection from the north. Protection from the north could be provided by a floating breakwater, which could be relocated in the future
- > Marina shares entrance channel with passenger ferry terminal and creek
- > Car ferry channel is separate as per present
- > Wrap around breakwaters and/or floating breakwaters provided due to fetches being too long for an unprotected marina.

Weinam channel width

- > Weinam Creek appears to be just wide enough to accommodate this terminal without an excessive dredging requirement. 30m wide two way channel toe to toe
- > Potential adjustment to existing finger jetties.

Weinam channel bends

- > No significant channel bends.

Weinam channel swing basin

- > 60m diameter swing basin (2 times vessel length).

Weinam dredging

- > Somewhere between 75,000m³ - 100,000m³ of dredging at insitu volume

Weinam dredge disposal

- > Large onsite area required.



Figure 23. Environmental strategy elements



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5. IMPLEMENTATION

5.1 Staging

The implementation strategy identifies a number of geographical areas within the Weinam Creek PDA that are dependent, to differing degrees, on infrastructure and market conditions. Implementation stages are broad and are split between catalyst projects, short term and long term opportunities. A general description of these is as follows and shown in Figure 24.

Core Catalyst Project

There is an immediate opportunity for investment in Neville Stafford Park. Landscaping improvement along with opportunities for lower scale retail pavilions will create the heart of the Weinam Creek PDA. This will change perceptions of this precinct and create a place people want to come to and stay in for an extended period of time. The new setting will improve values and stimulate growth.

Short Term Opportunities

Intensification around Neville Stafford Park

There are many existing opportunities to invest within the PDA currently. The catalyst project will improve the viability of these opportunities and stimulate some development activity. This may be initially focused on mixed-use development on sites adjacent to Neville Stafford Park. Mixed-use development will also include the rationalisation of existing community facilities and residential density uplift.

Intensification of PDA Frame

Intensification around the frame of PDA will be more attractive once core catalyst projects are complete and key vehicle infrastructure is in place. Intensification will be ongoing and will spread across all development stages. Along with redevelopment of existing residential sites there may be some limited opportunity for medium density residential growth on Moores Road.

Ferries and Parking

In the long term the Structure Plan supports the opportunity to relocate the passenger ferry terminal and translink Redland Bay marina bus station upstream and on the north side of Weinam Creek, with associated long term parking provided. This relocation would occur after the carparks areas on land adjacent to the proposed new ferry terminal are established and new car parking is provided. A new bridge link is established across the creek mouth at the same time. The Sea Scouts are relocated to the edge of Weinam Creek where they can share the existing boat ramp with the Coast Guard. This significant rearrangement of transport, parking and recreation facilities unlocks the more valuable parts of the PDA site for redevelopment and establishes robust travel and parking arrangements for the SMBI community. An additional vehicle ferry operator will improve competition and capacity at Weinam Creek.

Foreshore Development

The decanting of parking areas and the boat ramp from the foreshore area unlocks a significant development parcel on the edge of Morton Bay. A parcel of this size can cater for an intense mixed-use development outcome that can effectively integrate a new esplanade street and multi-deck carparking arrangements at the core of the PDA.

Transport Infrastructure

Provide transport upgrades associated with short term development within the PDA:

- > Upgrade the Meissner Street / Weinam Street intersection
- > Upgrade the Meissner Street / Moores Road intersection
- > Upgrade Weinam and Banana Streets
- > Extend Hamilton Street east from Banana Street to connect to the waterfront
- > Extend Meissner Street east from Banana Street to connect to the waterfront
- > Create a new north south waterfront esplanade road between the Hamilton Street and Meissner Street extensions, that facilitates a loop road between Hamilton Street, Weinam Street and Meissner Streets which supports bus movements
- > Upgrade Hamilton and Meissner streets to include cycle paths
- > Delivers a new road connection from Moores Street, east of the endangered regional ecosystem area which provides access to the recreational boat ramp and associated parking facilities
- > Construct Parking areas along Meissner Street and Moores Road, in addition to the boat ramp and associated facilities
- > Establish Hamilton, Banana and Meissner Street loop route
- > Improve Pedestrian safety throughout the PDA, utilising Crime Prevention Through Environmental Design (CPTED) principles.

Long Term Opportunities

Marina and Land Reclamation

A new 200 berth marina will leverage the strategic location of this site and broaden the range of activities and people that utilise it. The marina includes a new licensed club facility, which projects into Moreton Bay.

