Structure Plan

KOOMBANA NORTH BUNBURY WATERFRONT

Prepared for LandCorp

STRUCTURE PLAN CERTIFICATION

CERTIFIED THAT THE KOOMBANA NORTH STRUCTURE PLAN

WAS APPROVED BY

RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON

28/6/2013

Signed for and on behalf of the Western Australian Planning Commission

an officer of the Commission duly authorised by the Commission pursuant to section 16

of the Planning and Development Act 2005

24/7/2013 Date

AND ADOPTED BY

RESOLUTION OF THE COUNCIL OF THE CITY OF BUNBURY ON

21/5/13

Mayor, City of Bunbury

Chief Executive Officer, City of Bunbury

29/7/13 Date

DATE OF EXPIRY: 19 OCTOBER 2030

DOCUMENT HISTORY AND STATUS

Koombana North - Bunbury Waterfront

Structure Plan

Revision	Reviewer	Date Issued
0	ST	June 2012
1	ST	July 2012
2	ST	August 2012
3	ST	November 2012
4	ST	July 2013

Prepared By:

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Town Planning and Design

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PROJECT TEAM

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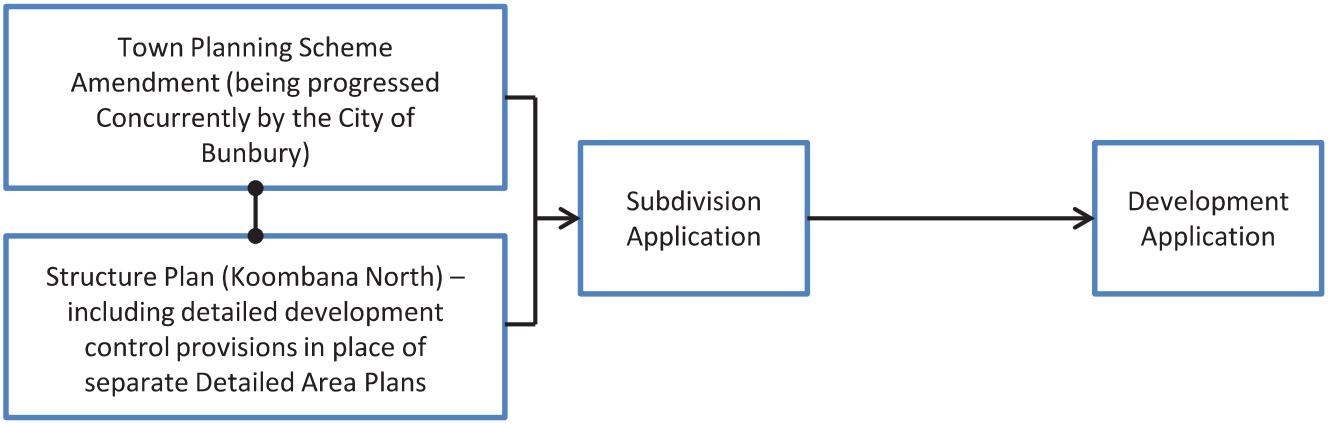
DOCUMENTATION OVERVIEW

DOCUMENTATION PURPOSE

This documentation has been prepared by Taylor Burrell Barnett, on behalf of LandCorp, to facilitate the assessment and approval of a Structure Plan for the Koombana North Precinct. Given the overlap of information required at each stage of the process and the nature of the subject site, this consolidated documentation will simplify the approval and assessment process for Development Applications within the Koombana North Precinct. The flowchart below compares the typical sequential statutory planning process with the proposed consolidated documentation format.

Typical Planning Process

Proposed Concurrent Planning Process for Koombana North



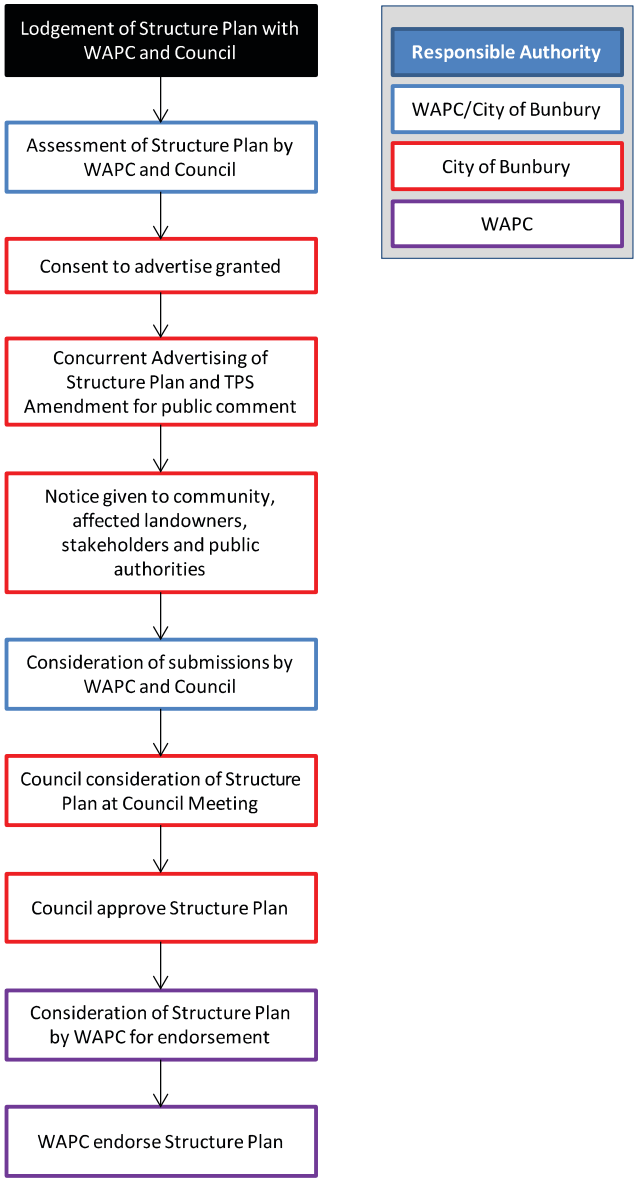
DOCUMENT FORMAT

STRUCTURE PLAN

The Structure Plan outlines the proposed development vision for the Koombana North Precinct and establishes the key development criteria that must be achieved in the construction of new buildings within the Precinct. The Structure Plan also includes information regarding the development of the public realm and assesses the impact of proposed development on the surrounding physical and natural environment.

- Part 1 – Structure Plan Statutory Provisions
- Part 2 – Explanatory Report
- Part 3 – Technical Appendices

Koombana North – Structure Plan



PART 1: STRUCTURE PLAN STATUTORY PROVISIONS

APPLICATION

1.1 This Part applies to the Koombana North locality, being all land contained within the inner edge of the line denoting the Structure Plan area boundary on the Structure Plan Map (**Plan 1**).

1.2 This part comprises the following text contained in Sections 1.2 to 1.7 below, Table 1: Planning Requirements, Structure Plan Map (**Plan 1**), Building Requirements Plan (**Plan 2**) and Movement Network Plan (**Plan 3**).

1.3 Unless otherwise specified in this part, the words and expressions used in this Structure Plan shall have the respective meanings given to them in the City of Bunbury Town Planning Scheme No. 7 (the Scheme).

1.4 This Structure Plan is prepared pursuant to Clause 6.2 of the Scheme.

1.5 The provisions, standards and planning requirements specified under Part 1 of this Structure Plan shall have the same force and effect as if they were provisions, standards or requirements of the Scheme. The associated 'Explanatory Report' is for explanatory purposes only in order to provide a descriptive analysis of the Structure Plan.

1.6 In the event of any inconsistencies or conflict between the provisions, standards of the Scheme and the provisions, standards or planning requirements of this Structure Plan, then the provisions of the Scheme shall prevail.

1.7 In accordance with Clause 6.2.8.1 of the Scheme, this Structure Plan shall come into operation when it is adopted by the local government following the Western Australian Planning Commission's approval pursuant to Clause 6.2.5.15 of the Scheme.

SUBDIVISION AND DEVELOPMENT

'Table 1: Planning Requirements' forms part of the statutory provisions of this Structure Plan and describe the standards, requirements and prerequisites for subdivision and development in the corresponding precincts designated overleaf. Where any variation arises between any provision of these plans and/or tables and provisions of the Scheme, then the provision of the Scheme shall prevail to the extent of that variation.

LEGEND

	Structure Plan Boundary
	Lot Boundary - Ground Floor / Podium Level (Building envelope)
	Low Rise Tower (Building envelope)
	Open Space / Foreshore
	Drainage - Urban rain garden-integrated drainage solution
	Indicative Sea Wall Alignment
1	Development Sites
	Road Reserve
	Shared Paths
	Public Access Ways
	Indicative Development Site Access
	Possible Future Railway Platform

Maximum Building Heights#

	5.0m*	(1 storey - ground floor / podium level)
	17.5 - 20.5m	(4 storeys)
	20.5 - 23.5m	(5 storeys)
	22.0 - 25.0m	(6 storeys)
	24.0 - 27.0m	(6 storeys)

#Refer Table 1.1 for site specific requirements.

**Except where required to achieve consistent horizontal plane*

1. Landuse is to be pursuant to provisions contained within Schedule 2 of the Scheme under Special Use Zone No.57.

2. This Structure Plan is to be read in conjunction with Table 1 Planning Requirements and the associated plans.

3. All parking provision shown is indicative only and subject to further detailed design.

ENDORSED STRUCTURE PLAN - CITY OF BUNBURY

To provide a framework for future detailed planning at the subdivision and development stage.

City of Bunbury delegated under section 6.2.5 of the City of Bunbury Town Planning Scheme No. 7

Date 29/7/13

ENDORSED STRUCTURE PLAN - WAPC

To provide a framework for future detailed planning at the subdivision and development stage.

WAPC delegated under section 16 of the Planning and Development Act 2005

Date 24/7/2013

STRUCTURE PLAN MAP (PLAN 1)

Koombana North

A Landcorp Project

0m 5 10 15m

s: 1:1000@A3
d: 12 July 2013
p: 06/099/012F

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BUILDING REQUIREMENTS PLAN (PLAN 2)

Koombana North

A Landcorp Project

s: 1:1000@A3
d: 12 July 2013
p: 06/099/017E

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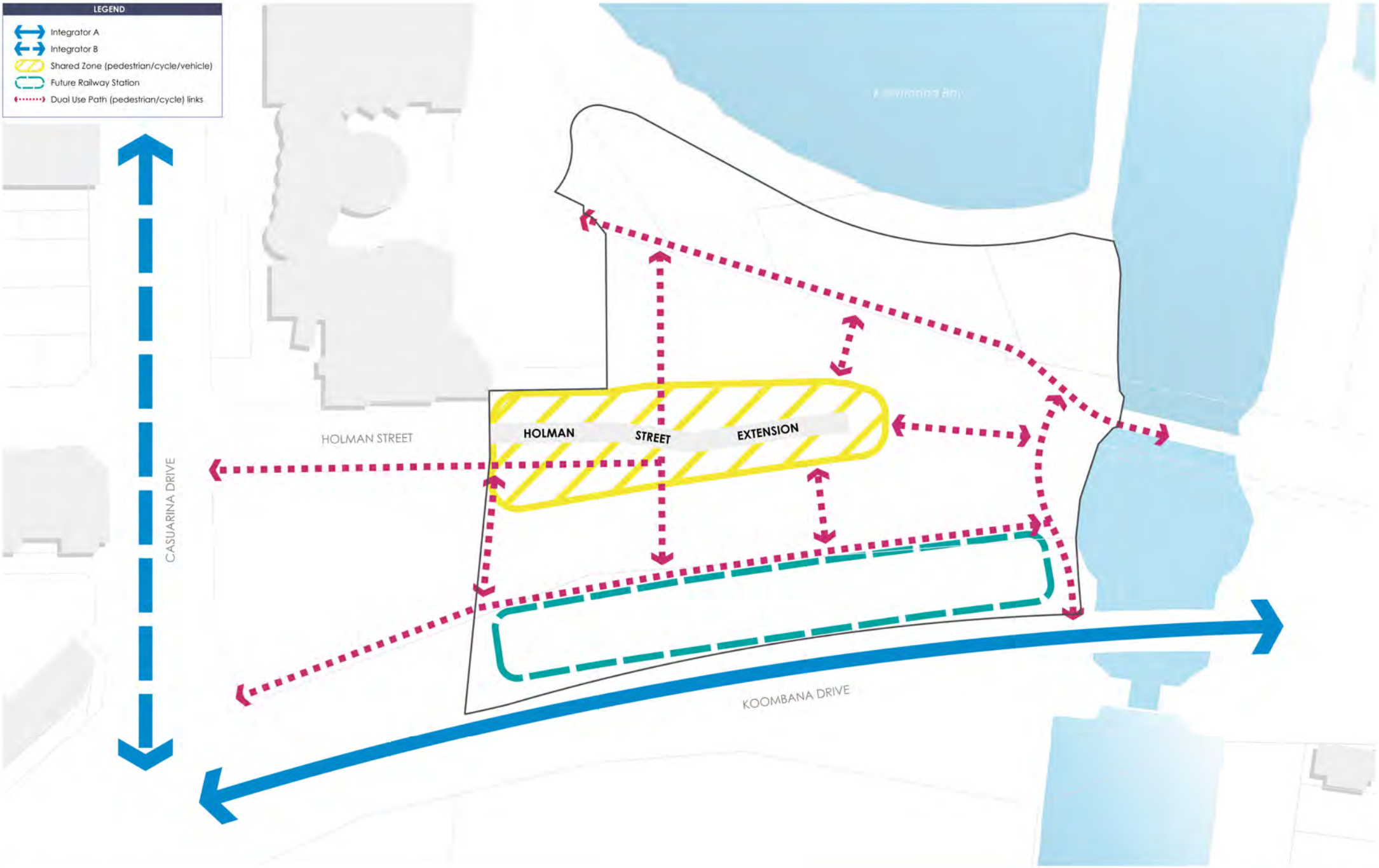

MOVEMENT NETWORK PLAN (PLAN 3)

Koombana North

A Landcorp Project

0m 5 10 15m

s: 1:1000@A3
d: 17 Jul 2013
p: 06/099/016D

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TABLE 1: PLANNING REQUIREMENTS	
1. VISION	The Koombana North locality will be an urban environment characterised by a wide range of intense and diverse activities in close proximity to the Bunbury CBD, bus station and future rail station; to create a thriving day and night time urban experience through increased activity from residential and office, supported by a variety of commercial, retail and entertainment enterprises.
2. OBJECTIVES	**General Objectives** 2.1 Create five development sites incorporating a mix of uses, with ground floor activation via opportunities for retail and commercial development at the ground floor/podium level. 2.2 Require the activation of the public realm along Koombana Drive, Holman Street and Koombana Bay. 2.3 Development of high quality public realm for the benefit of existing Bunbury residents, new residents to Koombana North and visitors to Bunbury. **Network Objectives** 2.4 Provide for a possible future rail platform within the northern verge of Koombana Drive. 2.5 Provide a highly connected street and path network that encourages pedestrian and cyclist connectivity to, and through, the Structure Plan area via regular road crossing points and managed crossover locations to Holman Street and Koombana Drive. 2.6 Require road and public realm design standards that deliver Main Street outcomes and that manage traffic behaviour and speed in areas of high pedestrian movement to encourage pedestrian activity. 2.7 Provide a legible vehicular circulation system with provision for public parking for beach users via the extension of Holman Street. **Land Use Objectives** 2.8 Encourage high intensity land uses that take advantage of the high amenity landscape, increase public transport use, enable shared trips, and stimulate activity in close proximity to the CBD, bus station and the future rail platform. 2.9 Facilitate the development of a mix of uses which provide an urban edge to Koombana Drive and an active edge along the foreshore promenade. 2.10 Allow for a diversity of housing types and tenure, with a managed interface to non-residential land uses that recognises the scale of the development in the context of the CBD. 2.11 Encourage mixed use activities that are compatible and complementary to typical inner city residential areas. 2.12 Require active ground floor uses, including cafes and restaurants, to Koombana Bay and Holman Street.

TABLE 1: PLANNING REQUIREMENTS	
	Built Form Objectives 2.13 Establish building heights and built form which provides an urban response to existing and future development in the locality and establishes an appropriately scaled interface with the foreshore promenade, consistent with the Bunbury Waterfront Taskforce Report (October 2009). 2.14 Creation of a visually attractive and iconic built form and landscaped gateway to the existing Bunbury CBD. 2.15 Require building designs to address street frontages and public spaces, maximising opportunities for passive surveillance through the placement of entrances and a high degree of glazing to the public realm. 2.16 Facilitate appropriate built form controls that enable continuity of frontage to Koombana Drive, Holman Street and Koombana Bay. 2.17 Provide opportunities to integrate signage with buildings at an appropriate scale and character. **Public Realm (Streetscape and Landscape) Objectives** 2.18 Establish a high quality public domain which provides community access to the foreshore. 2.19 Provide pedestrian linkages to and from the CBD, existing waterfront to the north and Leschenault Inlet to the south. 2.20 Require local landmarks, public artwork, landscape and street trees to improve legibility of the public realm. 2.21 Incorporate 'Crime Prevention Through Environmental Design' principles as a tool to create a safe and enjoyable pedestrian experience. 2.22 Provide parking areas in locations that allow for co-ordinated access, provide for the potential reciprocal use of bays and strong pedestrian connectivity, whilst minimising visual impact on the streetscape.
	Sustainability Objectives 2.23 Require solar passive design principles in the detailed design of buildings. 2.24 Promote the use of plants that are drought and wind tolerant, low maintenance and provide shade from summer sun and allow sun penetration during winter. 2.25 Create a built form structure and land use control framework that will facilitate land use change over time. 2.26 Recognise the optimal long term development potential and potential intensity of activity associated with the CBD location and future rail platform and allow redevelopment of these areas to reflect transit oriented development principles in the medium to longer term.

TABLE 1: PLANNING REQUIREMENTS		
3. GENERAL	3.1	Development proposals shall be considered in accordance with the conditions of Special Use Zone 57, under Schedule 2 - Special Use Zones of the Scheme (denoted as "S.U.57 Koombana North Precinct" on the Scheme Map).
	3.2	Mixed use development shall comply with the relevant provisions of State Planning Policy 3.1 Residential Design Codes (or R-Codes), in particular Part 7, unless specifically otherwise stated in this Structure Plan.
	3.3	All development in the public and private realm is to be consistent with the Structure Plan vision and objectives to the satisfaction of the Local Government.
4. LAND USE	4.1	The land use class permissibility for each development site area within the Structure Plan is outlined within Special Use Zone 57 of the Scheme (as amended).
	4.2	Each development site area shall incorporate non-residential land uses on the ground floor and may contain residential uses and/or non-residential uses on upper floors.
	4.3	The ground floor of development sites may incorporate a mix of retail, commercial (e.g. shops, restaurants, consulting rooms, offices), recreation and/or entertainment uses: a. that are sympathetic with the vision and stated objectives of the Koombana North Structure Plan; and b. that are not detrimental to the amenity of adjoining properties and public open spaces.
	4.4	Where residential development is intended to be used for future "Unrestricted Residential Accommodation" (URA), such development shall comply with the Local Government's relevant Scheme provisions and Local Planning Policy in the first instance.
5. BUILT FORM	5.1	Development is to comply with the Building Requirements Plan **(Plan 2)** and the requirements set out in Table 1.1 opposite.
	5.2	Buildings adjoining Holman Street, Koombana Bay and Koombana Drive shall have a continuous frontage, except where required to provide for vehicle access, servicing or articulation and interest to the streetscape.

Table 1.1: General Development Site Requirements

Development Site	Maximum number of storeys	Minimum Ground Floor Setbacks (m)				R-Code	Maximum plot ratio of residential component	Minimum open space (% of site)	Minimum setback of upper floors - all elevations (m)	Maximum Height (m)[c]			Max height of built to boundary walls (m)	
		Rail Platform Boundary	Holman Street Boundaries	Ski Beach Boundary	All other Boundaries					Top of external wall	Top of external wall with concealed roof	Top of pitched roof		
1	6	n/a	0[a]	0	0[a]	R-AC 0	3.5	-	3[b]	22	23	25	5	5
2	6	n/a		0						22	23	25	5	5
3	4	0		n/a						17.5	18.5	20.5	7.5[d]	5[e]
4	5	0		n/a						20.5	21.5	23.5	7.0[d]	5[e]
5	6	0		n/a						24	25	27	7.0[d]	5[e]

Notes:

a. Subject to establishing a satisfactory interface with the public realm. Minor variations may be permissible for the purposes of providing a forecourt, building articulation, alfresco dinning or other feature that adds amenity and interest to the streetscape, to the satisfaction of the Local Government.

b. Measured from the development site lot boundary or from the perimeter (outer wall) of the ground floor podium (except for minor podium level articulations to the satisfaction of the Local Government (e.g. forecourts, building features, alfresco dinning)). Balconies may extend into the setback area at the discretion of the Local Government.

c. Excluding plant and infrastructure located on a rooftop.

d. Measured from the development site lot boundary fronting the Holman Street road reserve.

e. Measured from the development site lot boundary fronting the rail platform.

TABLE 1: PLANNING REQUIREMENTS

6. FINISHED FLOOR LEVELS

6.1 The ground floor levels at the mid-point of each development site boundary with frontage to the rail platform shall accord with the Building Requirements Plan **(Plan 2)** and Table 1.2.

Table 1.2: Development site mid-points (in metres above AHD).

Development Site	Fronting the Rail Platform
1	n/a
2	n/a
3	6.5
4	5.8
5	5.2

6.2 Changes in level across each development site are to be accommodated within the ground floor built form.

6.3 The ground floor level of development fronting Holman Street is to be no more than 1m above natural ground level at any point along the lot boundary adjacent to the Holman Street road reserve.

6.4 The ground floor level of development fronting Ski Beach is to be no more than 1m above natural ground level at any point along the lot boundary adjacent to the public domain/footpath.

7. PUBLIC TRANSPORT

7.1 Development is to address, complement and not compromise the envisaged future provision of a rail platform within the Koombana Drive reserve.

8. ACCESS AND MOVEMENT

8.1 Vehicular access to the development sites shall be:

a. prohibited from Koombana Drive;

b. permitted from Holman Street only.

8.2 The extension to the Holman Street road reserve shall accommodate:

a. a functional shared space that provides a low speed shared vehicle, cycle and pedestrian environment;

b designated pedestrian-only zones;

c. service vehicle loading and unloading areas/bays;

d. waste and other service vehicle access, parking and turning areas;

e. vehicle access to development sites/basement level parking;

f. bicycle parking facilities; and

g. on-street public parking, designed and located to the satisfaction of the Local Government.

8.3 The Holman Street shared space environment shall be comprehensively designed and implemented in accordance with an approved Detailed Landscape Management Plan.

8.4 Consideration shall be given to the following in providing vehicular access from Holman Street:

a. provision of a single access point for each Development Site;

TABLE 1: PLANNING REQUIREMENTS	
	b. potential to share access points with adjoining sites where possible; c. pedestrian safety, access and amenity; and d. minimisation of adverse impacts on land use activation within Holman Street. 8.5 A pedestrian and cycle network shall be provided to the satisfaction of the Local Government, in accordance with the Movement Network Plan **(Plan 3)** and an approved Detailed Landscape Management Plan. 8.6 Downward vehicle ramps to any basement level parking shall be provided wholly within the lot of the development site. 8.7 Building entry steps and pedestrian ramps shall be located wholly within the boundary of the development site. 8.8 Pedestrian access to all floors shall be possible from the podium level, with external entrances to any residential floors able to be accessed directly from Holman Street to the satisfaction of the Local Government. **Note:** "Shared space environment" means an area that is specifically designed for pedestrian use with right of way over vehicular traffic which is not separated by kerbs or level differences. It also permits low volumes and speeds of vehicles and bicycles to share the public open space and/or road reserve in a safe manner that supports universal access and mobility. Shared space environments are to clearly delineate pedestrian only spaces and other areas with different functions by way of appropriate hard and soft landscaping and in streetscape design and construction.
9. VEHICLE PARKING	9.1 Vehicle parking shall be provided in accordance with the requirements of the Scheme and relevant Local Planning Policy. 9.2 All residential parking is to be provided on-site in accordance with the requirements of the Scheme and Residential Design Codes. 9.3 Basement parking, if provided, shall be accommodated to the satisfaction of the Local Government. There is a general presumption against the provision of 'at grade' parking on the development sites. However, if 'at grade' parking is proposed, the Local Government will need to be satisfied that the provision of such parking will not compromise the Structure Plan's objectives and development control provisions, in particular relating to land use, built form and public realm considerations. 9.4. Basement parking is not permitted to protrude above ground level, unless approved by the Local Government. 9.5 On-site parking shall not be located between the front building setback line and the public realm. 9.6 On-street parking, that is immediately adjacent to the development sites, may be included in parking provision calculations at the discretion of the Local Government. 9.7 Car parking areas, including for service vehicles, associated with retail/commercial uses shall be clearly separated and delineated from private residential parking.

TABLE 1: PLANNING REQUIREMENTS	
	Note: Constraints to the provision of on-site parking and limited options for off-site cash in lieu alternatives may significantly affect the maximum development potential of the Structure Plan area.
10. PLANNING APPROVAL APPLICATION REQUIREMENTS	10.1 In addition to the requirements of Clause 9.2.1 of the Scheme, applications for planning approval will also be required to address the following matters to the satisfaction of the Local Government: a. location and dimensions of building footprint and setbacks; b. location and extent of residential and non-residential land uses; c. location and dimensions of vehicular accessways, including positioning of basement parking entry/exit ramps, car parking provision/arrangements, service loading and unloading areas, storage areas, bin storage and collection areas; d. ground floor levels and demonstrated level (universal) access to pedestrian entranceways and other major openings; e. building design parameters and features/characteristics, including: i. building height; ii. external materials, particularly in response to landmark design elements where indicated and required by the Structure Plan; iii. building signage plan; iv. demonstrated adherence to crime prevention through environmental design principles, in accordance with the WAPC's Designing Out Crime Planning Guidelines (2006); v. demonstrated passive solar design principles and measures; and f. building design solutions that address drainage and impacts resulting from 'run-up' and 'over-topping' and spray drift during extreme weather events, having regard to Statement of Planning Policy 2.6 State Coastal Planning Policy (as amended) for Development Sites 1 and 2.
11. LANDSCAPING	11.1 Landscaping is to conform with the Structure Plan's Landscape Master Plan, submitted in accordance with the Scheme, and shall be comprehensively designed and implemented in accordance with an endorsed Detailed Landscape Management Plan to the satisfaction of the Local Government as a condition of subdivision.

TABLE 1: PLANNING REQUIREMENTS

12. NOISE ATTENUATION

12.1 The noise attenuation measures listed below, and documented in 'Road Traffic Noise Assessment (LGA, 2012)', are acceptable noise mitigation measures which may be applied to Development Sites 3, 4 and 5, to achieve the following LA_{eq} levels for the residential component of mixed use buildings and other noise sensitive uses (e.g. hotel):

i). 35dB(A) in any bedroom in the building at any time 10pm–6am; and

ii). 40dB(A) at any time anywhere else in the premises (other than a garage, kitchen, bathroom or hallway).

Area Type	Orientation	Package A Measures
Indoors		
Bedrooms	Facing road/rail corridor	• 6mm (minimum) laminated glazing • Fixed, casement or awning windows with seals • No external doors • Closed eaves • No vents to outside walls/ eaves • Mechanical ventilation/air conditioning
	Side-on to road/rail corridor	• 6mm (minimum) laminated glazing • Closed eaves • Mechanical ventilation/air conditioning
	Away from road/rail corridor	• No requirements

TABLE 1: PLANNING REQUIREMENTS

Area Type	Orientation	Package A Measures
Living and work areas	Facing road/rail corridor	• 6mm (minimum) laminated glazing • Fixed, casement or awning windows with seals • 35mm (minimum) solid core external doors with acoustic seals • Sliding doors must be fitted with acoustic seals • Closed eaves • No vents to outside walls/ eaves • Mechanical ventilation/air conditioning
	Side-on to road/rail corridor	• 6mm (minimum) laminated glazing • Closed eaves • Mechanical ventilation/air conditioning
	Away from road/rail corridor	• No requirements

12.2 Alternative mitigation measures may be implemented to achieve the noise level criteria specified in Clause 12.1 to the satisfaction of the Local Government and Department of Environment and Conservation (DEC). Information from a suitability qualified acoustic consultant regarding the suitability of proposed alternative mitigation measures shall be provided to the Local Government and DEC for their consideration.

Note:

The Local Government and Department of Environment and Conservation may consult with the Public Transport Authority when considering the suitability of proposed noise mitigation measures.

13. BUILDING DESIGN CRITERIA	Performance Criteria	Acceptable Development
13.1 Surveillance	PC13.1.1 Buildings and landscaping is designed to provide for passive surveillance over the public realm and common areas which minimise opportunities for concealment and entrapment.	AD13.1.1 Mixed use development is to be in accordance with the acceptable development solutions of the R-Codes. No acceptable development solution provided for commercial-only development.

TABLE 1: PLANNING REQUIREMENTS				
	PC13.1.2	Blank walls are minimised and ground floor elevations are designed as street frontages with unobstructed views to the public realm from major and minor openings.	AD13.1.2	Elevations do not contain blank walls in excess of 6m depth and 10m length, and transparent glazing is provided to a minimum 70% of each ground floor building frontage measured as a proportion of the total building ground floor elevation. All glazing meets relevant energy efficiency requirements and BCA standards.
13.2 External Appearance	PC13.2.1	Buildings incorporate detailed design qualities that recognise and respond to the importance of the Structure Plan area (Koombana North precinct) as a strategic location.	AD13.2.1	No acceptable development solution provided.
	PC13.2.2	Buildings incorporate landmark design elements (as identified on the Building Requirements Plan - Plan 2) that demonstrate innovative architectural design and/or articulation in the use of materials and treatments.	AD13.2.2	No acceptable development solution provided.
	PC13.2.3	Buildings are to complement: • the character and attributes of the locality; • the architectural theme of the public realm; and • buildings on adjacent development sites.	AD13.2.3	No acceptable development solution provided.
	PC13.2.4	Buildings incorporate climatically appropriate design measures that provide protection from the weather in a safe and attractive manner.	AD13.2.4	Subject to a detailed design and appearance that is acceptable to the Local Government, a covered continuous pedestrian walkway is to be provided along the frontages of all buildings, with a cantilever awning providing a clearance height of between 3.0m – 4.5m and a minimum depth of 2.5m, but shall not obstruct trafficable areas or interfere with public infrastructure.

TABLE 1: PLANNING REQUIREMENTS				
	PC13.2.5	Plant and infrastructure located on a rooftop is unobtrusive when viewed from the surrounding area.	AD13.2.5	Plant and infrastructure located on a rooftop is screened from view.
	PC13.2.6	Service areas (including external storage and rubbish collection/storage areas) are adequate for the needs of the development and provided without detriment to the locality.	AD 13.2.6	Mixed use development is to be in accordance with the acceptable development solutions of the R-Codes. No acceptable development solution provided for commercial only development.
13.3 Balconies Setbacks	PC 13.3.1	Upper floor balconies that are located entirely within the property lot boundary but encroach into the minimum 3m set-back area where they: a. assist to articulate the building façade in a complementary contemporary architectural form; and b. are commensurate in scale/composition of the building; and c. are designed as an integral part of the building elevation and do not appear as an "add-on" structure; and d. contribute to the sense of safety and liveliness of the street by providing passive surveillance and visual engagement between the public and private realm.	AD13.3.1	Upper floor balconies that conform to the minimum setback requirements.

TABLE 1: PLANNING REQUIREMENTS		
13.4 Noise Attenuation Measures	PC13.4.1 Buildings should be designed to minimise noise impacts within the precinct as well as within residential component of mixed use buildings. Insulation and acoustic shielding along with the use of acoustic windows, doors, facade materials and ventilation should be utilised to minimise noise impacts.	AD13.4.1 No acceptable development solution provided.
14. SUBDIVISION	14.1 At the time of subdivision, conditions may be recommended requiring the preparation and implementation of the following management plans to the Local Government's satisfaction: a. Detailed Landscape Management Plan, which is to address and include as a minimum: i. road and footpath layout for use by pedestrians, cyclists and cars; ii. pedestrian only zones; iii. landscaping (both softscape and hardscape) materials and surface finishes; iv. public artwork and street furniture; v. street trees and other vegetation species; vi. potential and/or proposed on-street alfresco dining areas; vii access control features (e.g. bollards); viii. lighting plan; ix. detailed staging of works; x. estimated annual average water and energy consumption levels; xi. estimated costing schedule for replacement and maintenance of landscaping within road reserves and public open spaces (i.e. after the developer's 2 year 'maintenance/establishment' period); b. Construction Management Plan; c. Urban Water Management Plan; and d. Sea Wall Construction Plan. 14.2 At the time of subdivision, a condition will be recommended seeking the imposition of notifications on appropriate titles advising of potential for noise impacts associated with the possible future railway platform and Koombana Drive.	

PART 2: STRUCTURE PLAN EXPLANATORY REPORT

Explanatory Report

KOOMBANA NORTH BUNBURY WATERFRONT

DOCUMENT STATUS

Koombana North – Bunbury Waterfront 06/099		Revision	Reviewer	Date Issued
Prepared By:	**Taylor Burrell Barnett Town Planning and Design** 187 Roberts Road SUBIACO WA 6008 Phone: 9382 2911 Fax: 9382 4586 admin@tbbplanning.com.au	0	ST	26.6.12
		1	ST	6.7.12
		2	ST	31.8.12
		3	ST	05.11.12
In association with:	**LandCorp** **TABEC** **URBIS** **Strategen** **Golder Associates** **Lloyd George Acoustics** **SKM**	4	ST	03.07.13

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APPENDICES

TABLES

FIGURES

1 PLANNING BACKGROUND

1.1 SITE OVERVIEW

1.1.1 LOCATION

The location and extent of the Koombana North Precinct, the focus of this Town Planning Scheme Amendment and Structure Plan, is outlined in **Figure 1.** The subject land is generally bound by Koombana Drive to the south, Casuarina Drive to the west, Koombana Bay to the north and the Plug to the east.

Figure 1 – Location Plan

1.1.2 LEGAL DESCRIPTION AND OWNERSHIP

All of the subject land is under the ownership of the State, as detailed in **Table 1** and depicted in **Figure 2**.

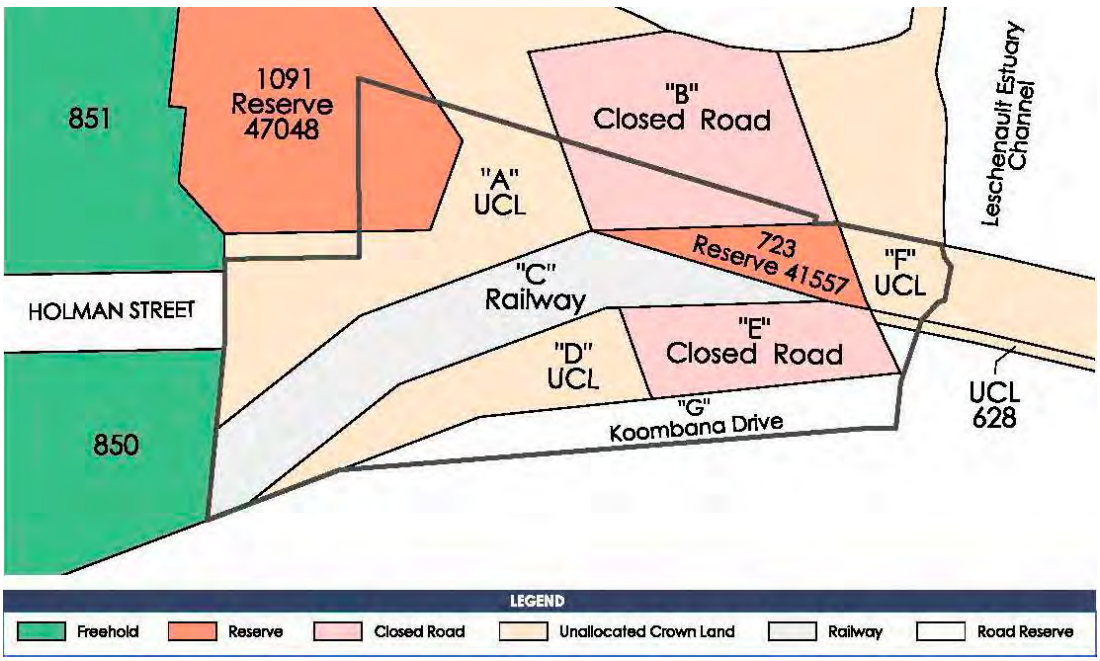


Figure 2 – Land Ownership

TABLE 1: LAND OWNERSHIP

Lot No.	Survey Document	Reserve	Volume	Folio	Owner	Vested	Primary Interest Holder	Notes
"A"		UCL			Crown			
"B"	DP 209432				Crown			Closed Road
"C"	DP 177132				Crown			Railway
"D"		UCL			Crown			
"E"	DP 209432				Crown			Closed Road
"F"	Plan 11544	UCL			Crown			Old Railway Line Reserve
"G"	DP 188772 DP 217371	Road			Crown			Koombana Drive
628	DP 214890	UCL	3007	792	Crown		State of Western Australia	
723	DP 189594	41557	3092	531	Crown	Reserve without Management Order	State of Western Australia	Railway
1091	DP 40599	47048	3134	700	Crown	Reserve under Management Order	City of Bunbury	Recreation & Pedestrian Access

1.1.3 HISTORICAL CONTEXT

The City of Bunbury is the major urban employment and residential centre in the south-west of Western Australia. It serves a wide regional catchment and plays a significant role as the economic and social hub of the area. Continued development of the Bunbury Waterfront will provide a much-needed boost to the attractions of the city centre, for employees, residents and visitors, and will increase the profile of Bunbury across the south-west region.

The Bunbury City Centre is located on a peninsula that is surrounded by three water bodies. These are the Indian Ocean to the west, Koombana Bay to the east, and the Leschenault Inlet to the south.

Bunbury was founded in the late 19th Century as a port for the South West region of Western Australia. It was the centre of a number of rural industries including timber and dairy produce, and later became a mining port for a number of minerals (initially coal, but latterly silica and bauxite).

As a result of this port heritage, Bunbury is typical of many early Western Australian towns, with a 'main street' of civic and retail buildings with surrounding streets becoming increasingly residential with weatherboard or brick bungalows. This pattern of development went through a radical change in the sixties and seventies as Bunbury had a rapid period of expansion based predominantly around the expansion of bulk port activity in bauxite, coal and wood chips.

A new port was established to the east of the traditional port area. In addition, the segregated planning policies of the 1970s created big box retail and residential sprawl on the outskirts of the traditional Bunbury CBD. This undermined the economic viability of the Bunbury Town Centre, which consequently became run down.

The 1980s saw the construction of the Bunbury Tower as a prime example of commercial office space that lacks a sense of scale and relationship to its surroundings. This building, at effectively 12 storeys, creates a height precedent for the rest of Bunbury.

In 1996, the Marlston Hill project saw the rejuvenation of the CBD, and inner city confines, with the creation of some waterfront commercial mixed use medium density and the gentrification of existing historic housing stock. This development is typical of its era (contemporary with Subi Centro and East Perth Redevelopment) and spawned residential 2-3 storey historically revisionist architecture. While the buildings have limited architectural merit, the public domain and increased activity has brought new life into the Bunbury Town Centre.

1.1.4 LOCATIONAL CONTEXT

The proposed Amendment and Structure Plan will be an important part of the Bunbury City Centre's ongoing revitalisation and evolution. The proposed developments will serve to re-energise the city, reminiscent of the Marlston Hill and Waterfront developments.

The current city centre is generally characterised by homogenous land use precincts, as follows:

- Core retail office adjacent Victoria Street from Wollaston Street through to Stirling Street; and
- Other business/mixed use west of Victoria Street along Wittenoom Street, south of Stirling Street and focussed around the Marlston Waterfront precinct west into Marlston Hill.

The Amendment sites are located directly adjacent to the eastern edge of the existing Bunbury CBD area, and adjacent to the City's cultural and entertainment precinct (refer **Figure 3**). To the north and north-west of the subject land is a significant area of recent development and enhancement, centred on the redevelopment of the heritage Silo buildings and the Marlston Waterfront mixed use precinct further north. To the northeast of the subject land, across the Plug, lies Koombana Bay beach and parkland to the north of Koombana Drive, and existing low intensity tourist development to the south.

The proposed development represents the opportunity to link these disparate areas of Bunbury and allow the City to form into an integrated and vibrant place to live, work and visit.

Figure 3 – City Context

1.2 PLANNING FRAMEWORK

1.2.1 ZONING AND RESERVATIONS

1.2.1.1 GREATER BUNBURY REGION SCHEME

The Greater Bunbury Region Scheme (GBRS) provides the statutory framework for land use in the Greater Bunbury region. **Figure 4** illustrates the current zoning of the subject land and reflects the outcome of the recent GBRS Amendment (0011/041) that excluded this area from the 'Railways', 'Regional Open Space' and 'Other Regional Roads' reserves and included it within the 'Regional Centre' zone.

As per Section 124(3) of the *Planning and Development Act (2005),* the City has 90 days from the day on which the amendment to the GBRS has effect (21 June 2011) to initiate an amendment to its local planning scheme to make it consistent with the region scheme, and which does not contain or removes, any provision which would be likely to impede the implementation of the region planning scheme. The 90-day timeframe expired on 19 September 2011. The City of Bunbury resolved to initiate an amendment to its Town Planning Scheme No. 7 (TPS7) on 27 March 2012.

Figure 4 – Greater Bunbury Region Scheme

1.2.1.2 CITY OF BUNBURY TOWN PLANNING SCHEME NO. 7

The City of Bunbury TPS 7 outlines the permissible land uses and relevant standards pertaining to development within each of its various identified zones. **Figure 5** illustrates that the subject land is presently shown as 'No Zone' on the Scheme Map.

Befitting the land's inner city waterfront location, surrounding land is either similarly reserved in TPS 7 or zoned:

- 'City Centre' – being the majority of land located west of Casuarina Drive and Blair Streets; and/or
- 'Special Use' – being Site No. 12 (Marlston Waterfront Precinct) and Site No. 25 (Silo Mixed Use Precinct), incorporating all the land west of the subject land, up to the edge of Casuarina Drive.

The proposed amendment seeks to introduce a new Special Use Area (No. 57 – Koombana North Precinct) into TPS 7 in place of the current 'No Zone' designation.

The Special Use Zone proposed will provide the framework to guide the preparation and approval of a Structure Plan for the subject land. The proposed Structure Plan outlines the preferred development vision for the site and determines appropriate land uses and associated development standards to realise this vision.

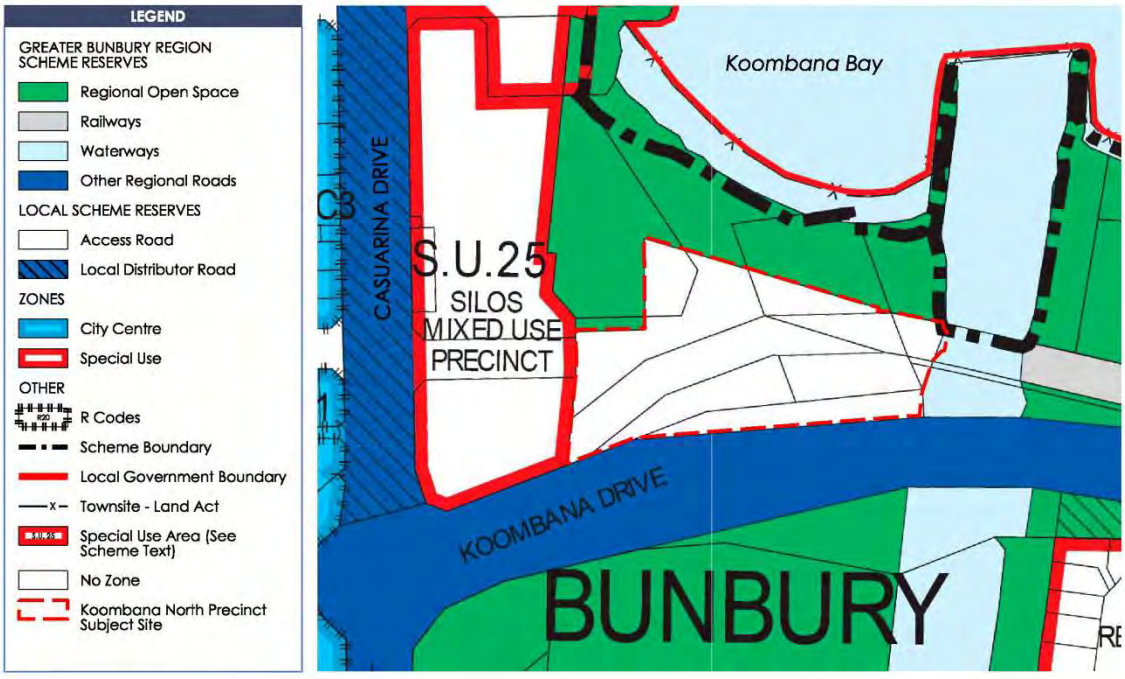


Figure 5 – City of Bunbury Town Planning Scheme No. 7

1.2.1.3 AMENDMENT NO. 63 TO TPS 7

PURPOSE OF AMENDMENT

Amendment No. 63 to TPS 7 has been prepared by the City of Bunbury to facilitate the introduction of 'Special Use Area No. 57 – Koombana North Precinct' into TPS 7 in place of the current 'No Zone' designation. The amendment seeks to update the Scheme Map 1 and Schedule 2 of TPS 7 following the gazettal of Amendment 0011/041 to the Greater Bunbury Region Scheme (GBRS). Amendment No. 63 provides the framework to guide the preparation of the Structure Plan to facilitate the development of the Koombana North precinct, which forms the southern extension of the broader Bunbury Waterfront project.

INITIATION OF AMENDMENT

A request to initiate an amendment to TPS 7 was lodged with the City on 1 March 2012. Following consideration by the City's officers, a report was prepared and presented to Council for its consideration at its meeting on 27 March 2012. Council unanimously resolved to initiate an amendment as follows:

"Council Decision 94/12

That Council:

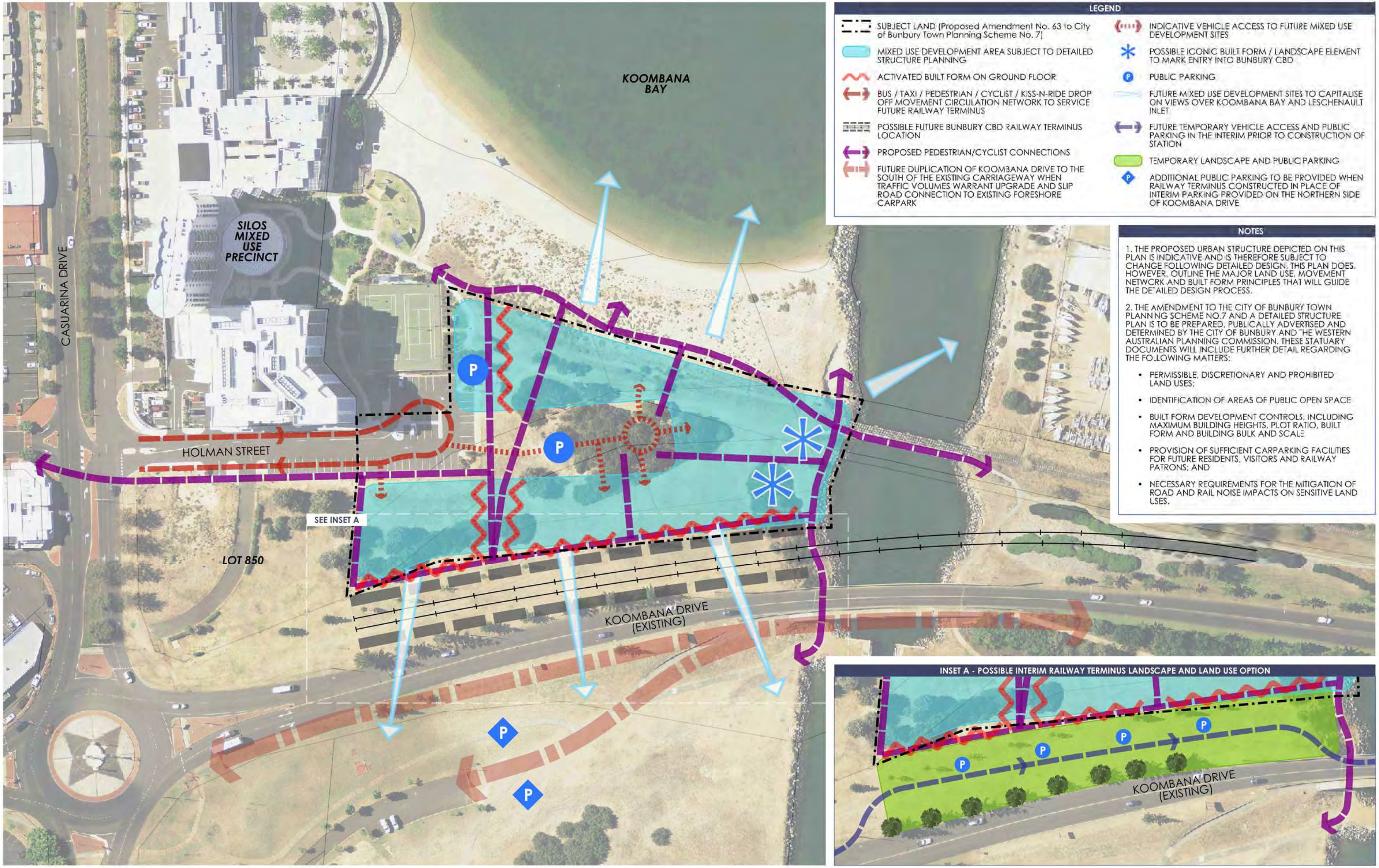
1. *In accordance with the Planning and Development Act 2005 resolves to initiate Scheme Amendment 63 to the City of Bunbury Town Planning Scheme No. 7 by:*

    a) *rezoning portion of Lot 1091 Holman Street, unallocated crown land, portions of Railway Reserve and portions of the Koombana Drive road reserve from City of Bunbury Town Planning Scheme No. 7 'No Zone' to 'Special Use Zone No. 57'; and*

    b) *inserting provisions for Special Use Zone No. 57 into the table under Schedule 2 – Special Use Zones of the Scheme for the purposes of facilitating the development of the Koombana North Precinct of the Waterfront to accommodate a variety of possible land uses including, permanent & short stay residential accommodation, commercial, tourism, and recreation uses as well as allowing for a high degree of public access to foreshore areas and an appropriate ground level built form interface to the possible future Bunbury CBD railway terminus.*

2. *Resolves to agree to the formulation of a Structure Plan generally in accordance with the Development Principles Plan as prepared by Taylor Burrell Barnett (Attachment 1 under separate cover to this report) for the purpose of guiding subdivision and development of the Koombana North Precinct of the Waterfront."*

The Development Principles Plan, as referred to in Point 2 of the resolution, is included as **Figure 6**.



LEGEND

- SUBJECT LAND (Proposed Amendment No. 63 to City of Bunbury Town Planning Scheme No. 7)
- MIXED USE DEVELOPMENT AREA SUBJECT TO DETAILED STRUCTURE PLANNING
- ACTIVATED BUILT FORM ON GROUND FLOOR
- BUS / TAXI / PEDESTRIAN / CYCLIST / KISS-N-RIDE DROP OFF MOVEMENT CIRCULATION NETWORK TO SERVICE FUTURE RAILWAY TERMINUS
- POSSIBLE FUTURE BUNBURY CBD RAILWAY TERMINUS LOCATION
- PROPOSED PEDESTRIAN/CYCLIST CONNECTIONS
- FUTURE DUPLICATION OF KOOMBANA DRIVE TO THE SOUTH OF THE EXISTING CARRIAGEWAY WHEN TRAFFIC VOLUMES WARRANT UPGRADE AND SLIP ROAD CONNECTION TO EXISTING FORESHORE CARPARK
- INDICATIVE VEHICLE ACCESS TO FUTURE MIXED USE DEVELOPMENT SITES
- POSSIBLE ICONIC BUILT FORM / LANDSCAPE ELEMENT TO MARK ENTRY INTO BUNBURY CBD
- PUBLIC PARKING
- FUTURE MIXED USE DEVELOPMENT SITES TO CAPITALISE ON VIEWS OVER KOOMBANA BAY AND LESCHENAULT INLET
- FUTURE TEMPORARY VEHICLE ACCESS AND PUBLIC PARKING IN THE INTERIM PRIOR TO CONSTRUCTION OF STATION
- TEMPORARY LANDSCAPE AND PUBLIC PARKING
- ADDITIONAL PUBLIC PARKING TO BE PROVIDED WHEN RAILWAY TERMINUS CONSTRUCTED IN PLACE OF INTERIM PARKING PROVIDED ON THE NORTHERN SIDE OF KOOMBANA DRIVE

NOTES

1. THE PROPOSED URBAN STRUCTURE DEPICTED ON THIS PLAN IS INDICATIVE AND IS THEREFORE SUBJECT TO CHANGE FOLLOWING DETAILED DESIGN. THIS PLAN DOES, HOWEVER, OUTLINE THE MAJOR LAND USE, MOVEMENT NETWORK AND BUILT FORM PRINCIPLES THAT WILL GUIDE THE DETAILED DESIGN PROCESS.

2. THE AMENDMENT TO THE CITY OF BUNBURY TOWN PLANNING SCHEME NO.7 AND A DETAILED STRUCTURE PLAN IS TO BE PREPARED, PUBLICALLY ADVERTISED AND DETERMINED BY THE CITY OF BUNBURY AND THE WESTERN AUSTRALIAN PLANNING COMMISSION. THESE STATUARY DOCUMENTS WILL INCLUDE FURTHER DETAIL REGARDING THE FOLLOWING MATTERS:

- PERMISSIBLE, DISCRETIONARY AND PROHIBITED LAND USES;
- IDENTIFICATION OF AREAS OF PUBLIC OPEN SPACE
- BUILT FORM DEVELOPMENT CONTROLS, INCLUDING MAXIMUM BUILDING HEIGHTS, PLOT RATIO, BUILT FORM AND BUILDING BULK AND SCALE
- PROVISION OF SUFFICIENT CARPARKING FACILITIES FOR FUTURE RESIDENTS, VISITORS AND RAILWAY PATRONS; AND
- NECESSARY REQUIREMENTS FOR THE MITIGATION OF ROAD AND RAIL NOISE IMPACTS ON SENSITIVE LAND USES.

DEVELOPMENT PRINCIPLES PLAN

Koombana North

A LandCorp Project

0m 5 10 15m

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d: 18 April 2012
p: 06/099/008C

figure 06

CONTENT OF AMENDMENT

Amendment No. 63 comprises the following elements:

- Scheme Amendment Map; and
- Scheme Amendment Text, incorporating specific land use permissibility and development conditions.

The Scheme Amendment Map identifies the subject land as being changed from the current 'No Zone' designation to 'Special Use Area No. 57 – Koombana North Precinct'. The proposed zoning is outlined in **Figure 7**.

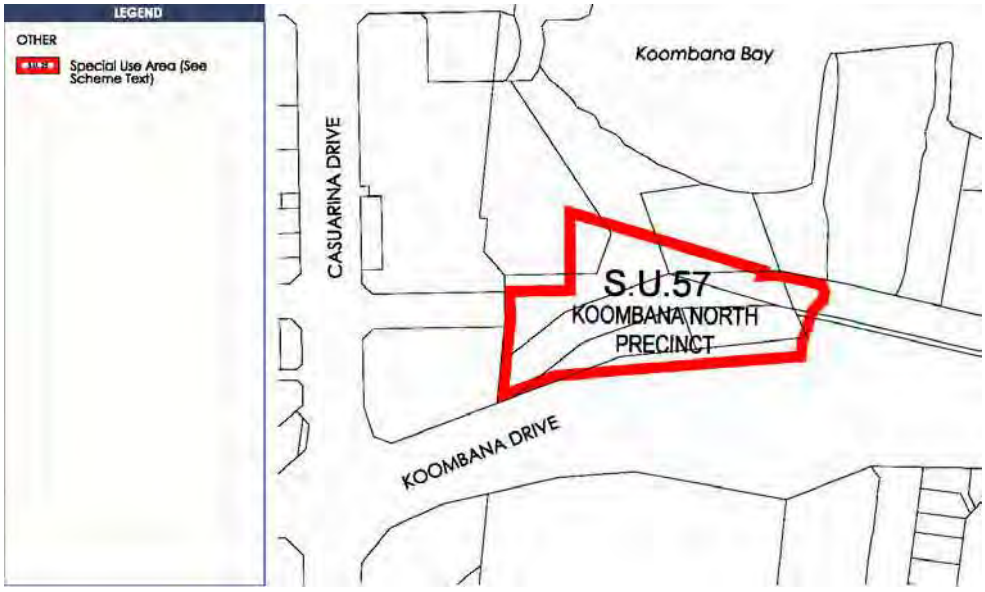


Figure 7 – Proposed Special Use Area No. 57 – Koombana North Precinct

The Scheme Amendment Text, identifies specific land use permissibility within proposed Special Use Area No. 57. The Scheme Amendment Text also outlines the conditions that must be fulfilled to facilitate development of the subject land. Specifically, the Scheme Amendment Text performs the following functions:

- Requires the preparation of the Structure Plan, to be approved by the City of Bunbury and Western Australian Planning Commission, to outline the development vision for the subject land and establish relevant development criteria that must be achieved in order to facilitate the realisation of the development vision;
- Identifies the key elements to be considered and addressed in the Structure Plan, in addition to the requirements of Clause 6.2.4.4 of TPS 7;
- Established some of the key development outcomes that are to underpin the preparation of the Structure Plan; and
- Requires the preparation of a number of necessary technical reports to support the preparation of the Structure Plan.

The Koombana North Structure Plan has been prepared in accordance with the requirements outlined in the proposed Scheme Amendment Text for Special Use Area No. 57.

1.2.2 STATE PLANNING FRAMEWORK

1.2.2.1 STATE PLANNING POLICY 2.6 – STATE COASTAL PLANNING POLICY

The relevant objectives of the current gazetted and operational version of State Planning Policy (SPP) 2.6 are to:

- provide for public foreshore areas and access to these on the coast; and
- ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities.

The provisions of Clause 5.3 – Building Height Limits apply to all urban development within 300 metres of the horizontal setback datum (i.e. the coastline). The subject land is located within this 300m horizontal setback area. The policy requires that the height of buildings should be limited to a maximum of five storeys (and not exceeding 21 metres). Higher structures up to a maximum of eight storeys (and not exceeding 32 metres) may be permitted where:

- There is broad community support for the higher buildings following a process of full consultation;
- The proposed development(s) is suitable for the location taking into account the built form, topography and landscape character of the surrounding area;
- The location is part of a major tourist activity node;
- The amenity of the coastal foreshore is not detrimentally affected by any significant overshadowing of the foreshore; or
- There is visual permeability of the foreshore and ocean from residential areas, roads and public spaces.

State Coastal Planning Policy 2.6 also includes requirements for development to be undertaken with regard to the possible impacts of sea level change.

The requirements of SPP 2.6 were considered in the preparation of the Taskforce Report (refer **Section 1.3.2**), which established the setbacks to development for the subject land and the proposed maximum building heights. The development boundary was then enshrined in the GBRS, via the gazettal of Amendment 0011/041. These previously established development setbacks and maximum building heights are reflected in the Structure Plan.

In addition, a Coastal Stability and Setback Review Report has been prepared by BMT JFA Consultants (refer **Appendix A**) which assesses the existing coastal environment. The report assesses the measures required to mitigate against the impact of future sea level rise and identifies the necessary measures required to protect development from storm surges.

1.2.2.2 STATE PLANNING POLICY 3.4 – NATURAL HAZARDS AND DISASTERS

SPP 3.4 addresses a number of natural hazards including floods, bush fire, landslides, earthquakes, cyclonic activity, coastal erosion, severe storms, storm surges and tsunamis. Statutory and non-statutory planning documents should have regard to the natural elements that may contribute to the occurrence of natural hazards including climate, geology, soils, vegetation cover, slopes, landforms and hydrology.

Of particular relevance to this proposal is the proximity of the subject land to Koombana Bay and Leschenault Inlet water bodies. SPP 3.4 states that proposed development on a floodplain is considered acceptable with regard to major flooding as long as it does not produce an adverse impact on surrounding development with an adequate level of flood protection.

As with SPP 2.6, the impact of the development site on the surrounding marine environment and its susceptibility to flooding has been considered in the preparation of the Structure Plan.

1.2.2.3 STATE PLANNING POLICY 5.4 – ROAD AND RAIL TRANSPORT NOISE AND FREIGHT CONSIDERATIONS IN LAND USE PLANNING

SPP 5.4 seeks to minimise the adverse impact of transport noise, without placing unreasonable restrictions on noise-sensitive residential development. This Policy is applied where the proposal includes:

- a proposed new noise-sensitive development in the vicinity of an existing or future major road, rail or freight handling facility;
- a proposed new major road or rail infrastructure project in the vicinity of existing or future noise-sensitive land uses;
- a proposed major redevelopment of existing major road or rail infrastructure in the vicinity of existing or future noise-sensitive land uses; or;
- a proposed new freight handling facility.

The noise impacts of traffic on Koombana Drive and the possible future Perth to Bunbury fast rail service have been considered in the preparation of the Structure Plan. A Road Traffic Noise Assessment has been undertaken by Lloyd George Acoustics (refer **Appendix B**). This report assesses the current and future noise impacts from Koombana Drive, which presently accommodates heavy trucks travelling to and from the outer harbour, and the future noise impacts associated with the railway. The report identifies necessary mitigation measures, such as minimum glazing thickness, to be incorporated into the future built form to ensure that a suitable noise level is achieved in future dwellings.

1.2.2.4 TOURISM PLANNING TASKFORCE REPORT

The Tourism Planning Taskforce (TPT) Report promotes the identification of tourism-oriented sites, nodes or precincts. A key recommendation of the TPT Report was for the designation of tourism places that are appropriately zoned in order to protect their long-term role and function for one or more of the five elements or factors that are commonly used to identify and address the development needs of the tourism industry in Western Australia.

The TPT Report sets out the parameters for the designation and development of tourism places, and includes the self-evident need for them to be located near established services and infrastructure in order to ensure maximum viability and synergy.

Indeed, it can be shown that the five elements or factors of the tourism industry are fundamentally interdependent, and as such, the degree of their presence in a place therefore critically underpins the performance of a tourism development.

As the subject site is located on the waterfront and situated within convenient walking distance of other mutually supportive tourism oriented developments, including Bunbury's CBD, it is considered that the site qualifies as suitably important tourism node. The Structure Plan provides for a mix of residential, retail and commercial land uses, which may be developed for tourism related purposes, including short-stay residential accommodation and tourism-orientated shops.

1.2.3 REGIONAL PLANNING FRAMEWORK

1.2.3.1 GREATER BUNBURY STRATEGY

The Draft Greater Bunbury Strategy has been prepared by the Department of Planning, in close consultation with the wider Bunbury region community. The study area includes all of the local government areas within the Shire's of Capel, Dardanup, Harvey and the City of Bunbury. The draft strategy considers the role of the study area as a service centre for the South West region and the influence of the areas proximity to Perth, the Margaret River Tourism Area, major employment areas at Collie, and major infrastructure proposals, such as the possible Fast Passenger Rail link between Perth, Bunbury and Busselton.

The draft document was advertised for public comment for a period of four months from June 2011 and provided the community with an opportunity to provide comment on the future of the Bunbury region over the next 20 years. Submissions received are currently being considered by the Department of Planning. It is anticipated that the outcome of the community consultation period will be presented to the Western Australian Planning Commission in 2012, and the final Greater Bunbury Strategy is anticipated to be released later in 2012.

1.2.3.2 ACTIVITY CENTRES FOR GREATER BUNBURY POLICY

The Activity Centres for Greater Bunbury Policy (April 2012) replaces the *Interim Greater Bunbury Commercial Centres Strategy*, which was prepared in April 2007 as an interim position statement to identify the WAPC's expectations for commercial development within Greater Bunbury.

The Policy outlines the broad planning and development requirements for new activity centres and the redevelopment and renewal of existing centres within the Greater Bunbury Region. Some of the key focuses and objectives of the policy are as follows:

- The broad-level definition and distribution of preferred land uses and urban design development criteria for activity centres;
- The co-ordination of the development of a mixture of land uses with infrastructure planning and delivery;
- The integration of activity centres with public transport to ensure community benefits through infrastructure efficiency and economic benefits of business clusters;
- The reduction in transport energy use and associated carbon emissions; and
- The consolidation of residential and commercial development in activity centres to contribute to a balanced network.