Growth of Marina

There is long term opportunity for the marina to grow to the east to form a larger marina basin. This development may occur gradually through the ongoing disposal of dredge spoil and balance cut and fill.

- Retail
- Mixed-use
- Medium – High Density Residential
- Community
- Marine Services
- Park / Open Space
- Vegetation
- Plaza
- Beach
- Dredge Spoil Disposal Area
- Community Node
- PDA Boundary
- Stage Boundary
- C Catalyst
- ST Short Term Opportunity
- LT Long Term Opportunity

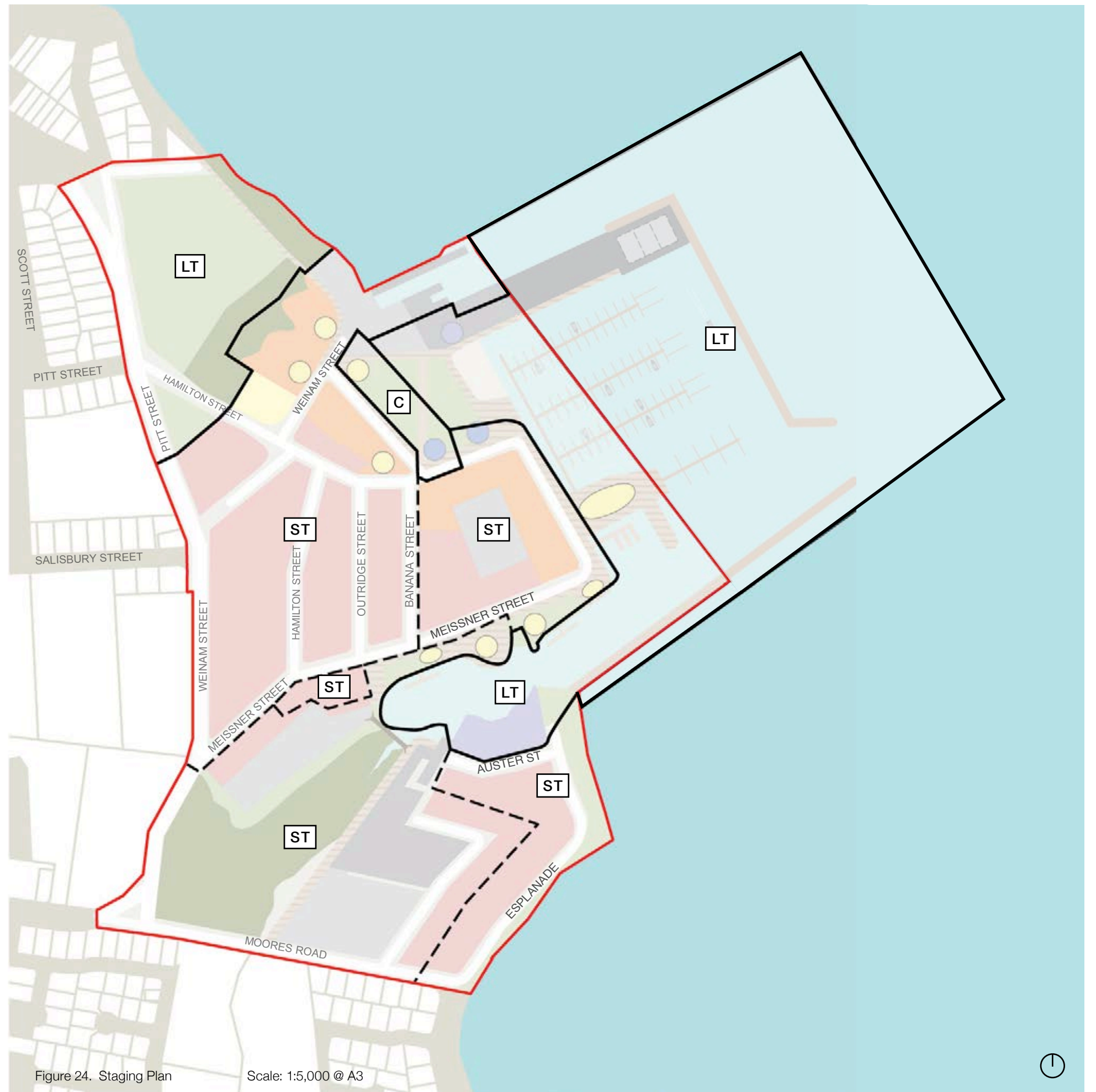


Figure 24. Staging Plan

Scale: 1:5,000 @ A3

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