Table 2 of the Policy identifies some of the functions, typical characteristics and performance targets for the various types of centres in the hierarchy across the Greater Bunbury Region. A number of aspects of Table 2 are relevant to the Koombana North site, which is located within the Bunbury Central Business District. An extract from Table 2 of the Policy is included in **Table 2.**

TABLE 2: BUNBURY CBD FUNCTIONS, TYPICAL CHARACTERISTICS AND PERFORMANCE TARGETS

Activity Centre	City Centre
Transport Connectivity and Accessibility	Focus of regional road and rail infrastructure as well as radial bus network.
Typical Retail Types	Speciality Shops Personal Services
Typical Office Development	Major Offices Commonwealth and state government agencies
Entertainment	Restaurants Wide range of arts, cultural and entertainments facilities
Future Indicative Service Population (Trade) Area	Greater Bunbury Region and South West Region
Dwelling Density Per Hectare	Density development desirable in appropriate locations

1.2.4 LOCAL PLANNING FRAMEWORK

1.2.4.1 CITY VISION STRATEGY

The City Vision Strategy was prepared by the City Vision Taskforce, which was appointed by the City of Bunbury Council in June 2004. The City Vision Taskforce's objective was to redefine Bunbury's image and promote its role and potential as the strategic regional capital for the Greater Bunbury Region. The City Vision Strategy seeks to provide a vision for development of the City of Bunbury, and a vision for the City's relationship with the Greater Bunbury Region for the next 25 years.

The City Vision Strategy Action Plan sets out discrete project or programme initiatives towards implementing the recommendations of the City Vision Strategy and identifies a City Entry Precinct.

The subject land is located within Sub-Precinct 5 (refer **Figure 8**), which includes waterfront/ commercial land, and has the following value statements as indicated in the City Vision Strategy Action Plan:

The City Vision Strategy addresses the development of the Waterfront Project as follows:

"Proposals for the development of Stage 1 of the project will need to address issues associated with an entry statement into the City; public access; provision of and management of regional and local open space; visual impact particularly height, bulk and architectural theme; traffic generation and management; interface with existing uses; and competition from competing uses including civic and cultural. Tradeoffs associated with the impact of development will need to be analysed within the context of the full range of development proposals for the CBD."

- Issues associated with an entry statement into the City; public access; provision of and management of regional and local open space; visual impact particularly height, bulk and architectural theme; traffic generation and management; interface with existing uses; and competition from competing uses including civic and cultural; and
- Trade-offs associated with the impact of development will need to be analysed within the context of the full range of development proposals for the CBD.

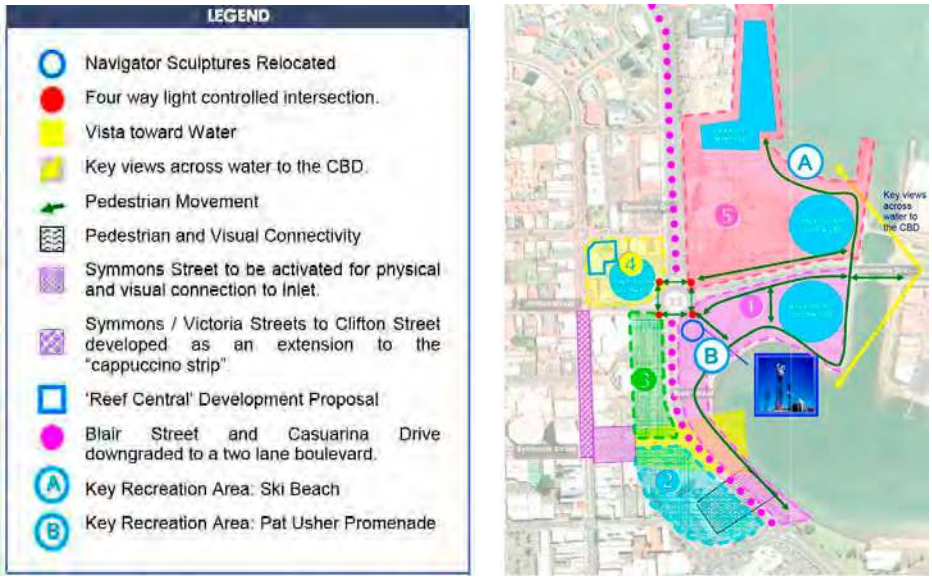


Figure 8 – City Vision Strategy Sub-Precinct 5

1.2.4.2 LOCAL PLANNING STRATEGY FOR ACTIVITY CENTRES AND NEIGHBOURHOODS

The City of Bunbury Local Planning Strategy for Activity Centres and Neighbourhoods (LPSACN) seeks to "facilitate a network of mutually supportive residential neighbourhoods and activity centres that contribute to the economic, social and environmental sustainability of the City of Bunbury." The LPSACN identifies the key defining characteristics of a sustainable city and is deliberately non-prescriptive so as to provide flexibility for development and redevelopment to achieve these characteristics. The LPSACN acknowledges that it is "a principles-based general strategy" that is to be used "to guide town planning scheme zoning, policy development and decision making in relation to residential, commercial and mixed use development."

The LPSACN identifies that there is likely to be demand for a significant amount of additional commercial floorspace over the next two decades, with a figure of up to 115,000 m^2 being quite possible. The LPSACN also specifies that maintaining the supremacy of the CBD should be a priority as future development occurs in the City. The LPSACN therefore advocates maintaining unrestricted development potential in the CBD as a general principle.

The LPSACN also includes an analysis of the recent population and housing trends in Bunbury, with the result listed below:

- Moderate, steady population and dwellings growth over time;
- Significant ageing of the population;
- Rapidly increasing numbers of 1 and 2 person households;
- The dominance of the separate house type to remain, however;
- Flats, units, apartments, semi-detached & townhouses should be the main focus of future housing demand.

The housing trends and future needs are directly applicable to the development of the Koombana North site, with a majority of one and two bedroom dwellings proposed.

In addition, it is noted that the LPSACN Strategy Map identifies the Koombana North Precinct as being within "Potential Walkable Catchments – areas within which medium density housing areas will be defined". The Koombana North Structure Plan will facilitate the development of these types of housing within the location identified in the LPSACN.

1.2.4.3 LOCAL PLANNING STRATEGY FOR TOURISM

The City of Bunbury's Local Planning Strategy for Tourism (LPST) seeks to encourage development that will assist Bunbury in realising it potential as a major tourist destination for domestic, interstate and international visitors. The LPST has the following objectives:

- Stimulate opportunities that will assist the further diversification of Bunbury's tourism industry as envisaged by the City Vision Strategy;
- Promote better management of interface issues arising from tourism activity and other uses (particularly residential activity) within the City;
- Enable ensuing benefits to be secured for the whole community; and
- Support the enhancement of the tourism industry by acknowledging valued resources whilst both protecting and facilitating the ecologically sustainable use of the City's significant natural and cultural assets.

Table 2.8 of the LPST identifies the existing Marlston Waterfront as being a prominent destination node and place of visitor interest and provides a summary of its key attributes. An extract of Table 2.8 from LPST is included in **Table 3** below. The area identified for the Marlston Waterfront in LPST also incorporates the majority of the Koombana North Precinct. The Structure Plan seeks to capitalise on the amenity of the site and provides the opportunity for the development of new amenities in accordance with those identified in Table 2.8

TABLE 3: PROMINENT DESTINATION NODES AND PLACES OF VISITOR INTEREST

Destination Nodes/ Areas of Visitor Interest	Accommodation	Access	Attractions	Activities	Amenities	Special Attributes
Marlston Waterfront	Mantra Hotel (open December 2008)	Main road connections to CBD, Koombana Drive & North; Mooring dock & boat launching facilities; Limited Car Parking; Limited pedestrian access to CBD / Koombana Drive.	Active Waterfront Environment; Ocean & Harbour Views.	Alfresco eating; Water-skiing (designated area); Cruises; Oceanside walks; BBQ and picnicking facilities.	Cafes; Restaurants; Tavern; Specialty shops; Playground; Public toilets; BBQ and picnicking facilities; Mooring dock.	Modern/vibrant atmosphere; Strategic link between Outer Harbour and CBD / Koombana.

The Marlston Waterfront area is also identified as a Strategic Tourism Location (STL) in the LPST. Table 3.10 of the LPST provides summary of the preferred, permissible and discouraged uses for the subject area. An extract of Table 3.10 from LPST is included in **Table 4** below. The land uses identified have been taken into consideration by the City of Bunbury in the preparation of Amendment No. 63 to TPS 7, which will establish the land use permissibility within the Koombana North Precinct.

TABLE 4: TOURISM RELATED USES WITHIN THE MARLSTON WATERFRONT STL

Marlston Waterfront				Key Design Considerations
Use Type	**Preferred**	**Permissible**	**Discouraged**	
Short-Stay Accommodation	Short-stay Multiple Units Unrestricted Residential Accommodation Unrestricted Residential Occupancy	Hotel/Motel Short-Stay Grouped Units Backpackers	Bed & Breakfast Guesthouse	Parking & Access Permeability Interface with Central STL CPTED Public Spaces & Public Access
Activities/ Amenities	Shop (limited floorspace) Restaurant Lunch Bar Tavern	Office (service) Fast Food Outlet Recreation – Private Exhibition Centre Reception Centre	Office Civic Use Amusement Parlour Restricted Premises Betting Agency Cinema Club Premises Theatre Nightclub	

1.2.4.4 LOCAL PLANNING STRATEGY FOR HERITAGE AND CHARACTER

The City of Bunbury Local Planning Strategy for Heritage and Character (LPSCH) seeks to establish the methods by which the City of Bunbury:

- conserves places and areas of cultural heritage significance;
- ensures that development does not adversely affect the significance of heritage places and areas;
- ensures that heritage significance is given due weight in planning decision-making; and
- provides certainty to landowners and community about planning processes for heritage identification, conservation and protection.

There is no existing built heritage within the Koombana North Precinct, however the Silos heritage redevelopment area is located to the west of the site. The redevelopment of the Silos area has occurred with the construction of new buildings demonstrating contemporary architecture. The development of the Koombana North Precinct is also likely to incorporate contemporary architecture that co-ordinates with the existing built form context.

1.2.4.5 LOCAL PLANNING POLICY 3.1 – ACCESS & PARKING FOR PEDESTRIANS, BICYCLES AND VEHICLES

Local Planning Policy (LPP) 3.1 seeks to ensure that the transport needs of the community and the provision of car parking is adequately met within the City, particularly within the CBD. The Policy aims to guide the exercise of discretion in the determination of applications for planning approval with respect to the provision of parking and/or access for pedestrians, bicycles and vehicles.

The subject land is currently located outside of the boundaries of the CBD Parking Area, however with the proposed amendment it would seem fitting that the subject land be included within this area. The following outcomes are to be achieved for access, parking and public transport integration within the CBD:

- planning for the CBD needs to ensure the efficient, convenient, safe and equitable movement of people goods and services;
- public transport should be promoted throughout the CBD to facilitate park and ride options and to encourage short run patronage in preference to the motor car;
- strategic public parking stations should be established and protected in the northern, central and southern sectors of the CBD;
- expansion of public parking areas must be based on a comprehensive parking demand assessment and extended cost/benefit analysis that include consideration of economic, social/cultural and environmental matters;
- management of parking that includes planning, construction, maintenance and regulation is to be a dedicated area of the Local Government's operations, with appropriate resource allocations that are reviewed annually; and
- developer contributions to the provision of parking need to be based on standards that are regularly reviewed and linked to other objectives that promote development, improve amenity, conserve heritage, promote pedestrian and cycle movements and cater particularly for the needs of people with a disability, aged persons and children.

Part C of the Policy prescribes development requirements for the provision of access and parking. Alternative designs may be considered subject to demonstration that the proposed development is consistent with the intent and objectives of the Policy. The provisions of this Policy will apply with the exception of residential development, of which shall comply with the Acceptable Development standards of the Residential Design Codes for the provision of car parking.

1.2.4.6 LOCAL PLANNING POLICY – ROAD HIERARCHY

LPP – Road Hierarchy provides guidelines in regard to traffic management, transport and access to roads in the City and to determine opportunities for integrating future land use, public transport and road based transport strategies.

Each road is classified based on their expected function. The road hierarchy under the City's TPS 7 is as follows:

- Primary Distributor Road
- District Distributor Road
- Local Distributor Road
- Access Road

The Policy prescribes management measures for each road classification under the road hierarchy to ensure that each road is able to perform the required function under that classification. Where development is proposed, the design is to accord with Council's Road Hierarchy Plan to ensure that the development will not adversely impact on surrounding areas and to ensure safe and efficient traffic circulation.

1.2.4.7 LOCAL PLANNING POLICY 4.12 – BUILDING HEIGHT

With Bunbury classified as a Strategic Regional Centre, the aim of LPP 4.12 is to recognise the anticipated growth in and around the CBD and key commercial/activity centres and to accommodate the rise in commercial activity and population. The Policy prescribes height limitations required in certain areas that are not otherwise specified by the Residential Design Codes in order to maintain the character and amenity of the City.

The development of land is to be in accordance with various development requirements as set out in the Policy. In respect of the Central Business Area, the area is broken up into four main sub-precincts which prescribe development requirements, established as a codes based approach.

The subject land is located within the CBD area, however not located within a specific sub-precinct. The Policy does not presently prescribe a maximum building height for the subject land. The Structure Plan specifies maximum building heights for the Koombana North precinct.

1.2.4.8 LOCAL PLANNING POLICY – INTEGRATED OPEN SPACE

This Policy is aimed at guiding the management of areas of public open space with an objective to implement programs designed to provide extensive greening and street tree planting as well as substantial parkland and natural area development.

The utility of open space is maximised when it is provided as a coherent and interconnected network. Provision of larger areas of open space is seen as the most appropriate method that will best allow for flexibility in function and minimise ongoing maintenance costs as community needs continue to change over time.

The current provision of open space in Bunbury has generally been compared against the following guiding values:

- Open space should have a minimum area of 0.5 hectares;
- Areas of 10 hectares or greater should be linked (smaller areas may be considered a part of corridor linkages if they are identified as integral to forming links);
- All households to be within 500 metres of open space of 0.5 hectares or greater;
- A diversity of settings and terrain types should be provided; and
- A system of 'green' corridors should provide for conservation and pedestrian linkages.

Bunbury's open space includes a broad range of types. Areas of existing open space are categorised into either local or neighbourhood open space. These categories are further broken down into specific themes, being:

- Conservation and landscape value (bushland, wetlands, waterways, beaches typically multiple use areas);
- Active recreation (sporting areas, includes sporting facilities);
- Passive recreation (Children's play grounds, picnic and BBQ facilities, no facilities as such); and
- Key enhanced open space tourist nodes.

The subject land is categorised as an area of passive open space, with conservation open space to the north and passive open space to the south of Koombana Drive. Given the GBRS rezoning process that has occurred, the subject site will no longer be categorised as passive open space as per the current policy.

1.2.4.9 LOCAL PLANNING POLICY – CONNECTION TO THE CITY'S STORMWATER SYSTEM

The purpose of this Policy is to provide guidelines and requirements for connection to the City's Stormwater Drainage Disposal System. The Policy states that the City Engineer may:

- Determine minimum standards that shall apply to connections;
- Require contributions for upgrading the drainage system;
- Require existing onsite drainage to be upgraded in line with current drainage policies and standards prior to making a connection;
- Refuse to permit connection if it is deemed that Council's drainage system is under capacity or does not have sufficient spare capacity; and/or
- Require additional information to be provided as deemed necessary.

Connections and works within road reserves shall comply with the standard requirements prescribed in the Policy.

1.2.4.10 LOCAL PLANNING POLICY – STORMWATER DISPOSAL FROM PRIVATE PROPERTIES

The purpose of this Policy is to provide guidelines for disposal of stormwater from private properties and to prevent stormwater run-off entering the Council's drainage system causing flooding. Council requires the submission of stormwater drainage plans for all developments other than single residential, prior to the issuance of a building licence. In the CBD, Council permits connection to the city's stormwater drainage system with written approval from the City Engineer. This will occur in the development of the Koombana North Precinct.

1.2.4.11 LOCAL PLANNING POLICY – DEVELOPMENT IN FLOOD AFFECTED AREAS

This Policy aims to provide guidelines to ensure that all developments are not exposed to flood risks as identified in recognised flood studies including the Preston River Flood Study, Bunbury Flood Management Strategy, Five Mile Brook Flood Study and Eedles Gully Flood Study. Developers are required not to develop lower than the Recommended Minimum Finished Floor Level as identified in flood studies carried out from time to time and in accordance with the Bunbury Flood Management Strategy. The Structure Plan specifies a minimum finished floor level for development to protect against possible flood, storm surge and sea level rise impacts.

1.2.4.12 LOCAL PLANNING POLICY – PUBLIC ART

LPP – Public Art is intended to encourage the provision of public art throughout the City. The Policy provides guidelines in relation to the location, construction and maintenance requirements for public art. Specifically, the guidelines encourage focal points within the City to enhance tourism and visual amenity potential and to recognise historical/heritage themes. Council is to encourage the provision of public art within the CBD and along the coastal areas of the City and should be site specific, reflecting the use and identity of the location.

The provision of Public Art as part of the Koombana North Precinct will be considered further as part of detailed landscape planning.

1.2.4.13 LOCAL PLANNING POLICY – MARLSTON WATERFRONT DESIGN GUIDELINES

The Marlston Waterfront Design Guidelines relate to all residential development within the Waterfront Precinct and are to read in conjunction with the approved Development Guide Plan. The Design Guidelines have been established to ensure development to a high standard and that environmental and visual qualities are protected and maintained.

The Guidelines prescribe provisions relating to noise requirements, overtopping, residential density classification, requirements of the Development Plan, public open space, landscaping, modifications to the public domain, car parking, pedestrian access, verandahs and awnings, signage, safety and security, public art and built form.

The Precinct area is further broken down into four sections – Eastern Precinct; Central Precinct, Northern Precinct and Southern Precinct. The subject land is identified in the Southern Precinct and the Development Guide Plan specifies that future development within the precinct shall have regard to the following:

- The future of the grain silos;
- A possible new railway station;
- Marlston Waterfront Precinct Design Guidelines;
- Access/egress opportunities consistent with the Development Guide Plan.

No specific provisions regarding the Southern Precinct are included in the Design Guidelines. The development intent and principles of the general provisions applicable to the whole of the Marston Waterfront area have been considered in the preparation of the detailed development control provisions in the *Part 1 – Structure Plan Statutory Provisions* section.

1.3 PREVIOUS CONSULTATION

1.3.1 EASTSIDE PRECINCT STRUCTURE PLAN

An early development proposal for Koombana North was included in the Bunbury Waterfront Eastside Precinct Structure Plan (covering the land to either side of Koombana Drive and to the east of Blair Street and Casuarina Drive), prepared by LandCorp and submitted to the City of Bunbury early in 2008. This document was made available for public comment, with Council receiving 880 submissions. The large number of submissions suggested strong community interest in any proposed development for the area. While a small proportion of these submissions actively supported the proposed Structure Plan, the majority objected to the plan or components of the plan. The objections raised a number of substantive planning issues with the proposal which included:

- The loss of public open space;
- The potential impacts of high rise buildings;
- Potential impacts on skiing and boating;
- A concern that the Sailing Club and the Power Boat Club may be 'forced' from the premises which they currently occupy;
- A reduction in the availability of parking in the area; and
- The restriction or loss of views to the waterfront.

The issue of greatest concern raised through the advertising process was the loss of open space. A substantial number of submissions also expressed concerns over the potential impact of high rise buildings. These two issues clearly represented the dominant concerns of the community.

With regard to the loss of open space, there were many who objected on principle arguing that it was inappropriate to in any way impinge on land currently reserved as open space. Others argued that the loss of open space would privatize the foreshore and that this would benefit the minority, while restricting general public access to an important community resource. Further submissions specifically argued the need for more open space, particularly near the water edge. Many submissions highlighted the need for large areas of open space to continue to provide recreation opportunities into the future, and to facilitate community events such as the circus, fireworks displays, and the chefs' long table.

Where submissions did differentiate between the areas north and south of Koombana Drive, and there were limited submissions which did so, the dominant concern was with building around the Leschenault Inlet with less emphasis on Koombana Bay.

Whilst many submissions objected to the loss of open space, it was generally recognized that the existing open space was not well used and that there was a need for improvements in the area to generate more active use of the foreshore. Suggestions include the provision of a water playground, cafes, public toilets, picnic areas and improved access for pedestrians and cyclists.

1.3.2 BUNBURY WATERFRONT PROJECT TASKFORCE

1.3.2.1 PROCESS

The Taskforce was announced by the Honourable John Day MLA Minister for Planning; Culture and the Arts to resolve the regional planning issues associated with the Eastside Precinct component of the Bunbury Waterfront Project, following the public advertising of the Eastside Structure Plan.

The Terms of Reference of the Taskforce were as follows:

- Define the Regional Open Space, City Centre uses and other uses of State interest;
- Create a policy statement for the development of any area identified for urban purposes;
- Establish any requirements for an environmental review of the project area; and
- Advance an amendment to the Greater Bunbury Region Scheme for public comment.
- The Taskforce was assisted in its deliberations by a Technical Advisory Group (TAG) comprising representatives of the Department of Planning, the City of Bunbury, the Department of Environment and Conservation, the Environmental Protection Authority and LandCorp. The TAG was chaired by Patrick de Villiers, an independent planning and urban design consultant.

The work undertaken by the Taskforce included a review of the current planning framework for the areas under consideration and a review of the community issues which arose in response to the Bunbury Waterfront Eastside Precinct Structure Plan, prepared by LandCorp and submitted to the City of Bunbury early in 2008. In seeking to provide a comprehensive picture of all of the urban development components associated with the Bunbury Waterfront project, the Taskforce also included in its considerations an additional component of development in Marlston North.

This was followed by an assessment of the major planning issues which saw the delineation of critical 'public interest' criteria against which any proposed development would be evaluated. These comprised:

- Enhancing the public domain;
- Maintaining the foreshore public open space 'arc';
- Protecting vistas towards the foreshore;
- Improving the entry to the city; and
- Activating the Bunbury Waterfront.

The key strategic technical issues comprise the following:

- Provision for a station in the Central Business District (CBD) for the Perth to Bunbury fast train project.
- Addressing relevant environmental issues.
- The outcomes of the Taskforce process were used as the basis for the preparation of amendments to the GBRS to update the zoning to enable detailed planning and development to occur. The GBRS amendment for Koombana North was gazetted in July 2011.

1.3.2.2 KOOMBANA NORTH

The Taskforce report identified a preferred development concept plan for the Koombana North subject area (refer **Figure 9**).

The key features of the concept plan are as follows:

- The identification of five building envelopes, comprising of a single storey plinth that accommodates potential active uses on the ground floor (i.e. restaurants, cafes);
- Podium-style residential development above the ground floor plinth, which is set back so as to reduce the impacts of building height on the pedestrian environment;
- Maximum building heights of six stories for three of the proposed sites and four and five storeys for the other two sites; and
- The extension of Holman St to provide improved access to the Koombana Bay Ski Beach along with parking for beach visitors.

In addition, the Taskforce Report includes a policy statement for the Koombana North precinct**.** The details of this policy statement are provided below.

The work undertaken by the Taskforce outlines a clear development vision for the subject site. The outcomes of the Taskforce process are integral to the Structure Plan for Koombana North. The Structure Plan also provides additional detail and rigour to the Taskforce concept plan layout.

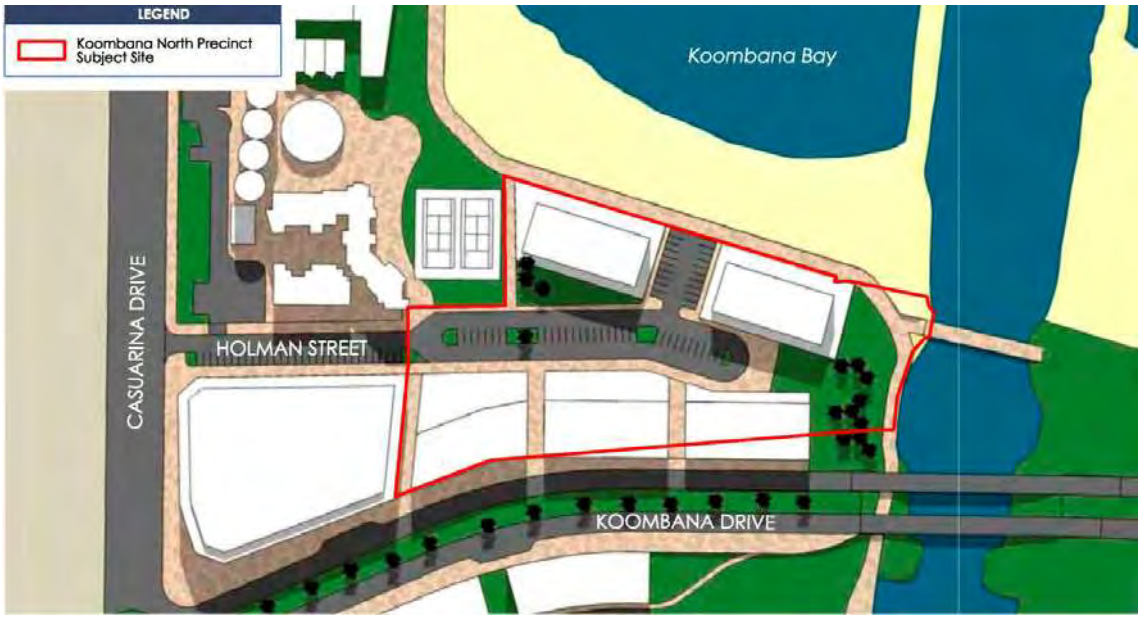


Figure 9 – Bunbury Waterfront Taskforce Concept Plan for Koombana North

KOOMBANA NORTH POLICY STATEMENT (BUNBURY WATERFRONT TASKFORCE REPORT 2009)

OBJECTIVES

The intent of this policy is to encourage development in the Koombana North Precinct which meets the following objectives:

- Establish a public domain of quality which provides community access to the foreshore.
- Provide generous pedestrian linkages to both the Marlston Waterfront to the north and Leschenault Inlet to the south.
- Provide a legible vehicular circulation system with provision for public parking for beach users by extending Holman Street.
- Facilitate the development of a mix of uses which provide an urban edge to Koombana Drive and an active edge along the foreshore promenade.
- Establish building heights which provide an urban response to existing and future development in the locality and establish an appropriately scaled interface with the foreshore promenade.

LAND USES

While a mix of land uses will be encouraged in the precinct preferred uses comprise:

- Residential development in the structures facing the beach. However, within these buildings active ground floor uses (restaurants, cafes etc) will be encouraged facing the foreshore promenade.
- Office/commercial or possibly residential uses in the buildings facing Koombana Drive.

BUILDING ENVELOPES AND BUILDING HEIGHTS

Buildings facing the beach shall provide a plinth which assists in clearly defining the public domain with potential for increased height in a limited area set back from the plinth.

Buildings facing Koombana Drive shall have larger building envelopes and will increase in height as you move towards Blair Street from the Plug.

Building heights are set out below:

Buildings are to provide an active edge to the beachfront promenade and an urban built edge to Koombana Drive.

Buildings should provide legible access points from the street, and windows should overlook the public domain to provide passive surveillance.

A variety of architectural expression will be encouraged with strong emphasis on promoting high quality contemporary design and incorporating sustainable building principles.

Development should establish sets of design elements, details, and finishes which articulate developments, and provide visual interest through the modelling of their built form.

PARKING

While development will be expected to make provision for a minimum level of parking on site cash in lieu will be encouraged for a component of parking demand to provide public parking in the locality. This will encourage reciprocal use of parking areas.

On site provision of parking shall generally be within the building envelope, subject to feasibility, basement or semi basement parking will be encouraged.

Where parking is provided within building envelopes at ground level such areas will be sleeved with active uses or suitably treated to ensure they do not impact adversely on the public domain.

1.3.3 GREATER BUNBURY REGION SCHEME AMENDMENTS

The outcomes of the work undertaken by the Taskforce informed the preparation of the amendments to the GBRS that were lodged with the Department of Planning in November 2009, released for public advertising from February to May 2010 and published in the Government Gazette in July 2011.

The extent of the GBRS amendment for the Koombana North site was amended following public advertising, upon consultation between the City of Bunbury, Department of Planning, Public Transport Authority and LandCorp to consider the requirements for a future station for the Perth to Bunbury fast train. As part of these negotiations, a preliminary concept demonstrating how the station may be accommodated on the northern side of Koombana Drive was prepared by GHD Consulting Engineers on behalf of the PTA. This concept provided a sufficient level of confidence that the GBRS amendment could progress and that it would not prejudice the delivery of the rail and a station in this location.

With regard to timing for the delivery of a high speed Perth to Bunbury train service, the PTA has advised that it is not foreseen that the railway would be entertained within the medium-term future. As such, robust planning and development is needed within this timeframe need to ensure that the necessary facilities can be accommodated in the future if and when a decision is made regarding the rail.

In addition to the GBRS amendment for Koombana North, two other proposals were advertised and considered by the WAPC. GBRS Amendments 0010/041 (Marlston North) sought to rezone portions of the existing Waterways reserve to Regional Centre zone, at the northern end of the Marlston Waterfront. This amendment was approved and gazetted as advertised. GBRS Amendment 0012/041 (Koombana South) for the Regional Open Space area located to the south of Koombana Drive was not progressed, following submissions received during public advertising.

2 SITE CONDITIONS AND ENVIRONMENT

2.1 ENVIRONMENTAL ASSETS ASSESSMENT

2.1.1 VEGETATION

A Flora and Vegetation Survey has been undertaken by Ekologica (refer **Appendix C**) for the Koombana North Precinct. The key details of the survey are outlined below.

Bunbury is located in the south of the Drummond Botanical Subdistrict or the Swan Coastal Plain Bio-geographical Region. It is expected that prior to urban development in the area, typical vegetation would have ranged from hardy coastal shrubs, through pockets of wetland marshes and karri forests.

The subject land is regarded as highly disturbed, with relatively few non-cultivated native species. The vegetation is dominated by exotic species, either planted as part of landscaping, or present as annual or short-lived perennial shrubs. All of the vegetation within the survey area is considered to be 'Completely Degraded'. The subject land does not contain any native remnant vegetation as it is reclaimed land within a completely cleared urban environment.

There is evidence of *Puccinellia vassica* (P1 species) within a five kilometre radius of the survey area, with a 'possible' likelihood of occurrence within the subject land. This species is under consideration for declaration as 'rare flora', however not in urgent need of further survey.

No natural, or semi-natural, plant communities occur within the survey area and consequently the conservation value of the vegetation is low. No Declared Rare Flora, Priority Flora, or flora listed as 'Endangered' under the EPBC Act are present.

2.1.2 FAUNA

A Fauna Assessment has been undertaken by Greg Harewood for the Koombana North Precinct (refer **Appendix D**). A summary of the key elements of this report is provided below.

FAUNA HABITATS

The Koombana North study area has a long history of disturbance and modification and no longer contains any original natural elements. Prior to European settlement the area would have either formed part of Koombana Bay, Leschenault Estuary or the adjoining land. Over time the area has been totally cleared of native vegetation, filled and raised to allow for various developments located onsite and nearby. The fauna habitats present with the study area are comprised of:

- Flat, open grassed areas with some emergent trees (peppermint and Norfolk Island pines);
- Gardens containing a range of endemic, non-endemic and exotic trees and shrubs (including peppermint and sheoak);
- A manmade rocky shoreline bordering the channel connecting Koombana Bay to Leschenault Inlet; and
- A small section of a low open shrubland on a dune bordering a sandy beach fronting Koombana Bay.

OPPORTUNISTIC FAUNA OBSERVATIONS

A total of 10 native fauna species were observed within or near the study area. Three introduced species were also sighted.

One bird species listed as migratory (Osprey) was observed during the site assessment. This species were observed flying overhead and, while listed as potential species, is unlikely to utilise the study area except for occasional roosting in the larger pine trees.

No evidence of the site being used by western ringtail possums was found (i.e. no scats, dreys or individuals were seen) and given the limited extent of suitable vegetation and the sites isolation it has been concluded that they are very unlikely to utilise the area as habitat now or in the future.

No evidence of the site being used by black cockatoos was observed (i.e. no foraging evidence, no roosting evidence and no trees with hollows). Black cockatoos may very occasionally visit the area but the vegetation present has a very low value as black cockatoo habitat and cannot be considered a site of significance for them.

No evidence of any other conservation significant species using the site was found during the field survey.

FAUNA VALUES

The results of the site assessment clearly indicate that the study area has almost no local or regional conservation significance with respect to fauna. The area is too isolated, degraded and small to have any substantial value to native fauna species except a small number of the more common widespread species normally associated with highly modified habitats.

The value of the site as an ecological linkage is compromised by the limited quality of the fauna habitats present and the fact that it is bordered by a multilane road, Koombana Bay, the Leschenault Inlet channel and existing developments. The site cannot be considered as having any value as an ecological linkage or as corridor for wildlife movement.

POTENTIAL CONSTRAINTS ON DEVELOPMENT

Constraints on development of projects of this nature generally centre on the presence of habitat used or potentially used by threatened and/or migratory fauna species in particular those listed under the federal *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) and/or the *Wildlife Conservation Act 1950*.

The assessment suggests that no fauna species of conservation significance are likely to be utilising the study site to a degree that would constrain development in any way. While some species of conservation significance may utilise sections of the study area on occasions, the area is too isolated, degraded and small to have any substantial value to any of the fauna species likely to be present in the general area.

The loss or modification of the existing habitats present within or immediately adjoining the study area that may occur as a consequence of the proposed development cannot be considered as likely to have any significant impact on any specially protected fauna species.

EPBC ACT

The results of the fauna assessment reported on here suggests that no species of conservation significance listed under the *EPBC Act* are likely to be utilising the study site to a degree whereby development of the area would result in a "significant impact" or "likely significant impact" as defined by the Department of Sustainability, Environment, Water, Population and Communities (*DSEWPaC*). It is therefore concluded that there are no issues relating to fauna species that would require an *EPBC Act* referral to be submitted.

2.1.3 STRUCTURE PLAN RESPONSE TO ENVIRONMENTAL ASSETS

As no environmental assets have been identified on the subject site, no specific measures are required.

2.2 LANDFORM AND SOILS

2.2.1 SOIL TYPE

The subject land is located on the Swan Coastal Plain, and is underlain by fill, Safety Bay sand (aeolian and beach lime sand) and alluvium (clay and sand). The presence of uncontrolled fill material (sand to clayey sand) is evident across the site to various depths. Light brown beach sand was observed underlying the sand to clayey sand fill material. Deeper down the profile and below the water table, a layer of fine to coarse grey sand was evident.

The dunal landform has been substantially modified in the past decades by local industry and urban development. The subject land was reclaimed in 1951 and the source of the fill (predominantly sands) is unknown.

Based on the geotechnical investigations undertaken by Coffey Geotechnics (refer **Appendix E**), the subject land has a generalised subsurface profile as outlined in **Table 5**.

TABLE 5: GENERALISED SUBSURFACE PROFILE

Layer/Unit	Typical Depth to Top of Layer (m)	Typical Layer Thickness (m)	Description/Remarks
Topsoil (Fill)	Surface	0.1 to 0.2	Sand, fine to medium grained, brown, with trace of organic matter.
Fill	0.1 to 0.2	1.8 to 3.5	Sand, loose to medium dense.
Sand	2.0 to 3.6	1.0 to 2.0	Sand, fine to medium grained, variable colours, loose to medium dense.
Alluvium	3.0 and 4.0	2.5 to 3.5	Sand and sandy clay.
Basalt	7.0 to 9.5	To maximum depth of investigation (14.5m)	Fine grained, grey to dark grey, moderate weathered to slightly weathered, high to very high strength.

2.2.2 SOIL CONTAMINATION

The site investigations undertaken do not suggest wide spread contamination at the site. In general, the data from the soil samples collected indicated that the soil quality meets the DEC HILs for standard residential with accessible soil (HIL A) through to commercial/industrial (HIL F). Nevertheless, as site contamination investigations collect samples from discrete locations, it is the recommendation of Golder Associates that a Construction Environmental Management Plan (CEMP) be prepared to provide guidance on how to treat potential unexpected contamination finds during earthworks and constructions. The CEMP will address the following:

- Water management;
- Dust and noise;

- Roles and responsibilities;
- Unexpected finds; and
- Community complaints.

2.2.3 ACID SULPHATE SOILS

The Department of Environment's Acid Sulphate Soils (ASS) Risk Mapping indicates that the Koombana North subject site is located in an area of "high to moderate ASS disturbance risk (<3m from surface)". Golder Associates have undertaken a Detailed Site Investigation (DSI) for the Koombana North development site (refer **Appendix F**), which includes an assessment of the potential for ASS.

The assessment of the acid generating potential in soils involved the collection of soil samples at 0.25m intervals, or change in lithology during the investigation. The intent of the ASS field screening tests was to provide an initial evaluation of the potential (high, medium, low) for each soil sample to be ASS. Based on the ASS indicators discussed above, the inferred PASS risk was high for one sample, moderate for one sample, and low for the remaining 125 samples. The high risk sample was collected between 2.40 and 2.65 m below ground level in brown (mottled black) clayey sand (Fill). It should be noted that the ASS field screening test provides an indication only of ASS. Laboratory analysis was undertaken for select samples, based on the results of the field screening.

Based on ASS field screening tests and subsurface material encountered, fifteen samples were submitted for the Suspension Peroxide Oxidation Combined Acidity and Sulfate (SPOCAS) to quantitavely assess the acid generating potential of each soil type. Of these samples, four samples were identified as potential acid sulphate soils (PASS) based on DEC guideline criteria. Further analysis of these samples was undertaken to determine the likelihood of acid generation in natural ground conditions. The analysis concluded that limited ASS are present on site, however these samples have been noted to neutralise any acidity generated *in situ*. This, however, is based on the assumption that the development requires minimal amounts of excavation. If the proposed works involve large-scale disturbance, treatment and validation of disturbed material would be required.

Golder Associates have also prepared an ASS Management Plan (ASSMP) for Koombana North. The purpose of the ASSMP is to mitigate or control potential impacts relating to disturbance of ASS associated with the proposed development. Should suspected ASS materials be exposed during excavations at the site, identification and characterisation of suspected ASS will occur to confirm the material status and treatments required. Further detail on ASS management is provided in the ASSMP (refer **Appendix G**).

2.2.4 LANDFORM AND EXISTING SITE LEVELS SUMMARY

The subject land is predominantly reclaimed land on the foreshore of Koombana Bay. The reclaimed area was once the historical natural opening of the Leschenault Estuary.

The topography of the subject land varies, with levels at the Koombana Drive road bridge over the Plug at approximately 5.4m AHD. This is generally the high point on site and there is a generally consistent grade toward the westerly direction from this point. The lowest point within the site boundary is at the western boundary where the existing contour is at 2.6m AHD. A contour of around 4.0m AHD exists at the northern boundary along the top of a 1.5m high batter which grades down into the existing beach. The site dimension is approximately 170m in length in an east/west direction and approximately 80m wide between the existing beach and Koombana Drive.

The site also falls away to the east of the site, where the existing rock batter protects the land from the channel to the Plug. The top level of the rock batter varies between about 1m and 2.5m AHD. The current eastern extent of pavement on Holman Street is at an elevation of 3.0m AHD. The former railway and current pedestrian bridge connecting the Koombana Bay Yacht Club to the Koombana North site has a current finished level of approximately 4.5m AHD with landform locally protecting the bridge contours.

2.2.5 GEOTECHNICAL TESTING DEPTH & BASEMENT CONSTRUCTION

Section 8.5 of the Report on Geotechnical Investigation prepared by Coffey Geotechnics (refer **Appendix E**) considers the construction of single level basements within the Koombana North Structure Plan area. Based on the proposed building pad levels (3.80m to 4.60m), Coffey estimated levels of around 0.5m AHD to 1.0m AHD for a single level basement. At the time of the investigations, a groundwater level of approximately 0.3m AHD was encountered; however, this is very likely to fluctuate due to seasonal, tidal and weather variations. Coffey recommended that allowance be made for the dewatering of basement and foundation excavations and that the inflow of groundwater can be expected to be substantial for excavations which extend below the groundwater table, given the proximity to Leschenault Inlet. Consequently, sheet piling may also be required to restrict water inflow and to support the excavations.

In view of the potential groundwater and tidal level variation, Coffey also recommended that the basements be constructed to be impermeable (i.e. tanked) and that the basement slab be tied into the structure in order to prevent any buoyancy uplift pressures that may arise.

Coffey has further considered the development of two level basements within the Koombana North Structure Plan area. Excavations are expected to extend to depths of approximately 7m, with basement levels at approximately -2.5 to -3.5m AHD (i.e. approximately 3 to 4m below the water table). In the presence of highly permeable marine sands and alluvium, considerable dewatering and excavation support would be required. From a geotechnical perspective, the excavation of two level basements is feasible; however, thorough groundwater control and excavation support will be required.

Coffey envisages the use of contiguous or secant pile walls, socketed into the bedrock, to form the final basement walls, provide support for the excavation and to restrict water ingress during excavation. Dewatering of the excavation, even following the construction of contiguous piles may still be required, depending on the degree to which water ingress is reduced and given the potential for water to enter through cracks, fissures etc in the bedrock.

Rock may be encountered at levels of between -2.5 and -6.0m AHD. As such, there may be some possibility that rock could be encountered at the base of the two level excavations, which would potentially require breaking out. The final basement would require 'tanking' and integration of the slab with structural piles to prevent buoyancy uplift.

2.3 GROUNDWATER AND WATERWAYS

2.3.1 EXISTING GROUNDWATER LEVELS

Groundwater levels have been recorded at 8 well locations by Coffey Geotechnics and Golder Associates. **Table 6** below shows a summary of groundwater monitoring data. Based on the proposed development and groundwater levels, dewatering will be required at the site.

TABLE 6: GROUNDWATER LEVEL MONITORING DATA

Well Location	Date Measured	Depth to Water (m)	Surface Level (m AHD)	Water Level (m AHD)
CPT3U	26/03/2012	5.5	4.0	- 1.5
CPT4U	27/03/2012	2.4	2.7	0.3
GW01	29/02/2012	3.330	3.502	0.172
GW02	29/02/2012	3.720	3.855	0.135
GW04	29/02/2012	4.845	5.008	0.163
GW05	29/02/2012	4.020	4.251	0.231

In addition, data loggers are being used by Strategen to measure groundwater levels in three bores. The data loggers record groundwater levels at five minute intervals to enable the monitoring of the impacts of tides and storm surges on groundwater levels. The loggers were installed on May 2012 and record data until the end of October 2012 to obtain winter peak groundwater levels.

It should be noted that the site is in very close proximity to the ocean and inlet. Groundwater elevations can be expected to be dictated by the elevation of mean sea level, tidal movement and storm surge (attenuated with increasing distance from the water edge) and localised direct rainfall infiltration. Storm surge is considered to be the likely primary driver of groundwater levels on the site.

As the project area is close to the coast in a sandy environment, the water level is expected to be only slightly higher than sea level; possibly with a shallow freshwater lens over a saline superficial aquifer.

A Dewatering Management Plan has been prepared and will be implemented in the development of the Koombana North site.

2.3.2 PREDICTED GROUNDWATER LEVELS

The likely peak groundwater levels have been estimated for the Koombana North Precinct, taking into account extreme sea levels due to storm surge events. This process lead to estimated peak groundwater levels of:

- 0.66m AHD in a 1 in 1 year ARI storm surge event;
- 0.73m AHD in a 1 in 10-year ARI storm surge event; and
- 0.79m AHD in a 1 in 100 year ARI storm surge event.

These estimated levels have been interpreted from historical storm surge levels and groundwater logger data. These estimates will be reviewed at the subdivision stage when additional logger data is available.

These levels do not take into account sea level rise due to climate change. Increases in sea levels due to climate change are not cyclical like tides or storm surge and are not impacted by tidal or storm surge influences. As the Koombana North site is surrounded by marine and estuarine water bodies on three sides, an increase in sea level as a result of climate change is anticipated to result in an equivalent increase in groundwater levels on the assumption that the other factors affecting groundwater flow and levels will remain constant. This assumption results in the estimated groundwater levels in **Table 7.**

TABLE 7: ESTIMATED GROUNDWATER LEVELS

	Average Return Interval		
	1 in 1-year	**1 in 10-year**	**1 in 100-year**
2010 level (mAHD)	0.66	0.73	0.79
2060 estimated level (mAHD)	0.96	1.03	1.09
2110 estimated level (mAHD)	1.56	1.63	1.69

Based on this, the 2110 estimated level for a 1 in 1 year storm surge event of 1.56m AHD has used as the design groundwater level. This level is the estimated peak groundwater level expected to occur on an annual basis when sea level rise occurs. The use of a 2110 estimated level results will result in a 'future proof' design that takes into account both climate change and storms.

2.3.3 GROUNDWATER QUALITY

Groundwater quality sampling has been undertaken for the Koombana North site. The pH in the site bores was circum-neutral and the ranged between 6.89 and 7.22. The electrical conductivity ranged from 1.63 to 3.64 mS/cm, or approximately 830 mg/L to 1860 mg/L total dissolved solids (TDS). This can be considered to represent fresh to brackish water, and is significantly below the salinity of seawater (approximately 35 000 mg/L TDS).

Total phosphorus (TP) results ranged from 0.11 to 0.14 mg/L and were above the estuarine and inshore marine guidelines of 0.03 and 0.02 mg/L respectively. Total nitrogen (TN) levels varied from 0.4 to 1.4 mg/L. The mean TN level was 0.95 mg/L, which was above the estuarine and inshore marine guidelines of 0.75 and 0.23 mg/L respectively. As the project is not anticipating on moving groundwater off site through subsoil drainage, it is currently not proposed to undertake further groundwater quality monitoring.

2.3.4 WATERWAYS

2.3.4.1 LESCHENAULT INLET

The subject land is located on the northern portion of the existing Lucianna Park between the Bunbury City Centre and Koombana Channel, locally known as 'the Plug'. The Plug is a connection between Koombana Bay (and the greater Indian Ocean) and the Leschenault Inlet.

Originally, the Leschenault Inlet and Leschenault Estuary were a single water body (termed the Leschenault Inlet). In 1951 however, the natural mouth of the inlet to the ocean was closed and a new connection to the sea was made, opposite to the mouth of the Collie River. In 1968-69, the Preston River was diverted to allow for construction of the Bunbury Port inner harbour. During this work, the southern part of the Inlet was separated from the rest of the water body. Thus, the Leschenault Estuary (larger northern section of the original inlet) and the 'new' Leschenault Inlet (small southern portion) were formed. On completion of the inner harbour work, a channel ('The Plug') joining the 'new' Leschenault Inlet to the sea was constructed.

The Inlet is about 1.9km long and up to 200m wide, has an urban catchment area of around 500ha and is an iconic feature of Bunbury. The Inlet is considered environmentally significant as it supports the southernmost mangrove vegetation in Western Australia.

2.3.4.2 THE PLUG

The Plug connects the Leschenault Inlet with Bay Koombana and contains the Bunbury Storm Surge Barrier, which is a set of storm gates operated by the Department of Transport (DoT). The barrier is designed to be closed during storm events to prevent seawater flooding low lying areas surrounding the Leschenault Inlet. The gates are designed to be closed when it is anticipated that sea levels will exceed 0.7m AHD. The gates are reopened when the risk of the storm has passed. All maintenance works for the Plug are the responsibility of the DoT.

The integrity of the plug wall has been raised as an issue by the City of Bunbury, with regard to the ongoing protection of the Koombana North development. LandCorp is committed to facilitating an inter-government meeting between key stakeholders including the City of Bunbury, Department of Planning, Regional Development & Lands, Department of Transport and the Bunbury Port Authority to discuss this issue and to develop an appropriate remediation and ongoing management plan for the Plug Wall into the future.

2.3.4.3 KOOMBANA BAY & SKI BEACH

The Koombana North Precinct is located at the west side of the Leschenault Inlet entrance. The subject site is fronted on the western side of Koombana Bay by what is locally known as the Ski Beach. The beach is located in what was previously the entrance of the Leschenault Inlet. The existing beach is an artificial beach which was constructed as a part of changes to the inlet entrance location to incorporate a surge barrier.

Both the Leschenault Inlet training wall and Marlston Waterfront seawall act as headlands and control the shape and orientation of the beach. The Ski Beach is protected from all directions except fetch limited local seas from the north by the Bunbury outer harbour breakwater and may be considered a relatively low energy beach.

BEACH PROFILE AND BATHYMETRY

The width of the beach fronting the development (Ski Beach) is about 300 m. The slope of the offshore seabed is very mild (about 1:100) with a closure depth at the head of the Leschenault Inlet training wall of about -2 m (AHD). The active beach level is around the mean sea level (MSL) and backed by a relatively low fore-dune (2.7 m AHD). The fore-dune is backed by a relatively low area at the upper beach (2 m, AHD).

SEDIMENT CHARACTERISTICS

During BMT JFA's site visit to this study are, four sediment samples were taken across the beach and analysed for particle size distribution (PSD) tests in order to characterise the sediment properties at the beach. The participle size distributions at all four locations across the beach were almost identical. The D50 of the sands are about 0.4 mm. The results of the tests for all the samples are included as an appendix to the Coastal Stability and Setback Review (**Appendix A**).

2.3.5 COASTAL ENVIRONMENT

2.3.5.1 COASTAL PROCESSES

As discussed, Koombana Bay is a relatively low energy marine environment due to the shelter provided by the Outer Harbour and the causeway leading to the historic jetty. This environment has led to low sediment transport rates along the coast, as evidenced by the presence of fine sediments within the bay. The current dominant sediment transport is from east to west as evidenced by the build up adjacent to the existing groynes. Therefore, it is not likely that any long-term build-up of sediment will impact the Koombana North subject site.

Some long-term build-up of sediment is likely along eastern side of Koombana Bay, however as this does not cause major erosion or accretion against existing groynes, and because the reclamation is just an extension of an existing structure, it is unlikely that the changes will be significant in the modified environment.

Further investigations will be undertaken to investigate the age of the existing structures, investigate any historical management undertaken and to estimate the rates of accretion against existing structures.

2.3.5.2 SHORELINE STABILITY

In addition to establishing coastal stability and setback requirements, an assessment of shoreline stability and vulnerability was also undertaken and can be summarised as follows:

- The beach is a pocket beach protected from all directions except fetch limited local seas from the north by the Bunbury Outer Harbour Breakwater and as review of the wave conditions show, the Ski Beach may be considered a relatively low energy beach.
- Given the limited direction for energy to impact the beach in either ambient conditions or extreme local sea storms the beach is likely to vary little in alignment and may be considered relatively stable.
- Review of shoreline movements, shows the beach has remained stable on its current alignment since 1985 with 5 m erosion in 1991 which had recovered by 1996.
- Storm erosion modelling showed that the development site was vulnerable to an extreme sequence of northerly storms at the projected 100 year MSL and the site may require protection.

- The modelled protection at the boundary was shown to adequately protect the development from the extreme storm sequence and upper profile wave conditions were within reasonable limits to feasibly design in control of run-up and overtopping.
- Location of the proposed protection at the rear of the extreme storm sequence profile is unlikely to impact beach amenities and sediment is unlikely to move outside the compartment.

2.3.5.3 COASTAL SETBACKS

The Coastal Stability and Setback Review Report focuses on documenting the accepted hazard and the adaptation measures required to manage the identified hazard(s) taking into account the need for coastal protection.

Based on previous calculations of acceptable setbacks for the nearby beaches, the subject land would require setback of the project boundary or protection with available setback from the Horizontal Setback Datum (HSD) in the order of 20 m at the top of the active beach on this sandy shoreline with a small frontal dune. However, as the Department of Transport (DoT) requires an SLR of 0.9 m over the 100 year planning horizon, compared to an SLR (100yr) of 0.38m as stated in SPP 2.6, this will likely increase these estimates.

- SPP 2.6 recommends considering the following components for establishing the physical processes setback in response to the assessed erosion hazard:
- S1 Erosion: Allowance for the current risk of storm erosion.
- S2 Erosion: Allowance for historic shoreline movement trends.
- S3 Erosion: Allowance for erosion caused by future sea level rise.

The recommended horizontal setback for the existing beach profile at Ski Beach (north of the subject land) based on SPP 2.6 is outlined in **Table 8.**

TABLE 8: CALCULATED HORIZONTAL SETBACK REQUIREMENTS

Erosion Allowance components	Horizontal setback values (m)
S1	35
S2	0
S3	13
Total	**38**

The calculated physical processes setback in response to the assessed erosion hazard for the subject land confirms that setback of the project boundary would be required or adaptation measures such as coastal protection implemented. As the setback to development has been established through the Taskforce process (and this is less than the calculated minimum under the provisions of SPP 2.6), physical mitigation measures will be required in order to protect future development from coastal processes.

Adaptation measures through building design, coastal protection, beach nourishment and profile enhancement are required in order to manage the assessed erosion hazard. The following adaptation measures are recommended for the proposed development:

- Protection to be provided by implementing a buried seawall in front of or as part of the pedestrian path at the rear of the beach. Design of this feature as a rock revetment incorporating a crest wall or as a block seawall founded below the estimated extreme event erosion profile can readily control run-up and overtopping impacts on development buildings in the design storm sequence.
- Accommodation features can also be incorporated in built form design to accommodate the risk of run-up and overtopping impacts on development buildings. Measures may include design of the buildings and public spaces to accommodate or prevent spray damage, good drainage to prevent flooding and management plans to prevent access in extreme storm conditions for safety.
- Further coastal protection is afforded by increasing the buffer sand storage at the top of the profile by filling in the area between the foreshore dune and the proposed seawall. This creates a buffer mild slope sandy beach which would reduce the recession due to the future sea level rise. Modelled beach response indicates that the deposited materials at the toe will remain within the compartment and renourishment if it should be required would be small.

2.4 EXISTING MOVEMENT NETWORK

2.4.1 ROAD NETWORK

The Koombana North Precinct is generally surrounded by Blair Street and Clifton Street to the south west, Holman Street to the west, Casuarina Drive to the west and north-west and Koombana Drive to the south. Some key details of each road are as follows:

- **Koombana Drive** – district distributor road with posted speeds of 60 kph. It provides key gateway access to the Bunbury CBD and provides access over the Plug. It is a two lane road, which in places provides four lanes. At the western end of Koombana Drive, a two lane roundabout controls the intersection of Blair Street. Access to the Perth-Bunbury Highway is provided at the eastern end of Koombana Drive via a roundabout.
- **Blair Street** – district distributor road which lies to the south west of the Koombana North Precinct area. It is a four lane divided road with a posted speed limit of 60 kph.
- **Casuarina Drive** – has posted speeds of 60 kph and provides a wide four-lane divided road with median planting. The site access road to the proposed development (Holman Street) is located off this road.
- **Clifton Street** – connects the Bunbury CBD to the Koombana Drive roundabout. It is a single carriageway road with posted speeds of 50 kph, which provides two traffic lanes and on-street parking. The road widens to a further two lanes at the roundabout approach and exit.
- **Holman Street** – lies to the east of Casuarina Drive and will provide access to the development site. The road currently provides access to a hotel and 54 existing on-street car parking bays.
- **Carey Street** – lies adjacent to the Holman St/Casuarina Drive intersection. It has left-in/left-out access onto Casuarina Drive and provides access to the Marlston Hill car park, via Brewery Lane. It is a 50kph single carriageway road.

2.4.1.1 EXISTING TRAFFIC VOLUMES

Traffic volumes along major roads in the vicinity of the development are shown in **Table 9.** The morning and evening network peak hours are generally 8-9 am and 5-6 pm, although there are some secondary peaks between 12pm and 2pm.

TABLE 9: EXISTING TRAFFIC COUNTS ALONG MAJOR ROADS IN THE VICINITY KOOMBANA NORTH

Road	Daily Traffic Volumes	Year of Count
Koombana Drive (west of inlet bridge)	10,487	2010
Clifton Street (west of Blair Street)	6,557	2011
Casuarina Drive (north of Koombana Drive)	6,076	2010
Blair Street (south of Koombana Drive	9,605	2008

2.4.2 PEDESTRIAN NETWORK

There are a number of existing footpaths which link the subject site with Marlston Waterfront to the north, the CBD to the west and south-west and the areas east of the Plug to the east.

Existing pedestrian crossing points on Casuarina Drive are provided to the north of Holman Street. Other crossing points are also available across Blair Street, Clifton Street and Koombana Drive. Blair Street and Koombana Drive provide wide medians which facilitate safe two-stage pedestrian crossing.

The WAPC's *Transport Assessment Guidelines for Development* recommend an analysis of the operation and safety of the pedestrian and bicycle networks including identification of which roads could potentially be difficult for pedestrians and cyclists to cross, where safe crossing should be provided, and where safe crossings are proposed. According to the guidelines, traffic volumes that adversely impact on the ability of pedestrians to cross safely are:

- Two-lane divided road – 2,800 vehicles per hour (two-way), equivalent to 28,000 vehicles per day; and
- Four-lane divided road – 1,600 vehicles per hour (two-way), equivalent to 16,000 vehicles per day.

All roads within the area of Koombana North have estimated traffic volumes that are below these levels. As such, the network flows would not compromise the safety and efficiency of pedestrians crossing streets.

2.4.3 CYCLIST NETWORK

There is a network of off-road shared paths, on-road bike lanes, and bike parking that enables safe bike travel around the Leschenault Inlet and the waterfront area. A number of shared paths provide grab rails at desired crossing points which help to provide a visual marker that is viewed by the cyclist as a safe crossing point.

2.4.3.1 CITY OF BUNBURY BICYCLE PLAN

The City of Bunbury issued a Bicycle Plan in 2010 that identified the existing infrastructure available to cyclists and the need for cycle infrastructure improvements in and around Bunbury. Consequently, numerous cycle paths that connect to the Koombana North development where identified as requiring upgrade. These are depicted in **Figure 10** and summarised in **Table 10**. Paths that are identified in the City's Bicycle Plan that abut or traverse Koombana North will be constructed as part of the development of the subject site, as outlined in **Section 3.3.4.1** The requirements will be discussed and agreed to with the City of Bunbury during the engineering and landscape design approval and construction phases.

TABLE 10: IDENTIFIED CYCLE NETWORK UPGRADES (CITY OF BUNBURY BICYCLE PLAN)

Link	Recommended Works	Description
Ocean Drive to Blair Street	Install 1.5m on-road bicycle lanes, on both sides.	650m on-road bicycle land. Remove parking bays north side and reallocate road space. Many challenges including existing taxi rank.
Ocean Drive to Blair Street	Upgrade path to 3.0m red asphalt.	650m high quality commuter link to CBD. Consider separation of cyclist/pedestrians.
Estuary Drive – Koombana Drive to Old Coast Road	Upgrade existing cycleway to 3.5m PSP standard.	3300m high quality red asphalt PSP along existing alignment. Upgrade culvert crossings and replace majority of existing path including existing cycle connection bypassing Eelup Rotary.
Koombana Drive – Leschenault Inlet to Estuary Drive	Install 1.5m on-road bicycle lane – both sides.	1350m high quality recreational path link along foreshore, connecting into existing wide shared path at Rowing Club.
Leschenault Inlet Southern Loop – Blair Street to King Road	Upgrade existing path to 3.0m red asphalt RSP along foreshore.	1300m high quality recreational path link along foreshore, connecting into existing wide shared path at Rowing Club.
Casuarina Drive/Bonnefoi Boulevard Koombana Drive to Port	Install 3.5m red asphalt RSP along Casuarina Drive.	900m high quality red asphalt RSP along Casuarina Drive alignment. Connection to existing cycling facilities in Queens Gardens.

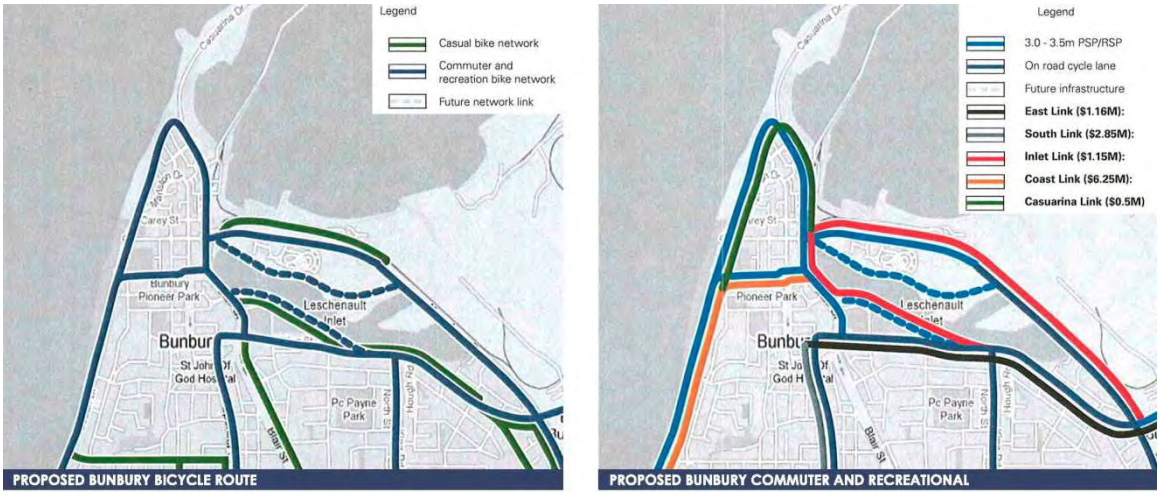


Figure 10 – City of Bunbury Bicycle Plan Extract

2.4.4 PUBLIC TRANSPORT

2.4.4.1 BUS SERVICES

The Koombana North Precinct is located approximately 650m to the north of the existing Central Bunbury Bus Station on Carmody Place. A total of 10 bus services operate from the Central Bunbury Bus Station, linking the CBD with Glen Iris, the existing railway passenger terminal, the health campus, Dalyellup, Kingston and Eaton.

2.4.4.2 EXISTING RAIL SERVICE

The nearest rail station is located less than four kilometres away from the Koombana North site. It is located on Picton Road in the suburb of Wollaston, to the south-east of the Bunbury CBD. Australind rail services to Perth are available from this station two to three times a day.

2.4.4.3 FUTURE PERTH TO BUNBURY FAST RAIL SERVICE

The potential development of high speed inter-city railway operating between the CBDs of Perth and Bunbury has been considered for a number of years, with a number of studies and reports being undertaken. GHD were engaged by the Public Transport Authority (PTA) to undertake a feasibility study for the possible future Perth to Bunbury fast rail service. Further feasibility work has been undertaken by Cardno in May 2010 on behalf of the PTA, investigating the forecast patronage of the high speed rail connection.

The Fast Train Study Report, issued in January 2010, considered the location of three stations on the proposed railway: Bunbury Central, Bunbury Park and Ride, and a mid-point station. It was the strong preference of key stakeholders for the station to be constructed in the vicinity of Koombana Drive/Casuarina Drive/Blair Street intersection. The Study Report identified the need for the station design to be able to accommodate six car trains and, consequently, a 155m straight platform. Furthermore, two platforms should be provided to allow a stationary train to wait within the station without inhibiting the movement of the other service. The design of the station should fulfil the role of being a city centre station and provide safe and convenient access to and from the Bunbury CBD; therefore it is considered that it would cater for walk up demand. The Study Report stated that street access must be provided for local public transport (buses or light rail) and taxis and that a strictly limited number of passenger drop off bays should also be provided. Passenger facilities at the station should include ticketing and information services, waiting rooms, toilets and showers, luggage lockers, bicycle lockers, food and beverage services and appropriate security measures (CCTV and emergency telephones).

GHD has undertaken further detailed design investigations into the proposed station footprint requirements adjacent to the Koombana North site. The PTA's preliminary indicative requirements for the station (including platform heights) and bus/taxi/kiss-n-ride interchange are outlined in **Figure 11**. The Koombana North Structure Plan has been prepared in accordance with the principles of the PTA's design concept, with the existing central Holman Street area (south of the tennis courts) being converted into a bus turnaround facility in the future when the railway is delivered. GHD has also provided its support for the marginal shortening of the railway platform at the western end so that pedestrian access to Koombana Drive and the CBD can be provided. GHD is also continuing with design investigations for the alignment of the fast rail between Perth and Bunbury and anticipates that this work will be completed by the end of 2012. Following this and in collaboration with the WAPC, it will commence the process of reserving land in the GBRS for the proposed railway alignment in 2013.

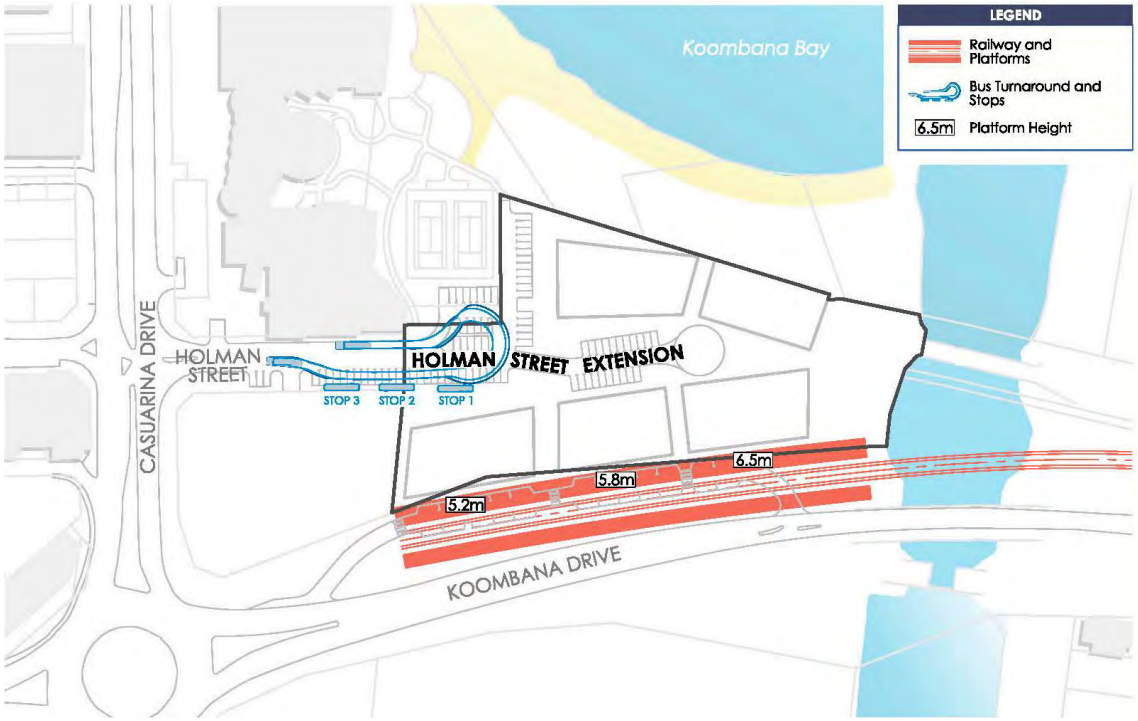


Figure 11 – PTA Preferred Railway Station and Interchange Concept

At this point in time, there has been no decision made by the State Government to construct a fast rail service between Perth and Bunbury. The work undertaken for the PTA has been undertaken to assess the feasibility of a future service and identify the land requirements needed for the future service. It is not currently anticipated that the railway will be delivered in the medium term future.

2.5 HERITAGE

The rich cultural heritage of the Bunbury Harbour spans across many time phases, beginning in the Ice age and encompassing Aboriginal prehistoric, French and British exploration, early settlement, and Industrial adaptations.

2.5.1 ABORIGINAL HERITAGE

In 2007, Bradley Goode undertook an ethnographic survey of the subject site to determine whether any aboriginal heritage issues exist that should be reflected in the planning for the Bunbury Waterfront project (refer **Appendix H**). As a result of archival research, no previously recorded Aboriginal Heritage sites were identified to be located within the Bunbury Waterfront development area. The survey report did, however, make a number of recommendations, which are outlined below:

- The Leschenault Inlet, from what was formerly known as Bar Point and Point Macleod following its original path to the Leschenault Estuary as depicted within the Preston River Settlements c1850 map be considered to be component of Site ID 16713 Collie River Waugal (Site Complex ID 16) and recorded as a site of mythological significance under Section 5(b) of the Western Australian Aboriginal Heritage Act 1972 (WAAHA 1972).
- LandCorp should apply for a Section 18 clearance under the WAAHA 1972 to use the land that may contain an Aboriginal site for any work that will impact upon the Leschenault Inlet within 30m of the normal high watermark.
- As the traditional owners of this site are supportive of development, it is recommended that following registration the Aboriginal Cultural Material Committee (ACMC) recommends that ministerial consent should be given for the work as proposed with the following conditions attached:
  - Engagement of suitable Nyungar representatives to conduct the necessary propitiatory rituals prior to the commencement of works so as to not to create any adverse spiritual problems for the community.
  - The monitoring of earthworks during development in order to appropriately manage any skeletal remains that may be unearthed during development in line with the obligations set out under the terms of the WAAHA 1972.
- Developers should give due consideration to the identified significance of the area and its mythological association with the marine life of Koombana Bay and acknowledge the significance with interpretation and conduct of good sustainable environmental management practices that endeavour to minimise the environmental effects on the marine ecology of the bay.
- LandCorp should supply the South West Aboriginal Land and Sea Council Gnaala Karla Booja Native Title working party and the Bunbury Aboriginal Women's Group with copies of all environmental studies associated with the development and the effects on the marine ecology in Koombana Bay as requested during consultation for comment.
- Good public access should be maintained throughout the development area so that Nyungars can continue to use the shores of Koombana Bay and the Leschenault Inlet for recreational, social activities and customary use.
- LandCorp should give due consideration to requests made by the Nyungar community for the provision of employment opportunities during the development and that assistance be rendered to the Nyungar community to progress the development of a cultural centre within land administered by the City of Bunbury south of Koombana Drive.

2.5.2 EUROPEAN HERITAGE

European exploration of the area began with the French in 1803 that provided the first map of the area (refer **Figure 12**) and noted that it would provide an excellent small vessel harbour which was named Port Leschenault.

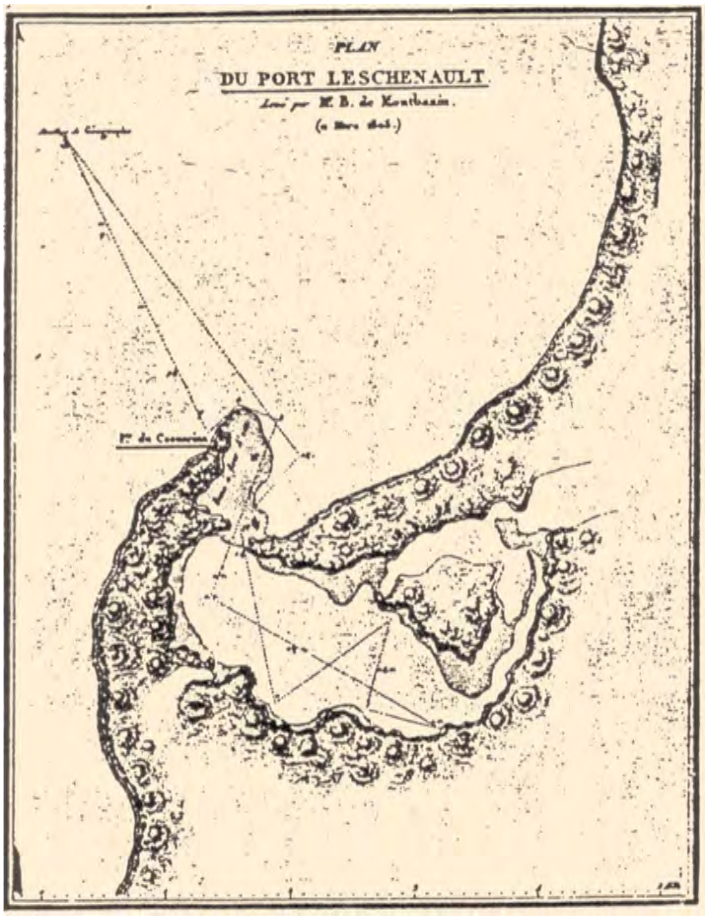


Figure 12 – French Map of Port Leschenault (1803)

Some years later, Captain Stirling made the same observation during his 1827 exploratory voyages, and Port Leschenault formed the focal point of the settlement of Bunbury. The notion of Koombana Bay providing safe harbour came into question some years into settlement however, following the successive wrecking of a number of ships that were driven on shore by the northerly gale. As the settlement progressed and grew, so too did the harbour and its facilities, which intensified with industrial usage in the post-war era.

2.5.2.1 HERITAGE LISTINGS

There are a number of lists of places of Aboriginal and historical value that are compiled and maintained by the various heritage agencies and local governments. Those lists reviewed as part of this study include, Heritage Council of WA Data Base and State Register, Aboriginal State Register, Register of the National Estate, Shire of Bunbury Municipal Inventory, Bunbury Shire Town Planning Scheme Heritage List and the Register of Shipwrecks, refer **Table 11**.

TABLE 11: HERITAGE PLACE LISTINGS FOR WHOLE OF BUNBURY OUTER HARBOUR

MI	TPS	HCWA	NAME	LOCATION	DATE	STATUS
B102	-	02500 05655	Bunbury Shoreline as at 1841	Koombana Bay, North Shore Bunbury	1841	
B016		03379 6601	Jetty Crane, Causeway	Outer Harbour Bunbury	1911	
B019	12	03402	Bunbury Timber Jetty	Lot 767 Koombana Bay (Opp Henry St)	1864 1998	CSR/RNE
B256		04259	Dolphin Discovery Centre	Lot 830 Koombana Dr	1994	
B283		05494	Original Railway Route - site	Wittenoom St to Jetty	1887 1891	
B078	54	05632	Wreck Site - Laughing Wave	Koombana Bay	1868	
B081	57	05635	Wreck Site - Citizen of London	Koombana Bay	1878 1882	
B082	58	05636	Wreck Site - Star of the South	Koombana Bay	1875	
B103	68	05656	Wreck Site - Agra	North Shore, Koombana Bay	1893	
B104	69	05657	Wreck Site - Cingalee	North Shore, Koombana Bay	1872	
B105	70	05658	Wreck Site - Annie M Young	North Shore, Koombana Bay	1863	
B106	71	05659	Wreck Site - Elizabeth	North Shore, Koombana Bay	1832	
B107	72	5660	Wreck site - North America No 1	North Shore, Koombana Bay	1843	
B108	73	05661	Wreck Site - Samuel Wright	North Shore, Koombana Bay		
B109	74	05662	Wreck Site - Midas	North Shore, Koombana Bay	1865	
B110	75	05663	Wreck Site -Solglyt	North Shore, Koombana Bay	1888 1901	
B125		5674	Flood Gates Storm Serge Barrier	Koombana Drive Leschenault Inlet.	1980	
B126	82	5675	Site: Military Camp 1830	Point McCleod, Leschenault Inlet		
B188		05691	Railway Marshalling Yards & environs (fmr)	Blair St	1893 1927	
B017	-	06599	Jetty Public Baths No 1 - Site	Outer Harbour Bunbury	1880	
B020	-	06602	Breakwater	Lot 415 Outer Harbour, Casuarina Pt	1897	
B027		06685	Jetty Public Baths No 2 - site	Outer Harbour Bunbury	1917	
B033	-	06700	Jetty Public Baths No 3 - site	Outer Harbour Bunbury	1930	
B069	48	07472	Wreck site - North America No 2	North Shore, Koombana Bay	1840	

Key
Column 1 City of Bunbury Municipal Inventory Listing.
Column 2 City of Bunbury Town Planning Scheme Heritage List.
Column 3 Heritage Council Data Base and Register List
Column 4 Place Name.
Column 6 Place address.
Column 7 Construction date.
Column 8 Denotes those sites included on the State Heritage Register (HCSR) and the Register of the National Estate.

The Bunbury Harbour area represents the historical focus of the Bunbury Township and about 80 sites and places have been identified within the wider Bunbury Harbour area. These sites include, Aboriginal Artefact Scatters and Burials, Commercial and Community buildings, Ship Wrecks, Port Facilities and Transport and trade infrastructure sites.

There are 24 listed sites that fall either within or in close proximity to the three development precincts, and may be impacted by development within the wider harbour area. Many of these sites no longer exist physically in the landscape, but some may have archaeological potential.

It is noted that there have been considerable impacts to the archaeological record of Point Casuarina and Koombana Bay through successive excavations, mining operations, dredging, land reclamation and remediation programmes, that have significantly modified the original landform. The extent of this modification can be seen in a comparison between an 1830 and 2007 map, which shows that the original landform is barely discernible within the modern setting of the harbour. This successive redevelopment has served to both create and destroy the archaeological record. The three areas of proposed development are comprised almost entirely of reclaimed land that has buried and or obscured a large number of the listed sites.

The most significant site within the proposed development area is the Bunbury Timber Jetty that has been placed on the State Heritage Register and the Register of the National Estate. Part of the Timber Jetty still exists and there is strong community opinion for its restoration.

There are also two possible ship wreck archaeology sites - Laughing Wave and Midas - located along the east of the Timber jetty that were wrecked alongside the jetty in 1903 and 1872 respectively. Most of the other listed shipwreck sites are located under the area of land reclamation on Koombana Beach.

The public baths sites are believed to have been similarly buried, but some archaeological remains may exist. Other sites with possible archaeological remains include the original railway and marshalling yards.

There may be enough archaeological, archival and photographic and oral historical evidence to undertake an interpretative reconstruction of a number of sites were the original structures or place no longer exists such as the original shore line of Koombana Beach, the original rail line and associated yards, the original jetty and jetty baths, the breakwater and the old military camp on Point MacLoud.

Some recently constructed sites such as the Dolphin Discovery Centre and the flood gates have been placed on the City of Bunbury's Municipal Inventory and the Heritage Council of WA data base.

2.6 CLIMATIC CONDITIONS

2.6.1 CLIMATE

Bunbury experiences a Mediterranean climate, with dry hot summers and cooler winters. The annual rainfall is approximately 718 mm/yr, with most of this falling between May and September as outlined in **Table 12.**

TABLE 12: BUNBURY RAINFALL

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean rainfall (mm)	12.3	7	15	36	91.6	147.5	148.4	117.7	79	31.8	25.2	15.8	718.2

2.6.2 WIND

Local ambient wind conditions at Bunbury are dominated by the sea breeze/land breeze system. Predominately easterly winds prevail in the morning (9am) and predominately westerly winds in the afternoon (3pm). The frequency of occurrence of strong northerly winds (stronger than 40 km/hour) is negligible compared to the westerly events.

2.7 OPPORTUNITIES, CONSTRAINTS AND SITE CONTEXT ANALYSIS

An analysis of the existing site conditions and the potential opportunities and constraints that require consideration in the planning and development of the Koombana North precinct has been undertaken to inform the preparation of the Structure Plan. The key elements of this analysis are considered in further detail below and outlined in **Figure 13**.

2.7.1 POSSIBLE FUTURE RAILWAY STATION

As identified above in **Section 1.3.3**, the extent of the GBRS Amendment for Koombana North was considered further by the City of Bunbury, Department of Planning and PTA following advertising to ensure that the proposed amendment would not prejudice the possible future delivery of a Perth to Bunbury fast train service into the Bunbury CBD, with a station adjacent to the amendment site. It was determined that a future station could be accommodated, immediately adjacent to the amendment site, in the unconstructed northern portion of the existing Koombana North Other Regional Road reservation.

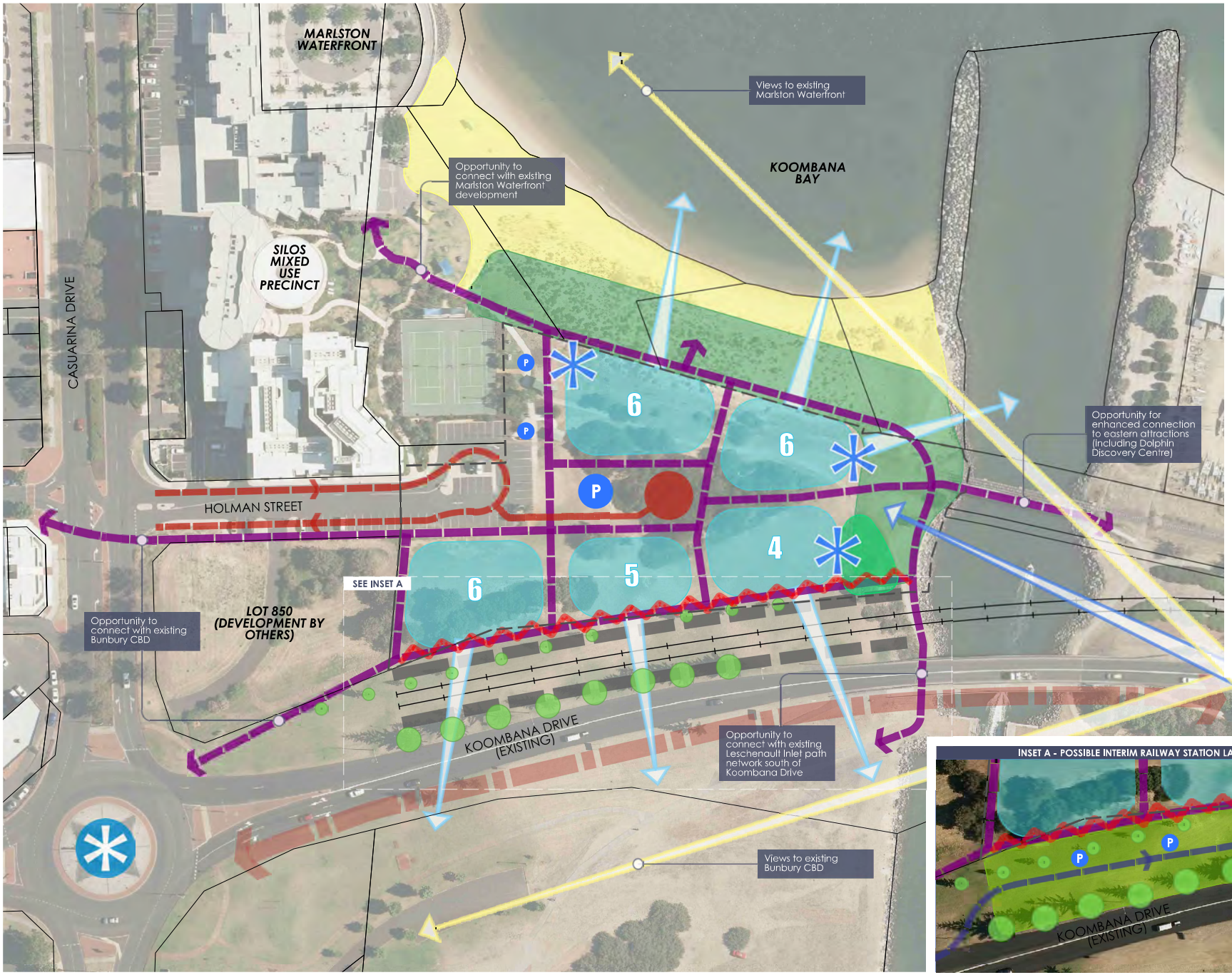
As such, the subject site benefits from its potential exposure to major transit infrastructure that would link the Perth and Bunbury CBDs. The presence of this transit infrastructure would provide high exposure to the subject site and train patrons and visitors would be likely to generate demand for festival and convenience retail facilities within the development site.

However, there is presently no government financial commitment to the construction of a fast-train service between Perth and Bunbury and it is not foreseen that a decision to proceed with the rail service is likely to occur in the foreseeable future. For this reason, any planning and development that occurs in the short to medium term must not prejudice the possible delivery of the railway at some point in the future. The planning framework must therefore be sufficiently robust to enable development to occur in the short-term to provide a public benefit and allow for the development of the railway to occur in the future, if a decision is made by government.

The planning for the Koombana North site at this time must therefore ensure that sufficient space is provided for the future railway platforms and associated infrastructure (i.e. bus turnaround and drop off facilities), an appropriate ground floor built form edge is provided to the future platforms and non-residential ground floor activity is provided for. As outlined in **Section 2.4.4.3**, GHD (PTA Engineering Consultant) has been consulted during the Structure Plan preparation process regarding its requirements for the station and associated infrastructure.

2.7.2 EXISTING BUNBURY CBD GATEWAY

The Koombana North precinct benefits from its high exposure along Koombana Drive on entry to the existing Bunbury CBD. The opportunity therefore exists to contribute to the existing entry experience to Bunbury, through a combination of built form architectural elements and high amenity landscape works. Landmark architectural elements will be required for the eastern built form facade of the Koombana North precinct, given its high visual exposure along the stretch of Koombana Drive approaching the Plug. Landscape works in the location of the possible future railway platforms could also be undertaken to celebrate the garden-style heritage of parts of the existing Bunbury CBD entry experience.



LEGEND

- Koombana North Precinct Subject Site

Land Use / Built Form / Vistas

- Indicative building locations and maximum building heights in storeys from the Bunbury Waterfront Project Taskforce
- Activated built form edge on ground floor to public realm / possible future railway station platform
- Possible iconic built form / landmark element location
- Existing viewlines / vistas
- Potential new viewline / vista to Koombana North Precinct
- Attractive views over Koombana Bay and Leschenault Inlet

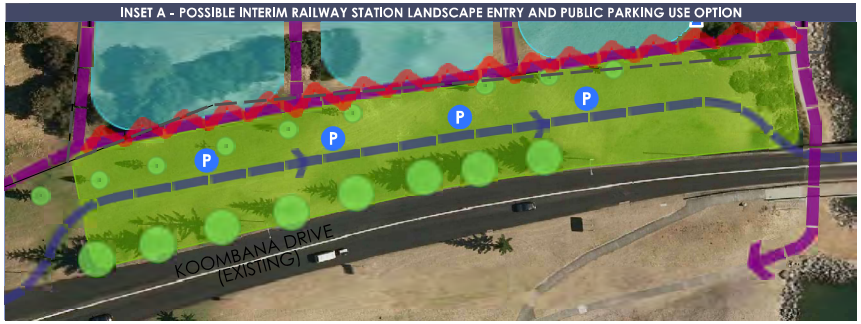
Open Space

- High public amenity of existing Koombana Bay Town Beach to be retained
- Potential public foreshore enhancements including active and passive recreation opportunities
- Existing vegetation to be considered for retention (subject to assessment of quality)
- Potential interim temporary landscape and public parking area
- Existing Norfolk Island Pine trees to be retained and incorporated into interim landscape area
- Opportunity to transplant existing Norfolk Island Pine trees and re-use for landscaping purposes elsewhere

Movement and Parking

- Proposed pedestrian and cyclist connections
- Possible future Bunbury CBD railway station
- Possible future duplication of Koombana Drive to the south of the existing carriageway when traffic volumes warrant upgrade
- Bus / taxi / kiss-n-ride drop off movement circulation network to service possible future railway station
- Indicative extension of Holman Street to provide vehicle access to future buildings
- Potential future conversion of roundabout to signalised intersection with cessation of Outer Harbour port-related activities
- Possible future temporary vehicle access and public parking in the interim prior to construction of possible future railway station
- Possible future public parking

INSET A - POSSIBLE INTERIM RAILWAY STATION LANDSCAPE ENTRY AND PUBLIC PARKING USE OPTION



OPPORTUNITIES, CONSTRAINTS AND SITE CONTEXT ANALYSIS

Koombana North

A LandCorp Project

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figure 13

These works could incorporate the retention of the existing mature Norfolk Island pine trees adjacent to the carriageway and the possible relocation of the smaller pine trees located further north. In this way, development of the Koombana North precinct has the potential to provide a new flavour to the architectural vernacular of Bunbury whilst at the same time respecting the current landscape feel of the entry experience.

2.7.3 KOOMBANA DRIVE

Koombana Drive, as one of the main entry roads to the Bunbury CBD, provides the subject site with high visible and functional exposure. Given the ultimate presence of the possible future railway platform, no direct vehicle access from Koombana Drive is considered achievable in the ultimate development of the site. However, the opportunity exists to provide a temporary landscape treatment in this location, along with some public visitor parking, in the interim prior to construction of the railway platform. Temporary public car parking would benefit the non-residential facilities of the site (i.e. shops and offices), particularly those identified to front Koombana Drive.

Given the proposed location of the possible future railway station within the unconstructed northern portion of the Koombana Drive road reserve, any major future upgrades (and the possible duplication) of Koombana Drive would need to occur to the south of the existing carriageway. The opportunity also exists to convert the existing roundabout at the intersection of Koombana Drive and Casuarina Drive to a signalised four-way intersection, when trucking movements to and from the outer harbour cease.

The impacts of traffic noise from Koombana Drive will need to be considered for future Development Sites located within the vicinity of the existing road. Any required mitigations measures should be incorporated seamlessly into the built form.

2.7.4 FORESHORE & GREEN SPACE

The Koombana North Precinct abuts the existing Koombana Bay Ski Beach to the north and the Plug foreshore area to the east. As such, there is the opportunity to enhance these public areas as part of the development of Koombana North precinct, for the benefit of the wider Bunbury community, visitors and tourists and future residents alike.

The Koombana Bay Beach will be upgraded to provide for improved public access by all members of the community and will incorporate public paths for pedestrians and cyclists and small sit-down areas for beach visitors. The enhancement of the existing beach and foreshore area will also include basic public amenities, such as drinking fountains and beach showers.

Public Open Space will be provided at the eastern end of the Koombana North Precinct, which will serve to ensure that public access will be maintained to the water's edge and immediate surrounds of the Plug. Opportunities for the possible retention of existing shrubbery in this area will be investigated. This area will logically connect with the enhancements to the Koombana Bay Ski Beach foreshore area and will link with the existing green spaces to the south of Koombana Drive and to the east of the Plug.

2.7.5 EXISTING MARLSTON WATERFRONT, SILOS REDEVELOPMENT & CBD

The subject site is located in close proximity to the existing Marlston Waterfront, Silos Precincts and the CBD. As such, there is the potential for new physical (i.e. pedestrian and cyclist paths) and psychological (i.e. viewlines, architectural elements) connections between these existing areas and the Koombana North precinct. Both the existing and the proposed development areas have the potential to mutually benefit from the retail and commercial activity that is generated by the non-residential attractors (i.e. shops, cafe, beach) to the broader area. This potential symbiotic relationship should be encouraged and nurtured through the development of the Koombana North precinct for the benefit of the wider area and ultimately the Bunbury community.

2.7.6 VIEWS & VISTAS

The entrance to the Bunbury CBD is currently characterised by views to the existing CBD buildings, including the Bunbury Tower, and views toward the Marlston Waterfront and Hill development areas. These vistas can be viewed along Koombana Drive to the east of the Plug. These vistas should be preserved and not obstructed in the development of the Koombana North precinct on approach along Koombana Drive.

In addition, as discussed in **Section 2.7.2** above, the prominent location of the site as an entry to the Bunbury CBD provides the opportunity for a new iconic built form landmark on the eastern edge of the development, which can be seen on entry to Bunbury from the east along Koombana Drive. This will assist in enhancing the entry experience into Bunbury.

Development of the Koombana North site has the potential to capitalise on very attractive water views to the north and south. Development on the northern side of the precinct will take advantage of views over Koombana Bay, the outer harbour and the Indian Ocean. Development on the southern side will take advantage of views over the Leschenault Inlet.

2.7.7 TASKFORCE CONSIDERATIONS

The Bunbury Waterfront Project Taskforce established a broad vision for the development of the Koombana North Precinct. The Taskforce identified the proposed development of five buildings, with varying maximum heights of four to six levels. The Taskforce report outlines a preference for activated land uses such as restaurants, cafes and shops at the ground level, with the potential for some office facilities as well. Residential development is proposed to occur in the upper stories above the ground level. The Taskforce layout also provides for public access to the beach and foreshore. These key elements, regarding building height, land use and public open space connectivity, should guide the more detailed planning and development of the Koombana North Precinct.

As outlined in **Section 1.3.2.2** above, the Taskforce Report also encourages the use of cash-in-lieu for parking. The acceptability of cash-in-lieu will be to the satisfaction of the City of Bunbury and is to be considered at the Development Application stage. It is noted that a parking study is being progressed for the existing waterfront area, including the Koombana North precinct, which will assess whether a shortfall exists in the locality and identify suitable locations for the provision of parking with cash-in-lieu funds.

3 STRUCTURE PLAN

3.1 STRUCTURE PLAN SUMMARY

The key elements of the proposed Structure Plan for Koombana North are as follows:

- Five mixed use Development Sites, with maximum building heights of four to six stories;
- Provision for ground floor activation, via opportunities for retail and commercial development;
- Development of a high quality, pedestrian-orientated public realm for the benefit of the wider Bunbury community, visitors and tourists and residents alike;
- Enhancement of the existing Koombana Bay and Plug foreshore areas, with provision for active and passive recreation opportunities;
- High amenity residential development on upper levels, that capitalises on the high natural and functional amenity of the subject site;
- Provision for the possible future Perth to Bunbury railway, immediately adjacent to the subject site;
- Creation of a visually attractive and iconic built form and landscape gateway to the existing Bunbury CBD; and
- Connection of the proposed development with the Bunbury CBD and existing Marlston Waterfront development area.

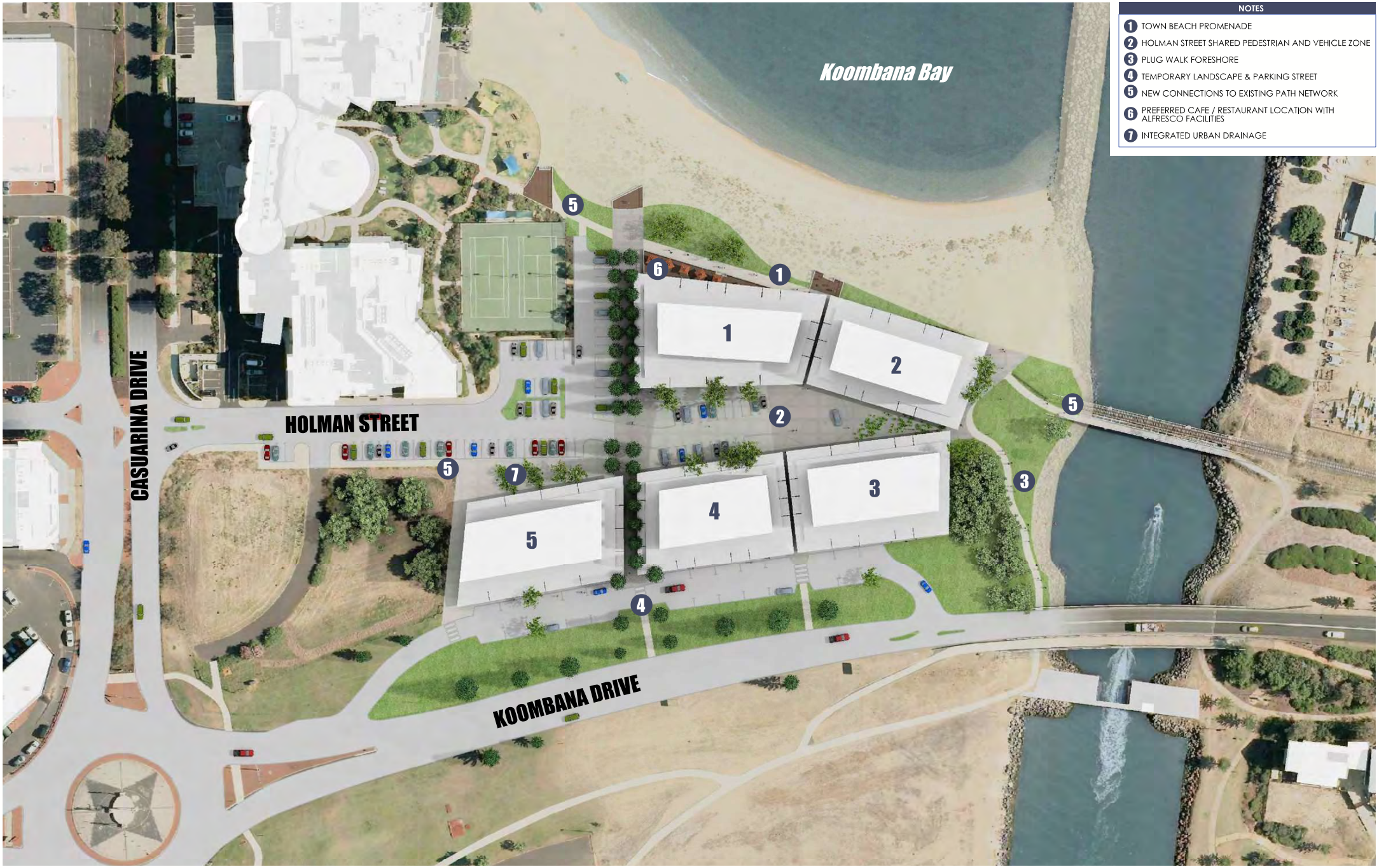
In addition to the statutory Structure Plan map included within *Part 1 – Structure Plan Statutory Provisions* of this report, a Concept Master Plan (refer **Figure 14**) has been prepared to provide an illustration of the development intent. This graphical representation is indicative only; however, it does demonstrate the intent for how the public spaces will be developed and the relationship of the public/private interface between the public spaces and development site of the Koombana North subject land.

3.1.1 SUMMARY TABLE

A summary of the key elements of the Structure Plan are outlined in **Table 13** below.

TABLE 13: STRUCTURE PLAN SUMMARY TABLE

Total area covered by the Structure Plan	**1.2686 ha**
Development Site yield	5
Estimated number of dwellings	121
Estimated population (assuming 1.8 persons per dwelling)	217
Estimated possible Non-Residential (Retail and Commercial) floor space	3735m^2 NLA
Estimated possible Food and Beverage Retail floor space	280m^2 NLA
Proposed Local Open Space (%)	1635m^2 (12.9%)



NOTES

1. TOWN BEACH PROMENADE
2. HOLMAN STREET SHARED PEDESTRIAN AND VEHICLE ZONE
3. PLUG WALK FORESHORE
4. TEMPORARY LANDSCAPE & PARKING STREET
5. NEW CONNECTIONS TO EXISTING PATH NETWORK
6. PREFERRED CAFE / RESTAURANT LOCATION WITH ALFRESCO FACILITIES
7. INTEGRATED URBAN DRAINAGE

CONCEPT MASTERPLAN

Koombana North

A Landcorp Project

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figure 14

3.2 LAND USE

The predominant land use indentified for the Koombana North Precinct is residential. It is intended that the upper levels of each of the proposed Development Sites will accommodate a variety of residential housing types. The Structure Plan also requires the development of non-residential facilities at the ground level, however, these facilities may also be developed at the upper levels.

3.2.1 RESIDENTIAL LAND USE

3.2.1.1 RESIDENTIAL DENSITY

The 'R-AC 0' coding is identified for the Koombana North precinct in the *Part 1 – Structure Plan Statutory Provisions*. The R-AC 0 code can be applied for multiple dwelling developments within mixed use and activity centres and is therefore considered appropriate for the Koombana North precinct. The application of the R-AC 0 coding provides for the applicable development standards to be specified in an approved Structure Plan. The development standards, relating to plot ratio, private open space requirements, setbacks and building heights, are specified in the *Part 1 – Structure Plan Statutory Provisions*.

3.2.1.2 BUILDING HEIGHT

The maximum building heights that apply to the proposed Development Sites, as outlined in *Part 1 – Structure Plan Statutory Provisions*, are detailed in **Table 14** below.

TABLE 14: MAXIMUM BUILDING HEIGHTS

Site	Stories	Maximum Building Height		
		Top of External Wall (m)	Top of External Wall (m) with a concealed roof	Top of Pitched Roof (m)
1	6	22.5	23.5	25.5
2	6	22.5	23.5	25.5
3	4	15.5	16.5	18.5
4	5	19	20	22
5	6	22.5	23.5	25.5

These proposed building heights reflect the outcomes of the Taskforce process and have been calculated using a maximum podium building height of 5m and floor to floor height of 3.5m for upper stories.

The maximum heights shall be measured from the ground level at the southern boundary of Development Sites 1 and 2, adjacent to Holman St. For Development Sites 3, 4 and 5, the maximum building height shall be measured from the ground level on the southern boundary adjacent to Koombana Drive. The height at these boundaries will represent the maximum horizontal height plane for the whole of each of the Development Sites.

The proposed building heights will provide for an appropriate built form transition on entry into the Bunbury CBD. The heights for proposed Development Sites 3, 4 and 5 provide for a stepped height increase moving west along Koombana Drive. This gradually increasing built form height profile co-ordinates with the heights of the existing Mantra hotel site (7 storeys) and Silos redevelopment (9 storeys).

3.2.1.3 LOT PRODUCT TYPE, MIX AND YIELD

The development of the Koombana North precinct is envisaged to provide a wide variety of dwelling types, which will consequently contribute to the diversity of the housing stock available in the Bunbury CBD and across the wider Bunbury region. The ultimate yield and product mix will be determined by the type of development pursued by each proposed site by a particular developer and will be subject to the market conditions at the time. For example, one developer may opt to provide the minimum amount of car parking bays required under the R-Codes in order to maximise the development yield, whereas another developer may choose to provide additional bays for each dwelling to improve their marketability and consequently provide less dwellings. On this basis, the ultimate lot yield and product mix will be determined during the construction and development phase.

Table 15 below outlines one of the possible residential development scenarios for the Koombana North precinct, with a mixture of one, two and three bedroom apartments proposed. The proposed mix of apartments in this scenario complies with the requirements of the R-Codes, which broadly requires there to be a minimum of 20% and maximum of 50% of one bedroom dwellings and a minimum of 40% of two bedroom dwellings. A range of different size dwellings are proposed for the one and two bedroom units, ranging from 60m^2 to 110m^2. The possible development scenario also assumes that a limited number of larger apartments will be provided. These larger format apartments would likely be provide as penthouse-style units at the upper levels of each building.

TABLE 15: POSSIBLE RESIDENTIAL DEVELOPMENT SCENARIO FOR KOOMBANA NORTH

Site	Stories	Residential Yield			
		1 Bedroom (60-74m2)	2 Bedrooms (75-110m2)	3 Bedrooms (>110m2)	Total
1	6	7	15	3	25
2	6	7	15	3	25
3	4	5	10	4	19
4	5	7	10	3	20
5	6	9	19	4	32
Total		**35**	**69**	**17**	**121**
% of Total		**29%**	**57%**	**14%**	**100%**

The delivery of a variety of housing types, in accordance with the requirements of the R-Codes, will contribute to the diversity of housing available in Bunbury. This diversity of housing product provides the opportunity for members of the Bunbury community to 'age in place'. For example, young singles and couples may choose to live in one of the smaller apartments before upgrading to a larger apartment when having a family and then potentially downsizing back to a smaller unit when their children leave home. This diversity enables people to maintain the social connections that they foster in their local community throughout the course of their lives, without the need to break these connections by moving suburb to accommodate their changing household size needs.

3.2.1.4 VIEWS

Each of the proposed Development Sites will benefit from the opportunity to capitalise on attractive water and parkland views, as outlined in **Figure 15**. Sites 1 and 2 will be able to capitalise on views to the north over Koombana Bay, the outer harbour and the Indian Ocean. Portions of Sites 2 and 3 will have views to the east towards the harbour. Sites 3, 4 and 5 will all benefit from views of the Leschenault Inlet and the existing Bunbury CBD area.

In addition, new view lines from the centre of the development site (i.e. the extension of Holman St) will be provided through the built form out to the surrounding areas, including Koombana Bay and the Leschenault Inlet. These views will be provided at both the ground floor and upper levels, given the building setbacks at both levels.

The development of each of the proposed sites will also not adversely affect the existing vistas to the Marlston Waterfront and Bunbury CBD from the eastern side of the Plug on approach to the CBD along Koombana Drive.

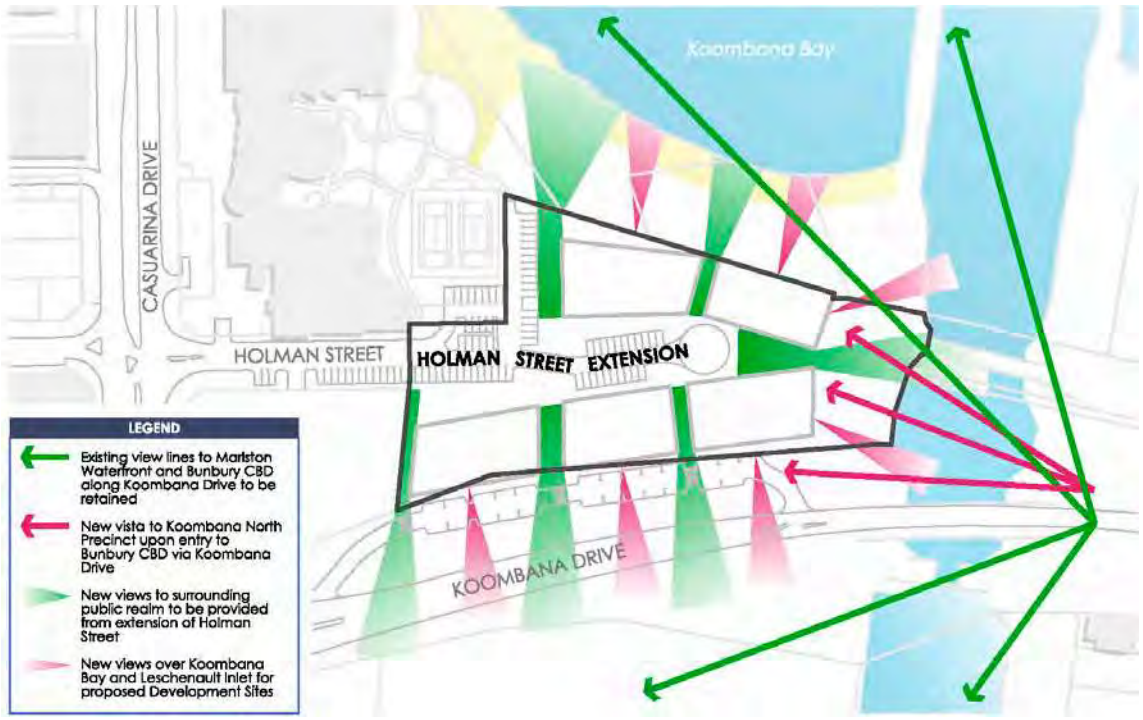


Figure 15 – Views & Vistas

3.2.2 NON-RESIDENTIAL LAND USE

The *Part 1 – Structure Plan Statutory Provisions* mandate that the ground floors of all of the proposed Development Sites are constructed to accommodate non-residential uses. The possible uses could include festival/hospitality retail (i.e. restaurants and/or cafes), convenience and tourism-based retail and offices. In addition, the upper levels of the Development Sites may be used for non-residential purposes, in accordance with the land use permissibility of TPS 7 and to the satisfaction of the City of Bunbury.

3.2.2.1 POSSIBLE NON-RESIDENTIAL DEVELOPMENT SCENARIO

In preparing the Koombana North Structure Plan, consideration has been given to the amount and location of non-residential floorspace that could be developed. The following areas have been identified for the non-residential component of a possible development scenario (and have been used to inform other aspects of the planning for the Koombana North precinct, such as car parking provision and traffic modelling):

- 280m^2 Net Leasable Area (NLA) – Restaurant/Cafe
- 900m^2 NLA – Retail; and
- 2835m^2 NLA – Commercial (Office etc).

These floorspace areas equate to the total net leasable area of the ground floor building envelopes of the five proposed Development Sites. A reduction factor of 25% has been applied to the gross site area to account for lobbies, stairs, lifts, service areas and other areas not typically included in NLA calculations, based on extensive architectural industry experience.

3.2.2.2 PREFERRED LOCATIONS FOR RETAIL DEVELOPMENT

It is acknowledged that the provision of certain types of land uses will serve to attract visitors to the Koombana North precinct and consequently contribute to the activation of the public realm. Furthermore, the delivery of a mixture of residential and non-residential uses can serve to improve the safety of an area, with people using the site at all times of the day and therefore providing 'eyes on the street' for passive surveillance. The activity generated from uses that attract people to a place can also in turn serve to improve the economic viability of retail outlets in the place. With the growth of activity can come the growth of economic sustainability to the extent where additional retail outlets can be opened which serve to attract more people to a particular place. Whilst this may not occur in all circumstances and may be limited by other external factors (i.e. population within a defined catchment), it demonstrates that the strategic delivery of the first attractors to a new space can serve to kick-start its development and evolution.

In the Koombana North precinct, there are some logical key sites that are the preferred locations for retail land uses in the initial phase of development. These sites are outlined in **Figure 16** and discussed in further detail below.

It is noted that the locations identified in Figure 16 are not included with the *Part 1 – Structure Plan Statutory Provisions* and are therefore not mandatory. Figure 16 does, however, provide some guidance as to the preferred locations for these facilities and should be considered by a developer in the preparation of a Development Application for any of the Development Sites within the precinct.

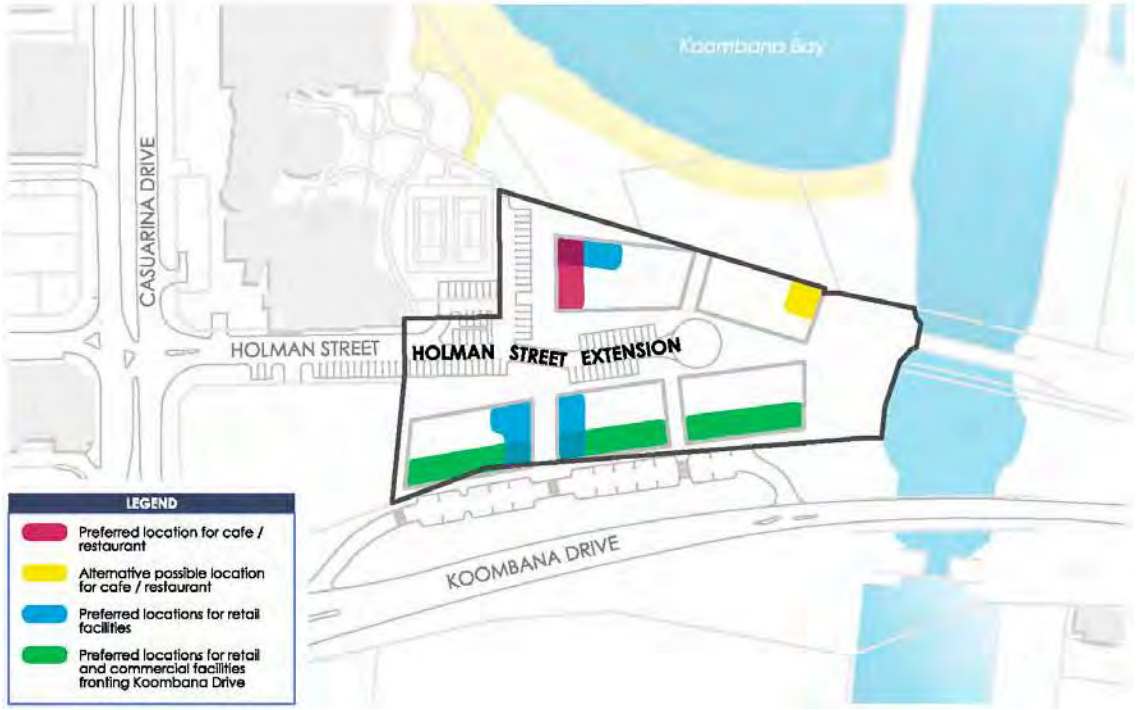


Figure 16 – Preferred Retail Locations

CAFE/RESTAURANT

The preferred location for a cafe and/or restaurant is at the western end of Development Site 1. This area will benefit from high visual exposure from Holman St to the south and from the Marlston Waterfront and foreshore to the north. It will also benefit from north-south pedestrian movement between Holman St (and the possible future railway station) and the Ski Beach foreshore area. The site also has the benefit to capitalise on views over Koombana Bay, with the potential for alfresco seating space to be provided which is sheltered from the wind by the proposed built form.

The alternative preferred location for a cafe and/or restaurant is on the eastern corner of Development Site 2. This site would be well sheltered by the built form from the prevailing south-westerly wind. This site also benefits from views over Koombana Bay, parts of the Leschenault Inlet and the existing Marlston Waterfront.

RETAIL

A number of areas are identified as preferred locations for retail facilities (i.e. shops). The north-western corner of Development Site 1 is likely to be a highly active corner, with pedestrians accessing the Ski Beach from Holman St and people walking and cycling east and west to and from the Marlston Waterfront. Convenience and tourism related shops may occur in this location, selling and hiring beach-related items.

Areas either side of the pedestrian connection between Development Sites 4 and 5 are also identified as preferred locations for retail development at the ground floor. This pedestrian thoroughfare will benefit from high pedestrian traffic between Holman St and the Koombana Drive landscape entry and parking area in the first instance and the possible future railway platform in the future. It is anticipated that these areas might accommodate convenience-based retail shops serving local residents and visitors and potentially train patrons.

RETAIL AND COMMERCIAL

The southern boundaries of Development Sites 3 to 5 are the preferred locations for retail and commercial facilities fronting Koombana Drive (and the possible future train station platform). It is considered possible that offices and shops may be developed along here, given the high visual exposure along this frontage from Koombana Drive. Temporary vehicle access would be provided as part of a landscape entry treatment to this area in order to provide suitable access for businesses here to support their economic viability.

3.2.2.3 EMPLOYMENT PROVISION

As outlined above in **Section 3.2.2**, the Koombana North Structure Plan provides the flexibility for non-residential facilities to be developed and to evolve with the precinct as it develops and grows. The likely development of shops, cafes and offices will largely be a function of the local and regional economic climate and is likely to vary accordingly across the construction and development phases and ultimate life of the Koombana North Precinct. As such, it is not possible to calculate how many new employment opportunities will be created as a result of the development.

It is envisaged, however, that a number of new jobs will be created with the establishment of new retail outlets and shops. These jobs will likely be in the hospitality service field, in support on new restaurants and/or cafes. It is also anticipated that convenience and tourism-related shops may occupy new tenancies in the precinct, providing further retail service-based employment opportunities. In addition, the potential development of office space will provide areas for professional organisations, with an associated potential professional workforce. It is anticipated that the demand for non-residential floorspace will increase with the delivery of the possible future railway and that this will in turn generate further employment opportunities within the Koombana North precinct and wider Bunbury region.

It is also foreseen that future residents of the Koombana North Precinct may pursue home-based business opportunities, both before and after the delivery of the potential railway. The Structure Plan provides for people to live and work in the one area with a consequent reduced reliance on fossil fuels and private vehicles and an increased sense of engagement with their local community. Employment opportunities will also be created during the civil and built form construction stages.

3.3 MOVEMENT NETWORKS

SKM has undertaken a thorough analysis of the existing movement networks in the vicinity of the Koombana North Precinct and assessed the impact of the proposed development on these existing networks. The Transport Assessment Report is included as **Appendix I**.

3.3.1 VEHICLE TRAFFIC

3.3.1.1 DAILY TRIP GENERATION FOR KOOMBANA NORTH

SKM has applied the following daily trip generation rates to the proposed land uses for the Koombana North Precinct:

- Residential: 5 trips per dwelling
- Retail: 30 trips per 100m^2 NLA
- Office: 10 trips per 100m^2 NLA
- Cafe: 60 trips per 100m^2 NLA

The vehicle trip generation associated with the residential, retail and commercial land uses is shown in **Table 16.** At full development, a conservative estimate of total vehicle trip generation by Koombana North is approximately 1,330 trips per day.

TABLE 16: DAILY VEHICLE TRIP GENERATION

Land Use	Current Yield	Calculation	Daily Trip Generation
Residential	121 units	121 x 5	605
Retail	900 m^2	(900/100) x 30	270
Commercial (Office)	2835 m^2	(2835/100) x 10	284
Café	280 m^2	(280/100) x 60	168
Total			**1,327**

The residential and commercial trip generation rates can be considered relatively high for a mixed use development located within one kilometre of a city centre and with reasonable access to walking and cycling facilities (even in lieu of there being local transit currently available). For example, residential apartments that have a trip rate of five trips per unit would typically assume a car drive mode share of about 70%, which is relatively high (i.e. 3.5 trips per person X average occupancy rate of 1.8 persons per dwelling X 1.15 allowance for visitor trips X 70% car driver trips = 5 vehicle trips per day).

3.3.1.2 POTENTIAL NEARBY GENERATORS OF TRAFFIC

The City of Bunbury has identified a number of potential traffic generators in close proximity to the Koombana North site and these generators have been considered in the preparation of the Structure Plan. It is noted that it is not reasonable nor practical to consider the development of every possible future traffic generator in the area, given the 30 year planning horizon and the uncertainty regarding the nature and scale of development that may ultimately be realised. The additional traffic generating uses considered are as follows (with further discussion of each below):

- The Ski Beach on the northern boundary of the Koombana North Precinct;
- The development of Lot 850 (corner of Casuarina and Koombana Drives); and
- The potential future Perth-Bunbury rail service.

SKI BEACH

The majority of traffic generated by beachgoers typically occurs on weekends. Notwithstanding this, some trips can be generated during the AM and PM peak periods. Using the trip generation rates contained in the 8th Edition of the ITE Trip Generation Handbook, the ITE code of a 'beach park' (i.e. contains a beach and other facilities such as toilets, picnic facilities etc) was used to derive the trips associated with the adjacent beach area, located north of the development site. Calculations are based on a 9,000m^2 (2.22 acres) stretch of beach using the trip rates contained in **Table 17.**

TABLE 17: SKI BEACH TRAFFIC GENERATION

Land Use	Daily Trip Rate (per acre)	No. of Acres	Total Daily Trip Generation
Beach Park	29.81	9000 m^2 / 4046.85 = 2.22	2.22 X 29.81 = **67 TRIPS**

LOT 850

It is anticipated that the development of Lot 850 will obtain vehicle access from Holman St and the development of this site has therefore been included in the trip generation calculations to assess the impact of the Koombana North Precinct. There are currently no development plans for this site, however, for the purposes of assessing potential future impact, an example development has been included in the assessment using the trip generation rates contained in **Table 18.** These rates are the same as those applied to the Koombana North development and are based on the following assumptions:

- Six storey development, based upon a 21m maximum building height (from the City of Bunbury's LPP – Building Height)
- 10% of the ground floor is developed for cafe/restaurant – 330m^2 NLA
- 40% of the ground floor is developed for retail – 1,310m^2 NLA
- 50% of the ground floor is developed for commercial – 1,640m^2 NLA

TABLE 18: CALCULATED TRIP GENERATION FOR LOT 850

Development Precinct	Land Use	Current Yield	Calculation	Daily Trip Generation
Lot 850	Residential	200 units	200 X 5	1000
	Retail	1310 m^2	(1310/100) X 30	393
	Commercial (Office)	1640 m^2	(1640/100) x 10	164
	Café	330 m^2	(3308100) x 60	198
	Total			**1,755**

PERTH TO BUNBURY RAIL SERVICE

The potential traffic associated with the possible future Perth to Bunbury rail services has not been quantified or included as part of the traffic generation calculations for the Koombana North site. This is primarily due to the uncertainty regarding the actual delivery of the rail within a 30 year timeframe and the uncertainty regarding the details associated with the potential service (i.e. frequency, patronage etc). As identified in the City of Bunbury's Integrated Transport Strategy, it is anticipated that a change in travel mode split is likely to have occurred prior to the commencement of a fast rail service (if provided). It considered more appropriate to undertake a detailed assessment of the anticipated traffic generation associated with the rail service nearer to the time of detailed planning and construction, when there is more information available regarding the details of the rail service.

3.3.1.3 PEAK HOUR GENERATION & DISTRIBUTION

The assumed peak AM and PM forecast vehicle trips have been calculated for the Koombana North development site, using industry-accepted standards, and are outlined in **Table 19**.

TABLE 19: PEAK HOUR GENERATION - AM & PM

Land Use		AM Peak	PM Peak
Residential	Percentage	8%	10%
	Number of trips	54	68
Retail	Percentage	5%	10%
	Number of trips	12	24
Commercial	Percentage	20%	20%
	Number of trips	46	46
Beach	Percentage	5%	13%
	Number of trips	3	9

Note: Traffic associated with Lot 850 is included in the Residential, Retail and Commercial calculations.

The directional movements of the traffic are influenced by the nature of the applicable land uses within the development site during the morning and afternoon peak hours. These factors have been considered for the subject site and the traffic distribution in **Table 20** determined accordingly.

TABLE 20: TRAFFIC DISTRIBUTION FOR KOOMBANA NORTH

Peak Hour	Land Use	North		South		East		West	
		%age	No. of Vehicles	%age	No. of Vehicles	%age	No. of Vehicles	%age	No. of Vehicles
AM inbound	Residential	5%	1	40%	5	15%	2	40%	5
	Retail/Commercial	0%	0	50%	78	10%	18	40%	63
	Beach	5%	0	40%	1	15%	0	40%	1
AM outbound	Residential	5%	6	40%	46	15%	17	40%	46
	Retail/Commercial	0%	0	50%	20	10%	4	40%	16
	Beach	5%	0	40%	1	15%	0	40%	1
PM inbound	Residential	5%	6	40%	51	15%	19	40%	51
	Retail/Commercial	0%	0	50%	23	10%	5	40%	18
	Beach	5%	0	40%	1	15%	0	40%	1
PM outbound	Residential	5%	2	40%	13	15%	5	40%	13
	Retail/Commercial	0%	0	50%	92	10%	18	40%	73
	Beach	5%	0	40%	2	15%	1	40%	2

Table 20 demonstrates that the dominant traffic movement will be to and from the south, in the direction of the Bunbury CBD via Casuarina Drive. Observations found an existing median break along Casuarina Drive and provision of a right turning pocket (with room for five cars) allowing access to Holman Street. It is proposed this intersection will continue to function adequately under these arrangements with priority control and no specific need for channelisation on Holman Street. This assessment is on the basis of observed traffic counts for Casuarina Drive and the likely profile of traffic seeking to access the development during peak periods.

3.3.1.4 LINK ASSESSMENT

The majority of development traffic is forecast to ingress/egress via Blair Street southwards towards central Bunbury. Under a conservative scenario, it is anticipated 80% of development traffic could distribute via this route. The addition of this traffic to Blair Street may increase daily traffic flows south of Koombana Drive from 9,600 to about 10,400 trips per day. This is acceptable for a district distributor road. However, in practice, a higher percentage of traffic is likely to distribute west via Koombana Drive, particularly if additional development unfolds east of the Plug, reducing development traffic on Blair Street. Minor flows can be anticipated to distribute west, via Koombana Drive, north via Casuarina Drive or east via Clifton Street. The additional development traffic is therefore not anticipated to compromise the function of these streets.

The daily traffic forecast to ingress/egress from Koombana North at Holman Street (3,150 vehicles per day) is within the carrying capacity of a slow-speed, single carriageway street. The current geometry of Holman Street is appropriate and includes a trafficable width of 5.5 metres and embayed car parking to support shared parking arrangements, including public access to the foreshore.

3.3.1.5 INTERSECTION ASSESSMENT

Analysis of the following intersections has been carried out using SIDRA software by SKM:

- Holman Street/Casuarina Drive T-intersection; and
- Blair St/Clifton St/Casuarina Drive/Koombana Drive roundabout.

Full details regarding the methodology used to assess the capacity of these intersections and the detailed outcomes of the SIDRA analysis can be viewed in **Appendix I**. A summary is also provided in **Section 3.3.1.6** below.

3.3.1.6 SUMMARY OF TRAFFIC IMPACTS

The findings of the link assessment indicate that the forecast development traffic can be accommodated within the existing network geometry without adversely impacting street function.

The results of the SIDRA analysis presented in **Appendix I** demonstrate that the key intersections within the study area are estimated to operate effectively in the 2030 horizon year with the addition of development traffic for Koombana North, Lot 850 and the Ski Beach during both peak hour periods.

The results provide a robust estimate of the likely traffic impact of the development on local network operation, assuming a 1% increase in background traffic per annum in an area that has historically shown little growth in traffic levels. The traffic generation assumed for the development is also considered to provide a very conservative forecast.

The proposed development of the Koombana North Precinct, with the addition of traffic generated from the Ski Beach and Lot 850, will not have a detrimental impact on the operation of the local road network and the capacity of the Holman Street/ Casuarina Drive intersection will not be exceeded.

3.3.2 VEHICLE NETWORK

3.3.2.1 HOLMAN STREET EXTENSION

The Structure Plan proposes the extension of Holman St as a shared low speed vehicle and pedestrian space, incorporating additional on-street parking for visitors to the Koombana North Precinct. This represents the only new permanent road reserve proposed as part of the development of the subject land.

The extension of Holman St will provide vehicle access to the proposed Development Sites and will incorporate a turning head at the eastern end of the proposed reserve. An 18m diameter cul-de-sac head has been nominally identified for turning movements, in accordance with the relevant Australian Standard; however the ultimate form of this turning area will be determined during the detailed landscape and engineering design phases. It is likely that paving detail will emphasise the priority given to pedestrians in this shared space over that of vehicular circulation.

As noted, the proposed road reserve for the extension of Holman St varies, with an approximate width of 30m at the western boundaries of Development Sites 1 and 4 and an approximate width of 24m at the eastern end in the location of the indicative cul-de-sac head. The Structure Plan also identifies indicative vehicle access locations to each of the Development Sites from the extension of Holman St. The exact location and form of these vehicle access points (and crossovers) will be assessed and agreed to during the Development Application phase.

It is acknowledged that space will need to be provided for service vehicles to unload supplies for the non-residential facilities within the Koombana North Precinct. Given the scale and size of the proposed development, there is an opportunity to provide shared service and loading spaces. Furthermore, these spaces could be provided as loading bays at specific times throughout the day, so as to enable co-use of these areas as public parking bays outside of delivery hours. The demand for servicing/loading bays will depend, to a large extent, on the requirements of the non-residential facilities developed. As such, it is intended that the amount, location and status of designated loading bays be determined during the civil construction and/or Development Application phases, to the satisfaction of the City of Bunbury. It is noted that the City of Bunbury, as the future authority responsible for the management of the Holman Street road reserve extension, has the discretion to amend the status of parking spaces as it considers necessary and can opt to designate additional parking spaces as servicing areas as demand warrants.

The Structure Plan layout seeks to maintain the majority of the existing public parking in the Holman St reserve. Some existing bays, however, will need to be removed in order to extend the carriageway through to the eastern part of the Koombana North Precinct. A single indicative 6m carriageway is proposed to connect the existing parking area and the proposed extension of Holman St. This is proposed purposefully to ensure that there is only one pedestrian crossing point across the extension of Holman St. As discussed in **Section 3.4.4.2** below, the Structure Plan proposes a major north-south pedestrian connection along the western boundaries of Development Sites 1 and 4. As such, the indicative carriageway layout is intended to limit pedestrian crossing of Holman St to a single location. If a loop-style system was to be proposed, then pedestrians would have to cross the extension of Holman St twice. Given the prominence given to the pedestrian in the Koombana North Precinct, it is considered that the proposed indicative carriageway layout serves to maximise pedestrian safety in this shared space environment with only the single crossing.

It is noted that the parking bays currently in the central island Holman St will ultimately need to be reconfigured and potentially removed when the Perth to Bunbury railway station is constructed. The Public Transport Authority (PTA) has identified bus turning and parking requirements that would be associated with the train station and allow for intermodal connections. The Structure Plan provides sufficient space to accommodate the future requirements of the PTA in this regard, as discussed in **Section 2.4.4.3**. It is noted that the ultimate requirements associated with the train station will be determined at a point in the future when a decision to construct the railway is made. The requirements will be determined collaboratively between the City of Bunbury (as the responsible authority for the Holman St road reservation) and the PTA.

3.3.2.2 KOOMBANA DRIVE

POSSIBLE TEMPORARY LANDSCAPE ENTRY AND PARKING AREA

The Structure Plan makes provision for the potential construction of a temporary one-way parking area off the existing Koombana Drive carriageway (in the location of the possible future railway station). This potential parking area could provide additional visitor parking for the non-residential uses to be developed at the ground floor on the southern side of proposed Development Site 3, 4 and 5. This area is identified as a preferred location for cash-in-lieu payments (to address any possible parking shortfalls for each of the Development Sites) to be used to provided additional public parking.

The parking aspect of this area is preferably located adjacent to the southern frontages of the Development Sites 3, 4 and 5 and would incorporate two lanes of parallel parking embayments on either side of a 6m single direction carriageway. Left-in only access would be provided travelling east along Koombana Drive. Left-out egress would be provided at the eastern part of the proposed one-way street, in front of Development Site 3. The ability to also provide a right-out exit in this location would require further consideration and agreement with the City of Bunbury's traffic engineers and may necessitate the provision of median treatments in this location.

The parking bays and one-way street will ideally be positioned adjacent to the edge of the proposed Development Sites. This would provide sufficient space in the area between the proposed one-way street and the existing Koombana Drive to install high quality landscaping. The landscape vision for this area is discussed in further detail in **Section 3.4.4.7**.

Should this temporary landscape entry and parking street be developed, then it is envisaged that it would be in place until such time as the development of the Perth to Bunbury fast rail service, with the parking area to be replaced with the station platform.

FUTURE DUPLICATION

The existing Koombana Drive may be upgraded in the future, with the provision of a second carriageway. With the location of the possible future railway station identified in the northern portion of the existing Koombana North reserve, any duplication of the carriageways for Koombana Drive (and road bridge over the Plug) will need to occur to the south of the existing carriageway and bridge. This possible upgrade may occur in the future, when traffic volumes warrant the increase to the capacity of the road.

3.3.3 VEHICLE PARKING

Car parking is a matter of high importance in the development of an area such as the Koombana North Precinct, given the mixture of residential and non-residential uses proposed, the wide catchment from which visitors will be attracted, the proximity to the existing CBD and the possible development of the future Perth to Bunbury railway. The combined impact of these elements requires careful assessment to determine what car parking facilities need to be provided in order to meet the anticipated demand for car parking for the development area.

The strategy for the provision of car parking in the Koombana North Precinct is broadly guided by the following key principles:

- All private residential parking is to be provided onsite for each Development Site;
- Non-residential and residential visitor parking is to be provided in the vicinity of the site in which it is serving. This may include at-grade in the public realm or within the basements of the Development Sites; and
- Where the required provision cannot be achieved, cash-in-lieu will be provided to the City to contribute to the development of additional car parking facilities to serve visitors to the Koombana North Precinct.

3.3.3.1 RESIDENTIAL PARKING

It will be the requirement of the developers responsible for the delivery of the built form on the proposed Development Sites to provide sufficient onsite car parking for the number of proposed dwellings. Where this cannot be achieved, cash-in-lieu may be paid for any shortfall. The rate of provision shall be in accordance with the R-Codes and will be considered at the Development Application stage.

It is noted that the rates of provision for development that is **not** within close proximity to transit, as outlined in Acceptable Development 3.1 of Clause 7.3.3 of the R-Codes, are to be used in calculating the specific requirements for a Development Site with the Koombana North Precinct.

A preliminary assessment of the residential car parking provision has been undertaken, on the basis of the possible development scenario outlined in **Section 3.2.1.3** above. The differential rates of provision for different sized dwellings, as outlined in the R-Codes, have been used to calculate the overall residential parking requirement. In addition, a preliminary assessment of the possible underground basement car parking layout has been undertaken for each Development Site (assuming the subterranean basements are confined to the extent of the proposed Development Site lot boundaries). **Table 21** below outlines the proposed car parking requirements for each Development Site, based on the proposed residential product mix, under this possible development scenario.

The calculations outlined in **Table 22** consider the construction of single and double basement car parks.

TABLE 21: RESIDENTIAL CAR PARKING PROVISION SCENARIO ASSESSMENT

		Residential Yield				Parking Requirements (R-Codes)	Preliminary Parking Provision Capability	
Site	**Stories**	**1 BR**	**2 BR**	**3 BR**	**Total**	**Without Transit**	**1 Basement**	**2 Basements**
1	6	7	15	3	25	31	30	55
2	6	7	15	3	25	31	19	35
3	4	5	10	4	19	24	30	54
4	5	7	10	3	20	24	25	45
5	6	9	19	4	32	39	32	59
Total		**35**	**69**	**17**	**121**	**149**	**136**	**248**

It is noted that proposed Development Sites 3 and 4 can be suitably parked onsite within a single basement, however Development Sites 1, 2 and 5 have an under provision to varying degrees. These potential shortfalls can be addressed at the Development Application stage, with a prospective developer having the option of choosing: to develop fewer dwellings, reduce the ultimate height of development, provide a second basement for car parking and/or cash-in-lieu.

Residential visitor parking may be provided as part of the public realm or onsite on each of the proposed Development Sites. The provision of residential visitor parking as presented in Section 3.3.3.2 below.

3.3.3.2 NON-RESIDENTIAL AND VISITOR PARKING

It is proposed that non-residential and residential visitor parking be provided at-grade within the public realm or onsite as part of the delivery of the built form for each of the Development Sites. Where the calculated provision requirement cannot be achieved, cash-in-lieu will be paid for an equivalent of the shortfall of car parking bays.

CALCULATED REQUIREMENTS

The calculated requirements for non-residential and residential visitor parking under the possible development scenario outlined in **Section 3.2.1.3** are outlined in **Table 22**. All parking (vehicle and bicycle) reductions, discounts and reciprocal arrangements are yet to be agreed to by the City of Bunbury and are to be negotiated with the City in the consideration of individual Development Applications. The floorspace areas identified are net figures, reflecting the total size of the ground floor building envelopes of the five proposed Development Sites. A reduction factor of 25% has been applied to the gross site area to account for lobbies, stairs, lifts, service areas and other areas not typically included in NLA calculations, based on extensive architectural industry experience.

TABLE 22: NON-RESIDENTIAL AND RESIDENTIAL VISITOR CAR PARKING PROVISION REQUIREMENTS

Parking Type	Parking Requirements	Number of Bays
Residential Visitor	1 bay per 4 dwellings (R-Codes)	30.25
	25% Reduction (Reciprocity with non-residential, given timing of use)	*23*
Retail	900m^2 NLA – 1 bay per 20m^2 NLA	45
Commercial (Office)	2835m^2 NLA – 1 bay per 30m^2 NLA	95
Cafe/Restaurant	280m^2 NLA – 2/3 (188m^2) at 1 bay per 5m^2 & 1/3 (92m^2) at 1 per 15m^2	44
Total Non-Residential and Residential Visitor Parking (including 25% reduction)		***207***
Total Disabled Bays (2% of the Total Total Non-Residential and Residential Visitor Parking Provisison)		***4***

A total of 207 bays are calculated as being required for non-residential and residential visitor parking purposes, of which four are required as Disabled Bays. A reduction factor of 25% has been applied to the calculated residential visitor parking requirements for the Koombana North precinct. This percentage reduction has been derived based primarily on the operational reality of parking, whereby parking bays will be used for different uses of the development, which have different peak times and demand profiles. Visits to non-residential land uses (i.e. offices, retail outlets etc) typically occur during the day, whereas visits to residential properties generally occur after working hours. In addition, the reduction also reflects the likely use of some of the non-residential facilities of the Koombana North Precinct by future residents of Development Sites 1 to 5. Parking spaces would not be required in these instances, as residents will be able to comfortably walk to these facilities.

NEW PARKING BAYS

A preliminary assessment has been undertaken of the potential proposed new bays, at-grade in the public realm, which may be provided as a result of the development of the site. The outcomes of this assessment are summarised in **Table 23** and it is noted that these numbers are indicative only and subject to detailed planning.

TABLE 23: AT-GRADE NON-RESIDENTIAL AND RESIDENTIAL VISITOR CAR PARKING PROVISION

Description/Location	Number of Bays
Holman St Extension	6
Proposed Public Car Park (North-South Spine)	21
TOTAL NEW BAYS (AT GRADE)	**27**

A total of 27 new bays are identified to be provided in the public realm as part of the development of the Koombana North Precinct. It is evident that there is a calculated shortfall of parking for residential visitors and for proposed non-residential facilities. As presented in **Section 3.3.3.1**, the extent of the shortfall will not be known until the details of a development proposal (i.e. number of dwellings, amount and type of non-residential floorspace) for an individual Development Site are known. Furthermore, the potential shortfall can be addressed in a number of ways, including the payment of cash-in-lieu or the construction of a second car park basement. As such, the ultimate provision of parking shall be considered and determined by the City of Bunbury at the Development Application stage.

EXISTING AND ADDITIONAL POTENTIAL PARKING BAYS

It is proposed that 48 of the existing 54 bays in Holman St be retained as part of the Koombana North Precinct development. It is noted that this parking appears to be currently underutilised and it is likely that it would be used by visitors to the subject site, given its close proximity to the site.

In addition to the existing Holman St bays and the new proposed parking bays in the extended Holman St reserve and the new North-South Spine, some new additional bays may be provided in the Koombana Drive road reserve adjacent to the southern boundary of Development Sites 3, 4 and 5. Approximately 25 bays could be provided off Koombana Drive, however it is noted that this figure is indicative and the actual provision may vary with the progression of detailed engineering design. As outlined in **Section 3.3.2.2**, this is one of the preferred locations for cash-in-lieu payments (where required to meet parking shortfalls for the Development Sites) to be used.

Figure 17 below illustrates the spatial distribution of the new and existing car parking bays.

Figure 17 – Existing and Proposed Car Parking Provision

CASH-IN-LIEU

It is evident that there is likely to be an overall shortfall in the provision of parking for the Koombana North Precinct, should the development scenario in **Sections 3.2.1.3** and **3.2.2.1** be pursued and realised. In addition, the parking calculations undertake are based on a hypothetical development scenario. It is likely that a cash-in-lieu payment (or other appropriate arrangements with the City of Bunbury) will need to be made to the equivalent of the parking shortfall.

The construction cost of parking bays should be set at an agreed fee for the purposes of cash-in-lieu payments and linked to the WA buildings inflation index. All cash-in-lieu payments should be provided into a trust account with funds available solely for transport improvements, which may or may not include provision of future additional public parking in the vicinity that would be of benefit to the development. Non-residential visitors parking is preferably provided on-street, thereby supporting shared use.

Should cash-in-lieu payments be required for development within the Koombana North Precinct, then it is suggested that these monies be spent on the construction of bays in the vicinity of the site. It is noted that there are currently no formal on-street parking bays provided along Casuarina Drive and cash-in-lieu payment could be made to retrofit bays in this location. In addition, the existing pavement of Holman St appears excessively wide to that required for two way traffic movement. As such, there may be the potential for additional on-street parallel bays to be provided within a widened northern verge adjacent to the Mantra. These possible areas are highlighted in **Figure 17.**

It is also noted that the payment of cash-in-lieu amounts are not typically calculated using the full amount of the shortfall of parking bays. SKM advises that a proportion of the shortfall of bays is typically used to determine the cash-in-lieu payment amount. This is due to the fact that the parking provided with cash-in-lieu funding is likely to be located in the vicinity of the generating use and is likely to serve a wider catchment. For example, if the calculated shortfall of bays for a particular Development Site was 20 bays, then an amount of bays less than 20 would typically be multiplied by the agreed per bay cash-in-lieu amount to determine the total cash-in-lieu payment required. All cash-in-lieu payment requirements are to be agreed to with the City of Bunbury.

3.3.4 PEDESTRIAN & CYCLISTS

3.3.4.1 PATH NETWORK

The development of the Koombana North Precinct will see the creation of a number of new pedestrian and cyclist paths through and around the subject site. The proposed path network seeks to link in with the existing path network of the area. In doing so, not only does it connect the Koombana North site with the surrounding areas but it also connects these other areas with the Koombana North Precinct acting as an effective thoroughfare for pedestrians and cyclists. This exposure will serve to support the economic viability of non-residential uses in the development area, as discussed in **Section 3.2.1**. The proposed path network is outlined in **Figure 18**, which outlines where new paths are proposed and existing paths are proposed to be upgraded as part of the development of the Koombana North Precinct.

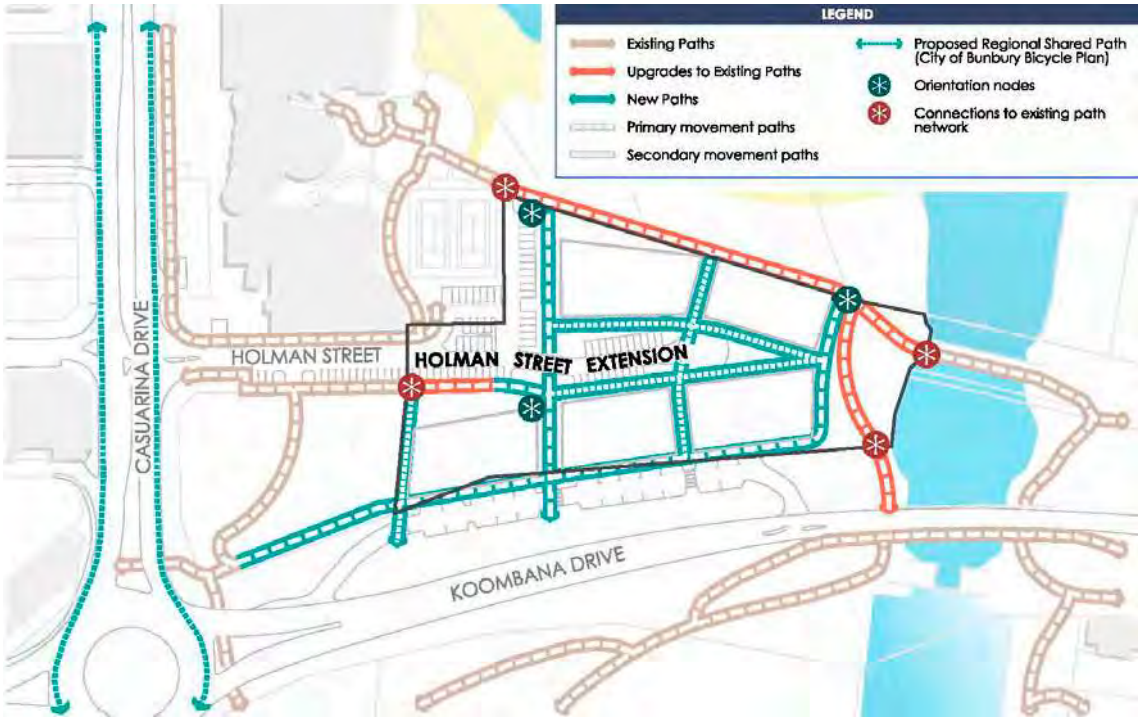


Figure 18 – Path Network Plan

The existing path that runs parallel to the Ski Beach, along the northern side of the proposed Development Sites 1 and 2, will be upgraded and will connect the site to the Marslton Waterfront to the north and the area east of the Plug across the old railway bridge. The existing paths to the west of the Plug will be upgraded, linking the Ski Beach area to south of Koombana Drive to the Leschenault Inlet.

The Koombana North Precinct will also be linked to the existing path on the southern side of Holman St, with portion of this existing path being upgraded as part of the Koombana North development works. This connection to Casuarina Drive, and the existing informal pedestrian path through Lot 850, will connect the site with the existing CBD core area.

New paths are proposed along the southern boundary of Development Sites 3 to 5, which will provide pedestrian and cyclist access to the non-residential uses along this frontage. This pathway will also provide an interface between the built form and the possible future railway platform when ultimately constructed.

A new north-south path along the western edge of Development Sites 1 and 4 will provide access from the possible future railway station to the Ski Beach. It is likely that this will be a high traffic pedestrian and cyclist connection through the site and therefore provide pedestrian traffic to support non-residential facilities.

A number of secondary pedestrian and cyclist linkages will be provided through the Koombana North site. The extension of Holman St will be a shared pedestrian, cyclist and vehicle space, with priority given to safe and efficient non-vehicular movement. Pedestrian and cyclist connections will also be provided between Development Sites 1, 2, 3 and 4, providing for a highly permeable urban environment.

3.3.4.2 BICYCLE PARKING

In addition to parking for private vehicles, access to the development will be enhanced through the provision of bicycle parking facilities. Bicycle parking for office employees should also be accompanied by the appropriate provision of end of trip facilities such as lockers and showers.

The minimum provision of one bicycle space per residential dwelling, in accordance with the R-Codes, will apply to all development within the Koombana North Precinct. However, the provision of additional bicycle parking spaces (i.e. one space per dwelling) is strongly encouraged. The provision of additional bicycle spaces, in excess of the minimum requirements of the R-Codes, may potentially be used to justify reduced vehicle parking on site, to the satisfaction of the City of Bunbury. These arrangements shall be discussed with and agreed to by the City of Bunbury in determining Development Applications.

The recommended rates of provision of bicycle parking spaces for the Koombana North Precinct are outlined in **Table 24,** based on the combined assumed residential and non-residential development scenarios.

TABLE 24: BICYCLE PARKING PROVISION

Land Use	Parking Requirements	Cycle Spaces Required
Private Cycle Parking		
Residential occupant	1 space per 3 dwellings	41
Commercial (Office) employee	1 per 50 m^2 NLA	57
Café employee	1 per 50 m^2 NLA	6
Retail employee	1 per 100 m^2 NLA	9
Total Private Cycle Bays		*113*
Visitor Cycle Parking		
Residential visitor	1 space per 10 dwellings	13
Commercial (Office) visitor	1 per 100 m^2 NLA	29
Café visitor	1 per 50 m^2 NLA	6
Retail visitor	1 per 100 m^2 NLA	9
Total Visitor Cycle Bays		*57*
Reduction factor of 25% for visitor parking		**43**

A 25% reduction for visitor (residential and non-residential) bicycle parking shall apply to the Koombana North Precinct. As outlined in **Section 3.3.3.2**, the reduction is proposed in response to the likely differential times of use across the course of the day. Visits to non-residential land uses (i.e. offices, retail outlets etc) typically occur during the day, whereas visits to residential properties generally occur after working hours. Future residents of Koombana North are also likely to visit other parts of the precinct on foot and are therefore not likely to generate a demand for bicycle parking.

All private residential bicycle parking is required to be provided onsite. It is likely that this will be in secured areas in the basement car park areas of each Development Site. Bicycle parking for non-residential and residential visitors will be provided in the public realm. The exact location and design of these facilities will be determined during the detailed landscaping design phase.

3.3.5 PUBLIC TRANSPORT

3.3.5.1 POSSIBLE FUTURE TRAIN STATION

The Koombana North Structure Plan identifies the location of the possible future Perth to Bunbury rail station in the northern portion of the existing Koombana Drive road reserve. The Structure Plan mandates that the built form at the ground level orientate to the future railway station. In addition, the finished floor levels for the ground floors of these buildings at this interface is required to coordinate with the levels of the future platform, as advised by GHD. Figures 19 and 20 outline the interim and ultimate interface between the southern boundary of Development Sites 3-5 and the possible future train station platform.

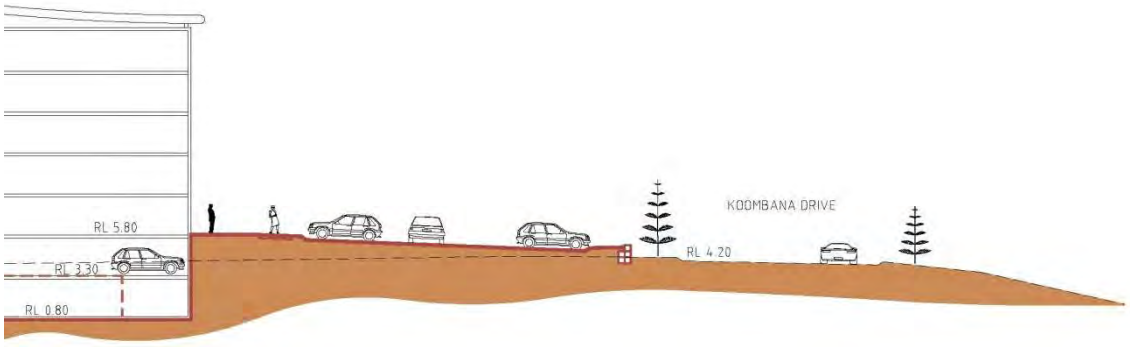


Figure 19 – Interim indicative cross-section of interface between southern boundary of Development Sites 3-5 and possible future train station

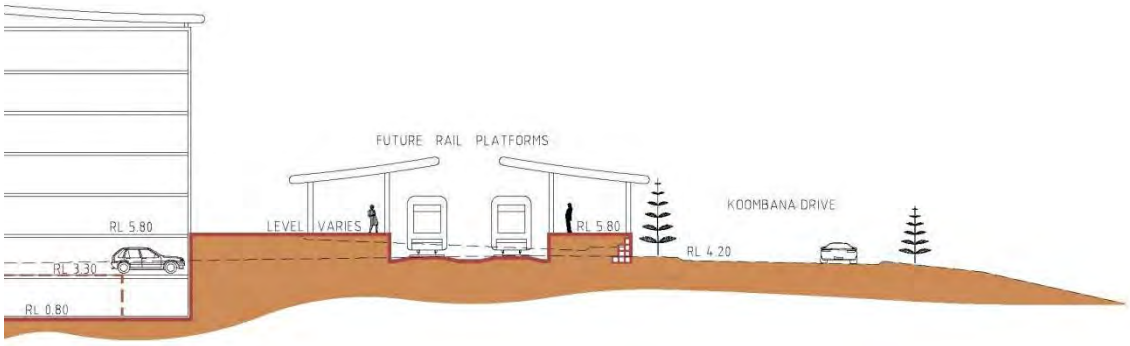


Figure 20 – Ultimate indicative cross-section of interface between southern boundary of Development Sites 3-5 and possible future train station

The timing for the construction and delivery of the railway is unknown at this time, however it is not anticipated that it will be developed in the medium-term. The decision to construct the rail will ultimately be made by the State Government.

3.4 PUBLIC REALM

3.4.1 PUBLIC OPEN SPACE PROVISION

Public Open Space (POS) will be provided in accordance with the requirements of Liveable Neighbourhoods, which requires that a minimum of 10% of the Net Developable Area be provided as POS. **Table 25** below outlines the provision of POS in accordance with Liveable Neighbourhoods, demonstrating the provision of 12.9% of land for credited POS.

TABLE 25: PUBLIC OPEN SPACE SCHEDULE

PUBLIC OPEN SPACE SCHEDULE		
Gross Site Area (Lot 505)		**1.2686 ha**
Deductions		
Future Railways Reservation	0.0132 ha	
Total Deductions	**0.0132 ha**	
Net Subdivisible Area		1.2554 ha
Required Public Open Space (10%)		**0.1255 ha**
Public Open Space Requirements		
Unrestricted public open space – minimum 80%	0.1004 ha	
Restricted public open space – maximum 20%	0.0251 ha	
Total		**0.1255 ha**
PUBLIC OPEN SPACE PROVISION		
Unrestricted Public Open Space		
POS 1	0.1635 ha	
Total Unrestricted Public Open Space		**0.1635 ha**
Restricted Public Open Space		
Drainage (1:5 ARI)	0.0000 ha	
		0.0000 ha
Total Credited Restricted Public Open Space		**0.0000 ha**
Total Credited Public Open Space		**0.1635 ha**
Percentage of Public Open Space Provided		**12.9%**
(Unrestricted and Restricted POS Contribution)		

Figure 21 below outlines the variety of public spaces provided across the Koombana North Precinct.

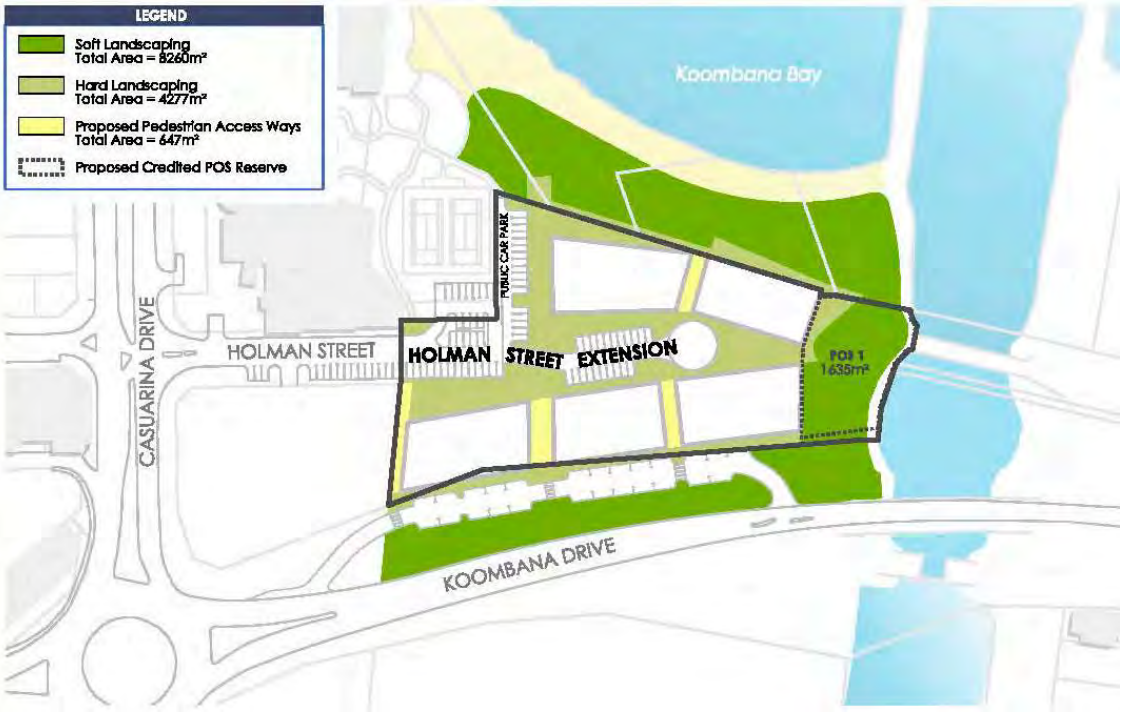


Figure 21 – Public Realm Provision

POS 1 is proposed for the foreshore area immediately abutting the existing Plug Waterways reserve and the eastern edges of proposed Development Sites 2 and 3. The creation of this POS reserve will ensure that east-west public access will be provided through the two Development Sites to and from the Plug foreshore reserve. The easternmost portion of this proposed POS reserve will be landscaped in a holistic manner, as outlined in **Section 3.4.4.5** below.

3.4.2 PUBLIC REALM PROVISION

In addition to POS Area 1, additional Reserves for Recreation will be provided in the development of the Koombana North Precinct, but will contribute to the calculation of the overall minimum 10% provision, as detailed in **Table 25**. One of these proposed reserves is located between POS 1 and the extension of the Holman St road reserve (between Development Sites 2 and 3). The status of this area as a public reserve for recreation will ensure that uninterrupted east-west public access from Holman Street to the Plug is guaranteed.

The second of these uncredited reserves is proposed in the north-west corner of the Koombana North Precinct. This reserve will be bounded by the existing Regional Open Space (ROS) reservations to the west (tennis courts) and north (existing Ski Beach foreshore). The reserve will therefore form an extension of these existing reservations and will serve to provide a transition between these and the proposed future built form of Development Site 1. Landscape enhancement works are also likely to occur in the Ski Beach foreshore reserve and the proposed Reserve for Recreation will consequently form part of a larger landscape precinct. The landscape character vision for this area is outlined in further detail in **Section 3.4.4.1** below.

In addition to the provision of POS 1 and the additional uncredited Reserves for Recreation, four Pedestrian Access Ways (PAWs) will be provided to facilitate pedestrian movement through the Koombana North site. These areas, totalling 648m^2, will be fully publically accessible and are an integral public realm element of the overall development vision and design for the site. The development vision for these PAWs is outlined in **Section 3.4.4.6** below.

Whilst not strictly a future POS reservation, the extension of Holman St and the Koombana Drive landscape entry and temporary parking areas represent key elements of the future public realm. These areas will be landscaped to a very high standard, will be fully publically accessible and will serve to celebrate the existing and foster a new sense of character for the area. When these areas are considered, the extent of the public realm in the Koombana North precinct area exceeds the total amount of developable area proposed for Development Sites 1 to 5.

3.4.3 LANDSCAPING VISION FOR PUBLIC SPACES

The landscape vision for the Koombana North Precinct is to create an inspiring and innovative public domain that enables evolution of use while successfully linking the development to its surrounding current and future key activity areas. **Figure 22** provides a graphical representation of public realm landscaping vision for Koombana North. LandCorp will be responsible for the implementation of the landscape vision in the development of the Precinct.

This public domain will introduce a progressional sequence of landscape elements that provide a distinct visual and physical connection between the broader key activity areas and the development. Recognition of the strong industrial, maritime, cultural and environmental heritage of the area will provide opportunity for creation of a vibrant and iconic place.

The key overall public realm design objectives are as follows:

- To introduce a progressional landscape that provides an integrated and evolving sequence of elements and experiences to reinforce Bunbury's rich industrial, maritime, cultural and environmental heritage;
- To provide a movement regime that establishes a sequence of linked destinations that creates strong east-west and north-south pedestrian links through the site;
- To use indigenous and appropriate coastal species that are drought tolerant and climatically suited to the harsh and variable coastal conditions;
- To provide thermal comfort for pedestrians with the protection from the harsh cold winds in winter and capturing the cool sea breeze in summer;
- To respond to the harsh microclimatic conditions of Bunbury by introducing and designing innovative solutions for human comfort within the public open space environments. For example, creating protected areas through the use of built form, screens, earthworks and planting;
- To introduce an integrated public art programme that responds to the progressive landscape and the innovative opportunities that draws on the character and language of the existing environment;
- To maximise the visual benefits of many water related outlooks within and outside the site, through view corridors and open vistas;
- To celebrate the harbour and surrounding coastal and inlet scenery;

- To create a world class quality landscape environment that responds to the proposed built form and uses;
- To create urban spaces will that relate to the human scale and maximise pedestrian comfort; and
- To incorporate best practise Water Sensitive Urban Design (WSUD) principles.

3.4.4 DESCRIPTION OF FORM AND FUNCTION

A number of Landscape Character Precincts have been identified for the proposed Koombana North development site, as outlined in **Figure 23**. Each precinct has its own function and form, consequently, different landscape treatments will be used for each. The details of each proposed Landscape Character Precinct are outlined below.

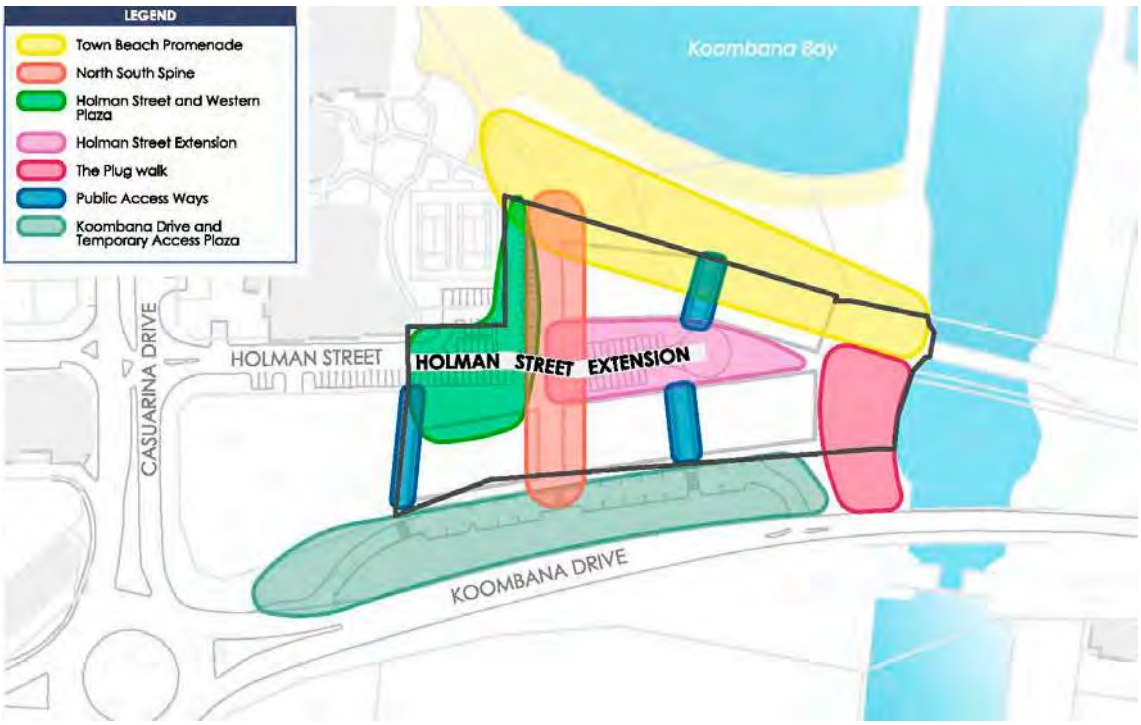


Figure 23 – Landscape Character Precincts

Water sensitive urban design / pollutant trap

Formalise beach access

North facing public alresco area

Beach interface with promenade

Informal open space adjacent to residential zone

North/South spine - formalised tree planting and feature paving

Recyed steel railway sculpture at eastern gateway

Paved shared space

Fish cleaning stations and picnic opportunities

Urban rain gardens and integrated drainage solutions

Towr plaza and meeting place

Pine tree avenue and gateway sculptures

Activate public access ways to connect to central plaza

PUBLIC REALM LANDSCAPE CONCEPT PLAN

Koombana North

A Landcorp Project

0m 5 10 15m

s: 1:1000@A3
d: 4 July 2012
p: 06/099/031A

figure 22

3.4.4.1 SKI BEACH

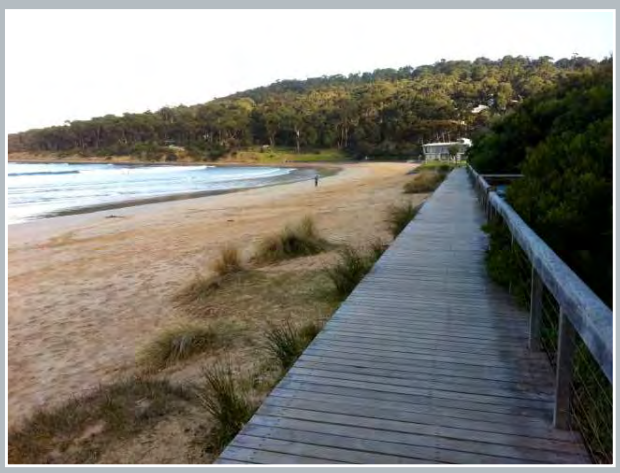
To enhance the beachfront north of the proposed development, the adjacent proposed mixed use Development Sites have been designed to give great activation to this highly important area of the public domain. The potential for non-residential development to occur at the ground floor provides complementary activity opportunities for beach goers, allowing them to frequent a possible variety of cafes, restaurants and retail outlets in a north-facing environment that is sheltered from the prevailing south-westerly wind. The upper storeys are also likely to be activated with residential uses, ensuring good passive surveillance, and making the best use of the view potential from this location across Koombana Bay.

Pedestrian linkages to the east over the Plug are to be enhanced, and a distinct transition between the formal urban landscape and the informal coastal landscape will occur at the foreshore precinct.

The landscape design intent focuses on reinforcing the role of the foreshore pedestrian promenade. The key landscape design elements of the parkland are:

- A beach promenade paved walkway, which incorporates the converted railway bridge. The landscape along this walkway will include varied paving patterns, sections of boardwalk and feature walls. Sections of this pavement will be opened up to the beach to provide access to the boardwalks;
- The interface between the foreshore park and the existing dunal system to be contoured and rehabilitated;
- Seating and outdoor shower facilities to be provided;
- The landscape will use indigenous and appropriate species that are resistant to the coastal conditions; and
- The landscape will integrate with the adjacent built form development and the proposed outcomes from the Leschenault Masterplan.

SKI BEACH



3.4.4.2 THE NORTH-SOUTH SPINE

The North-South Spine is the primary pedestrian connection from the possible future Perth to Bunbury train station to the new Ski Beach. It provides a direct visual and physical connection and plays an integral role as a path finder throughout the site.

The North-South Spine creates the axis for a strong visual connection from the south of Koombana Drive and the Leschenault Inlet, to effectively link both water bodies. Additional on-street parking to be provided on Holman Street will further emphasise the importance of the Ski Beach and ensure additional convenience for beach-goers.

The North South Spine will be reinforced by the following landscape mechanisms:

- Avenue of Norfolk Pines (these may be transplanted from onsite following viability review);
- Paving design and furniture selections to be robust and climatically appropriate;
- Pedestrian lighting for way-finding and security;
- Priority pedestrian crossing given at the extension Holman Road;
- A possible iconic artwork as an orientation marker at the beach end of the pedestrian spine; and
- A terminus space at the beach end of the spine, providing a meeting place and viewing promontory.

3.4.4.3 HOLMAN STREET AND WESTERN PLAZA

Some of the existing public car parking will be reconfigured to allow for interim bus access and turn-around, taxi-waiting and public parking for the beach users, visitors to the retail and commercial and non-residential facilities and patrons of the possible future railway. The orientation of the northern arm of the car park allows for safe beach access and limits the numbers of vehicles needing to cross the North-South pedestrian spine.

The Western Plaza provides a civic space that is sheltered from winds. The intent is for the space to provide a waiting and meeting space and, in the future, train users. Its northern orientation and central location make it ideal for this purpose.

The key landscape considerations associated with this plaza space are:

- Provision of shelter from sun and rain;
- Provision of seating;
- High levels of lighting to ensure safety;
- Good surveillance from surrounding built form development overlooking the space;
- Possible iconic artwork as an orientation marker; and
- Incorporation of rain gardens and WSUD principles.

3.4.4.4 HOLMAN STREET EXTENSION

This shared space will be framed by new built form. It will be a landscaped plaza space providing access and parking for the adjacent Development Sites. It will provide pedestrian linkages to the Pedestrian Access Ways (PAWs) to the north and south and to the pedestrian bridge at the eastern edge of the site.

The key landscape considerations associated with the Holman Street extension plaza are:

- The space is to read as a shared low speed vehicle/pedestrian zone;
- It will be predominantly a hard space, with paving detail responding to buildings and pedestrian access, rather than vehicle circulation;
- Provision of trees for shade and to provide intimacy of scale;
- Provision of covered areas for shelter from the rain at building interface;
- Landscape treatments to reinforce PAW access to the north and south;
- Landscape treatments to frame views out of the space to the surrounding public realm, including Koombana Bay and the Leschenault Inlet.

3.4.4.5 THE PLUG WALK

The Plug Walk area is both a refuge space and a linkage space. It is an area to be retained as a soft, landscaped space that is sheltered from the winds, providing an informal picnic/gathering space and access to the Plug for recreational fishing. It provides an important link to the area south of Koombana Drive, via the existing pedestrian path under the traffic bridge.

The key landscape considerations associated with the Holman Street extension plaza are:

- Improved pedestrian connection to the eastern pedestrian bridge;
- Provision of disabled access, via ramps;
- Provision of improved, safe access for recreation; and
- The space has existing vegetation that provides stabilisation to the embankment and shelter from prevailing winds. Retention of this vegetation is anticipated, provided passive surveillance objectives are not compromised.
- The landscape will integrate with the adjacent built form development and the proposed outcomes from the Leschenault Masterplan.

3.4.4.6 PEDESTRIAN ACCESS WAYS

The PAWs form an important function within the development as both pedestrian link and view corridors. They ensure that the development has a high level of permeability that enhances its focus on pedestrian movement, while creating multiple view corridors both into and out of the development.

The key landscape considerations associated with the PAWs are:

- Improved pedestrian connection though out the site;
- Provision of multiple access points to key activation areas;
- Opportunities for public art/wayfinding structures to draw people through the Koombana North Precinct;
- Ensuring that Crime Prevention Through Environmental Design (CPTED) outcomes are achieved (e.g. via lighting, surveillance) in the construction and development of the PAWs; and
- Introduction of spatial variety ensuring a variety of landscape experiences.

3.4.4.7 KOOMBANA DRIVE AND TEMPORARY ACCESS PLAZA

The upgraded frontage of Koombana Drive has the potential to dramatically enhance the entry experience to the Bunbury CBD. High quality built form combined with considered landscape and public art will ensure this area achieves its potential to become a significant landmark entry for the City.

Development fronting Koombana Drive will require activation and, with the proposed train station not yet delivered, temporary parking is proposed to activate this interface. Design of this area will be cognisant of the constraints concerning its future use, but will deliver an attractive and valued interface that enhances this entry into the CBD.

The key landscape considerations associated with the Koombana Drive and the Temporary Access Plaza are:

- The space is to read as a considered and well-designed forecourt to the development;
- Treatment adjacent to the built form will be predominantly a hard space, with paving detail responding to buildings and pedestrian access, rather than vehicle circulation. Treatments will also be cognisant of the potential future train station;
- A gradual transition from urban form to softer landscape treatment adjacent to Koombana Drive, reinforcing the existing landscape treatments in place;
- Landscape treatments to frame views out of the space;
- Provision of planting areas to increase visual amenity and minimise any possible impacts of carparking; and
- Opportunity for Iconic Public Art to reinforce roundabout treatment and enhance eastern gateway concept.

3.4.5 MANAGEMENT OF PROPOSED PUBLIC SPACES

Management of all of the proposed public spaces will ultimately fall to the local authority and as such the City of Bunbury will be engaged throughout the design and implementation process. The use of the public realm for alfresco dining opportunities will be the subject of lease arrangements with the City of Bunbury.

3.5 BUILT FORM

A Podium-style built from typology is proposed for the Koombana North Precinct, in accordance with that identified in the Bunbury Waterfront Taskforce Report. This typology is characterised by built form incorporating activated frontages (shops, cafes, offices, visible entrances, glazing etc) at the ground floor, with low-rise development above setback from the edge of the activated frontages below and is outlined in **Figure 24**. For the Koombana North Precinct, the podium height will be one storey for all Development Sites, with additional development ranging from three to five levels above. This results in overall building heights of four to six stories as detailed in **Section 3.2.1.2**.

The setting back of upper level development serves to reduce the dominance of the built form on the pedestrian environment at the ground level. The essence of this built from typology is to provide for low-rise upper level development that does not adversely impact on the pedestrian-scale of the public realm. In this way, upper levels can capitalise on the attractive views of Koombana Bay, the Leschenault Inlet and the Indian Ocean whilst not impacting on the key public assets of the Ski Beach and Plug foreshore, the extension of Holman St and the Koombana Drive forecourt area.

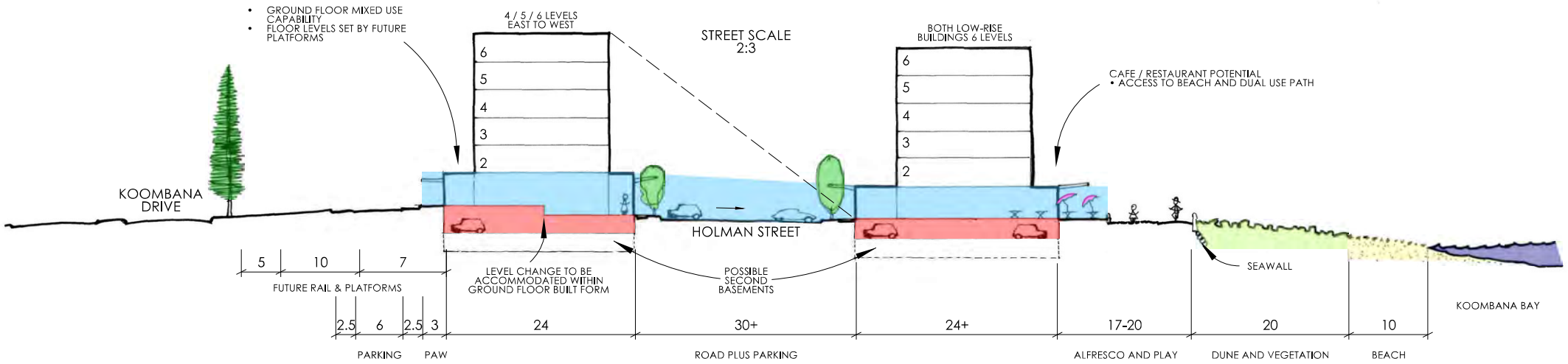
3.5.1 GROUND FLOOR BUILT FORM

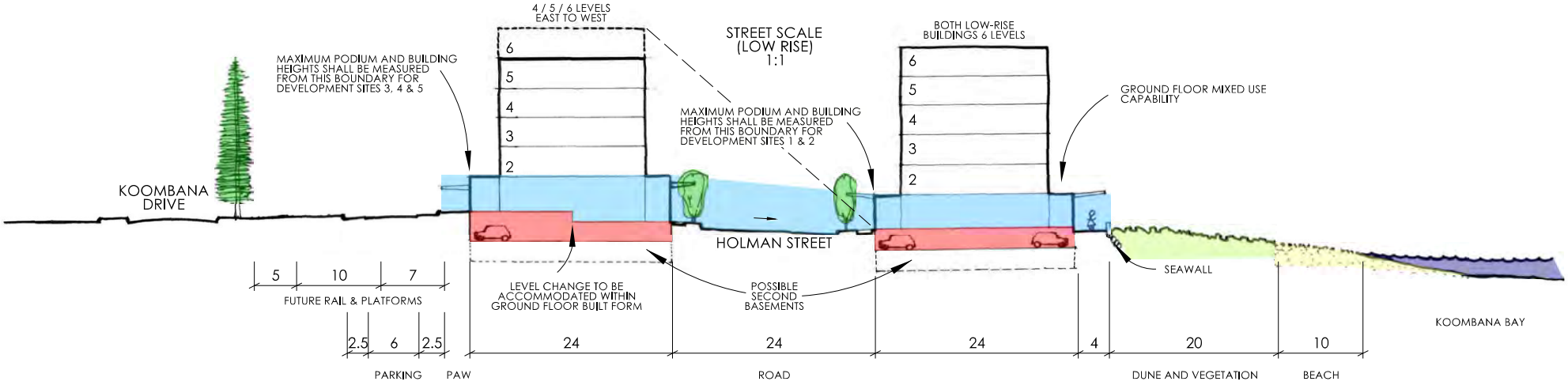
3.5.1.1 SETBACKS & PUBLIC REALM INTERFACE

A nil ground floor setback is desirable for all Development Sites. However, minor variations are permissible to provide a forecourt, building articulation, alfresco dining or other features that adds amenity and interest to the streetscape. As noted in **Section 3.3.2** above, only non-residential land uses will permissible on the ground floor, in accordance with the land use requirements of TPS 7 and at the discretion of the City of Bunbury.

The *Part 1 – Structure Plan Statutory Provisions* for Koombana North encourage active frontages to the public realm be provided at the ground floor for all proposed Development Sites. This may include the development of certain types of high activity non-residential land uses (such as shops and cafes), the strategic placement and design of building entrances and the extensive use of glazing. The Structure Plan also prohibits the development of extensive blank walls to the public realm at the ground floor level. The incorporation of these measures will serve to maximise opportunities for passive surveillance and create a more visually attractive built environment for the enjoyment of visitors and residents alike.

SECTION 'AA' - WESTERN END





SECTION 'BB' - EASTERN END

DEVELOPMENT CROSS-SECTION

Koombana North

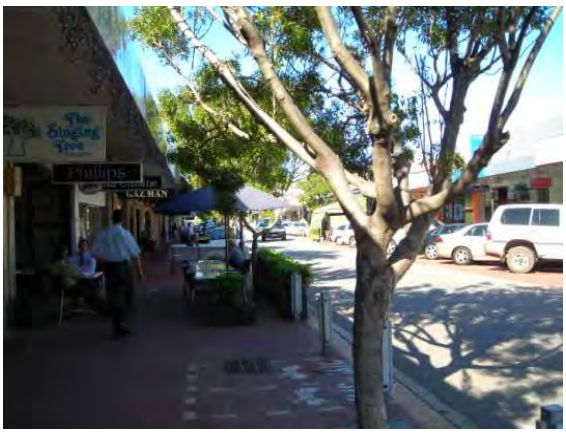
A Landcorp Project

s: NTS@A3
d: 4 July 2012
p: 06/099/010E

figure 24

3.5.1.2 COLONNADE BUILT FORM & AWNINGS

The Koombana North Structure Plan mandates that suitable cover be provided to the public realm in the immediate ground level surrounds of all of the proposed Development Sites. The continuous cover of these areas may be achieved via the use of awnings or colonnade-style built form (i.e. awning with pillars). The provision of these facilities will provide shelter for pedestrians from inclement weather in winter and will provide shade from the hot summer sun.



3.5.1.3 PODIUM HEIGHT

The *Part 1 – Structure Plan Statutory Provisions* specifies that the maximum height of built to boundary walls shall be 5m for development within the Koombana North Precinct. This effectively establishes the maximum height of the ground floor podium and has been determined on the basis of an approximate podium building height of 4.5m, with an additional 0.5m provided for railing where a terrace is provided at the first floor.

The *Part 1 – Structure Plan Statutory Provisions* provide for a higher maximum podium height (i.e. 7-7.5m) on the northern boundaries of Development Sites 3, 4 and 5 adjacent to Holman St. This is due to the level differences between the future railway platform and the extension of Holman St and the intention for the podium to maintain a consistent horizontal height plane across each Development Site. The consistent horizontal plane approach also applies to Development Sites 1 and 2, although it is acknowledged that the anticipated level change between the northern and southern boundaries is minimal.

3.5.2 UPPER LEVEL BUILT FORM

3.5.2.1 SETBACKS

A minimum 3m setback is required for upper levels from the edge of the ground floor podium. This is a minimum setback and the ultimate upper level setbacks realised may be greater than this, depending on the detailed design prepared by an individual developer for each Development Site. In addition, minor protrusions beyond this upper level setback are permitted for outdoor living areas and balconies. The *Part 1 – Statutory Provisions* specify that balcony protrusions are permissible, where these protrusions meet the following criteria:

- Assist in the articulation of the building façade, in a complimentary contemporary architectural form;
- Are commensurate in scale/composition of the building;
- Are designed as an integral part of the building elevation and do not appear as an "add on" structure; and
- Contribute to the sense of safety and liveliness of the street by designing for passive surveillance and visual engagement between the public and private realms.

It is evident from the criteria above that any proposed balcony protrusions into the minimum 3m setback must demonstrate enhancement of the built form experience with the Koombana North Precinct. Any proposed balcony protrusions into the minimum 3m setback are to presented at the Development Application stage for consideration and determination by the City of Bunbury.

WIND MITIGATION

As noted in **Section 3.5** above, the upper level setback serves to reduce the perception of dominance of the built form on the public realm. This setback, when considered with the provision of awnings, can also serve to mitigate against the effects of the prevailing winds on the public realm at the ground level.

When prevailing wind hits the face of a building, it typically splits into two with half travelling upward and half travelling towards the ground. The portion that moves downwards can accelerate rapidly until meeting a horizontal plane and creating localise turbulence. In the circumstance where the upper and ground floor levels have a consistent frontage (i.e. the same setback), this process occurs at the street level and can significantly affect the amenity of the public realm. In the circumstance of Koombana North, where podium-style development is to prevail, this turbulence will occur at the upper edge of the podium and its impact on the public realm will therefore be significantly reduced. The 3m upper level setback proposed, couple with the protection provided provide by mandatory awnings, will adequately mitigate against the potential negative effects on the pedestrian environment at street level.

3.5.2.2 BULK, MASSING & SCALE

The existing entry to the Bunbury CBD along Koombana Drive is characterised by a reasonably abrupt change in scale, as the generally low scale parkland landscape east of the Plug is contrast against the built form bulk and height of the Mantra Hotel and Silo Apartments sites and the dominant Bunbury Tower. The location of the Koombana North Precinct between these two areas of differing form provides a unique opportunity to deliver a more subtle transition between the two zones.

As noted in **Section 3.2.1.2**, the proposed maximum building heights for Development Sites 3 to 5 increase from four to six storeys moving west towards the CBD from the Plug. This provides the opportunity for a more gradual built form scale transition on entry to the CBD and is considered to represent an improvement to the current sudden transition from the Plug to the Mantra and Silos. It is noted, however, that this built form transition is desirable but is not guaranteed under the framework of the Structure Plan.

The essence of the podium-style typology is that it minimises the perceived impact of the building bulk and scale on the public realm whilst still enabling development to occur at the upper levels. This typology is ideal for the Koombana North Precinct, as maintains the potential for upper level development that capitalises on the surrounding natural amenity of the site and the views over water to the north, south and east. The prominence of the location as a gateway to the Bunbury CBD lends itself to upper level building bulk to enable creation of a landmark built form entry. Finally, the absence of any other existing residential development in the immediate surrounds provides the opportunity for upper level to height to be provided, without adversely overshadowing or impacting upon the views of existing residents. The Koombana North site is therefore considered ideal for sensitive built form development, with any perceived building height impacts on the public realm minimised through the adoption of the podium-style built form typology.

The relationship between the existing and proposed built form is graphically illustrated in Plates 1 to 4 below.

Plate 1 – Perspective from south-west

Plate 2 – Perspective from east

Plate 3 – Perspective from north

Plate 4 – Perspective from south-east

3.5.3 OTHER BUILT FORM CONSIDERATIONS

3.5.3.1 ICONIC BUILT FORM & LANDMARK ELEMENTS

There are a number of key locations situated at the termination of key view lines in the Koombana North Precinct. These sites consequently benefit from high visual exposure and are the logical locations for the incorporation of additional built form measures to reflect their visual importance. Landmark locations can contribute to the creation of the local character and can perform a way finding function for both locals and visitors alike.

Landmark locations are identified on the eastern edge of Development Sites 2 and 3 and are designed to emphasise the importance of this built form facade upon entry to the Bunbury CBD. An additional location is identified on the north-west corner of Development Site 1, to capitalise on the visual prominence of this corner from the existing Marlston Waterfront area.

The *Part 1 – Structure Plan Statutory Provisions* provide for one or more of a number of architectural features to be used for the designated landmark locations and include glazing, building materials, building height (within the building height restrictions), and major openings to the satisfaction of the City of Bunbury. Any proposed landmark built form elements should be considered and presented at the Development Application stage.

3.5.4 SHADOW ANALYSIS

A shadow analysis of the proposed built form has been undertaken for the Koombana North Precinct, with the shadow impacts for midday 21 June shown in **Figure 25**. It can be seen that there is limited overshadowing, with a small portion of the lower levels of proposed Development Site 3 overshadowed by the upper levels of Development Site 2.

Figure 25 – Shadow Analysis

It is noted that Clause 7.4.2 of the R-Codes, regarding overshadowing of adjacent properties, does not apply for development with a density coding above R60. The anticipated density of development of the Koombana North Precinct exceeds R60, so the requirements of this clause are not considered applicable. Notwithstanding this, the overshadowing impacts are limited, as outlined above

3.5.5 NOISE ATTENUATION REQUIREMENTS

Noise attenuation measures will be required for future buildings affected by noise from Koombana Drive and the possible future rail service. Detailed noise modelling has been undertaken by LGA to assess the extent of these noise impacts and determine the necessary mitigation measure required in order to achieve acceptable indoor noise levels in noise-sensitive areas (i.e. bedrooms, living rooms). This modelling has identified the requirement for mitigation measures to be incorporated into the future built form for Development Sites 3, 4 and 5. Specifically, measures are required for the southern facades fronting Koombana Drive and the southern portions of the PAWs between Development Sites 3, 4 and 5. Further information regarding the modelling undertaken and the necessary mitigation measures is provided in **Appendix B**.

3.6 WATER MANAGEMENT

A draft Local Water Management Strategy has been prepared by Strategen to accompany the Structure Plan and is included as **Appendix J**. A summary of the key aspects of the proposed drainage regime are outlined below.

3.6.1 LOCAL WATER MANAGEMENT STRATEGY SUMMARY

3.6.1.1 KEY GUIDING PRINCIPLES

Events up to the 1 in 1-year Average Return Interval (ARI) event account for 99.5% of all stormwater runoff and, as such, the key focus for the drainage system is will be the treatment of events up to the 1 in 1 year ARI event, as identified by the *Decision Process for Stormwater Management in Western Australia*. The development will maintain pre-development flows off the site in events up to the 1 in 1 year ARI event.

The key guiding principles of the LWMS are to:

- facilitate implementation of sustainable best practice in urban water management;
- encourage environmentally responsible development;
- provide integration with planning processes and clarity for agencies involved with implementation;
- facilitate adaptive management responses to the monitored outcomes of development;
- minimise public risk; and
- reduce potable water use.

3.6.1.2 KEY DRAINAGE CONTROLS

The site will be developed in a water sensitive manner, with the following drainage controls:

- use of a vegetated retention basin and underground infiltration cells to treat stormwater and maintain pre-development flows off the site in the 1 in 1 year ARI event;
- maintaining road serviceability by ensuring that all drainage is piped off the site in events up to and including the 1 in 10 year ARI event; and
- use of additional Best Management Practices such as underground infiltration cells and soakwells to treat and infiltrate stormwater on-site where practicable.
- Each of these drainage control measures are discussed in further detail below.

VEGETATED RETENTION BASIN

Treatment and infiltration for the 1 in 1 year ARI event will be provided through the use of a stormwater treatment basin and underground infiltration cells within the central section of the site. Flow will enter the basin through a bubble up pit in the base. The basin and stormwater cells have been designed to contain the infiltrate the 1 in 1 year ARI event. Lots will be required to manage their own flows in the 1 in 1 year event, with overflow into the basin and infiltration cells allowed in the larger events. The system will provide adequate storage to meet the City of Bunbury requirement of 1 m^3 of stormwater storage per 65 m^2 of impervious area. The basin will be vegetated with appropriate native species to allow for nutrient stripping and will be designed to integrate with the urbanised environment.

PIPED DRAINAGE

A new piped drainage connection is proposed to link the vegetated drainage basin and the City's existing drainage infrastructure located to the south of Koombana Drive (1650mm diameter Luciana Park Drain). The development has been designed to maintain serviceability of Casuarina Drive and Koombana Drive in the 1 in 10 year ARI event. Flows in the 1 in 10 year ARI event will be directed towards the vegetated basin identified above. The basin will overtop in such an event, with the overflow entering the new drainage outlet connection and flowing under Koombana Drive into the Luciana Park Drain. This system will be designed to prevent flooding of roads within and adjacent to the development.

In the 1 in 100-year ARI event, stormwater will overtop the basin and the outlet pipe. Additional flows will be transferred via overland flow.

The Luciana Park Drain is considered to have adequate capacity to accommodate these proposed additional flows.

BEST MANAGEMENT PRACTICES

A summary of the design elements and requirements for Best Management Practise for the Koombana North Precinct are provided in **Table 26** below.

TABLE 26: DESIGN ELEMENTS AND REQUIREMENTS FOR BEST MANAGEMENT PRACTICES

Category	Principles	Objectives	Development Design Elements and Requirements
Water use	Consider all potential water sources in water supply planning. Integrate water and land use planning. Sustainable and equitable use of all water sources having consideration for the needs of all users, including community, industry and the environment.	Minimise the use of potable water where drinking water quality is not essential, particularly for outside buildings.	Apartments offer many opportunities for water saving measures as these are usually furbished by the developer. The strata agency control of irrigation and water supplies also provides opportunities to consider water conservation and efficiency measures at a building scale through design guidelines. Measures that will be considered to manage water use at Koombana North at the UWMP stage will include: • mandating provision of low water use appliances such as showers and dishwashers • requiring use of water efficient planting and irrigation • building-scale alternative water supplies, such as irrigation and toilet flushing systems that include a rainwater or greywater portion.
Groundwater levels and surface water flows	Retain natural drainage systems and protect ecosystem health. Protect development from flooding and water-logging. Implement economically viable stormwater systems. Post development annual discharge volume and peak flow rates to remain at pre-development levels or defined environmental water requirements	For ecological protection, 1 in 1-year ARI volume and peak flow rates maintained at or below predevelopment conditions. Where there are identified impacts on significant ecosystems, maintain or restore desirable environmental flows and/or hydrological cycles.	Pre-development flows will be maintained off the site in events up to the 1 in 1-year ARI event. Finished levels will be designed to prevent impacts due to groundwater level rise due to storm surge and sea level rise. Basements below the groundwater level will be designed to be impervious to prevent groundwater entry. The development will comply with the CoB requirement for 1 m3 of stormwater storage per 65 m2 of impervious area.
Groundwater and surface water quality	Maintain or improve groundwater and surface water quality. Where waterways/open drains intersect the water table, minimise the discharge of pollutants from groundwater. Where development is associated with an ecosystem dependent upon a particular hydrologic regime, minimise discharge or pollutants to shallow groundwater and receiving waterways and maintain water quality in the specified environment.	Implement current known best management practice as detailed in the Stormwater Management Manual for Western Australia (DoW 2004 – 2007) and Decision Process for Stormwater Management in Western Australia (DoE & SRT 2005), with an emphasis on a treatment train approach including nutrient input source control, use of bioretention systems, and maintaining 1 in 1-year ARI post development discharge volumes and peak flow rates at pre-development levels.	Best Management Practices (BMPs) have been implemented through the development to minimise pollution, including a stormwater treatment basin and potentially oversize soakwells, underground storage cells and the use of permeable pavement for non-vehicle traffic areas to reduce flows. The use of vegetated treatment structures on the site is constrained by the high density nature of the development, with little area available for swales or other vegetated treatment systems.
Disease vector and nuisance insect management	Reduce the health risk from mosquitoes, retention and detention treatments should be designed to ensure that between the months of November and May, detained immobile stormwater is fully infiltrated within a time period not exceeding 96 hours.	Permanent water bodies are discouraged, but where accepted by DoW, must be designed to maximise predation of mosquito larvae by native fauna to the satisfaction of the local government on advice of Departments of Water and Health.	Detained stormwater will be fully infiltrated within 96 hours Permanent water bodies are not proposed.

3.6.1.3 URBAN WATER MANAGEMENT PLAN

An Urban Water Management Plan (UWMP) will be required for the Koombana North precinct, as a condition of subdivision approval. The UWMP will include:

- reporting on additional groundwater level data from data loggers;
- analysis of the additional groundwater level data to refine the estimate of peak groundwater levels and design groundwater level;
- detailed landscaping design for the proposed for the POS and details on how this will be managed, including irrigation volumes and methods;
- additional information regarding design guidelines that encourage WaterWise design, such as provision of low water use appliances, low water use landscaping and consideration of at a lot scale;
- details of any information to be provided to householders regarding water conservation;
- detailed drainage design, including confirmation of pipe sizing and locations, basin design and landscaping;
- confirmation of Best Management Practices to be utilised, sizing and locations;
- design guidelines and requirements for lot scale drainage systems;
- confirmation of finished levels for roads and ground floors of buildings, taking into consideration storm surge levels; and
- design requirements for basements constructed below the design groundwater level.

Further detail regarding the proposed water management regime for the Koombana North Precinct can be viewed in **Appendix J**.

3.7 CIVIL ENGINEERING & INFRASTRUCTURE REQUIREMENTS

Koombana North project engineers, TABEC, have undertaken an assessment of the existing servicing infrastructure in the vicinity of the subject site and have identified where infrastructure upgrades to will be required to service the development. The outcomes of TABEC's assessment and the recommended upgrades are outlined in detail below.

3.7.1 DEVELOPMENT SITE LEVELS & EARTHWORKS

3.7.1.1 DEVELOPMENT SITE LEVELS

The Koombana North Structure Plan requires that the ultimate Finished Floor Levels (FFL) for all Development Sites appropriately coordinate with the adjacent public realm edge. This ensures that an appropriate interface can be delivered between the private and public realms and that access and opportunities for passive surveillance can be achieved. The preliminary indicative site levels are outlined in **Figure 26.**

The minimum FFL for the southern boundary of Development Sites 3, 4 and 5 (as measured at the eas-west mid-point of the sites) are as follows:

- Site 3 – 6.5m AHD;
- Site 4 – 5.8m AHD; and
- Site 5 – 5.2m AHD.

These heights are proposed to ensure that the FFL for these sites coordinates with the ultimate height of the possible future railway platform, as advised by GHD and outlined in **Section 2.4.4.3**. This requirement will provide for the seamless transition from the ground floor of the buildings on this edge with the future platform when constructed.

The built form on Development Sites 3, 4 and 5 will also need to ensure that an appropriate FFL level is provided at the northern boundary to ensure that a suitable level interface with the extension of Holman Street can be achieved. As outlined in **Figure 26**, there is a reasonable level difference between the northern and southern boundaries of Development Sites 3 (2.3m), 4 (2m) and 5 (1.8m). This level change is to be accommodated in the ground floor of the built form, as outlined in **Figure 24**.

Level Development Sites, that match the level of the surrounding public realm, will be created during the earthworking and civil construction phase. The edges of Development Sites 3, 4 and 5 will match in with the specified levels on the northern (Holman St) and southern (railway platform) boundaries. The details of the proposed earthworks will be presented to the City of Bunbury for its assessment in the earthwork and civil design and approval phases following subdivision approval.

3.7.1.2 SITEWORKS

GENERAL

Siteworks for the Koombana North site will include the clearing of existing vegetation, stripping of topsoil and the removal of all organic material from site. The topsoil may potentially be reused in POS areas for landscaping purposes only. Following clearing, the site will be proof compacted, with a minimum 10 passes with smooth drum roller. Any weak areas that deform excessively will be over excavated, and material replaced with appropriate clean structural fill or limestone. The earthworks activities will involve some cut to filling and the sand material excavated from site may be used as structural fill.

It is also noted that all uncontrolled fill shall be excavated from within the areas where filling is proposed or where the proposed development site are located. Due to the basement levels proposed, the material is required to be excavated in any case.

Minimum development levels will be achieved with reference to the Coastal Stability and Setback Review report (refer **Appendix A**). This report provides advice on the total design water level which includes the 100 year annual return interval water level and additional allowances for sea level rise, based on the SPP 2.6 recommendation of 0.9m for the 100 year planning horizon. The extreme water level and the full allowance for sea level rise is described in **Appendix A** as 2.5m AHD. Based on preliminary earthworks models to date, the minimum finished floor level (excluding potential basement level car parking) would be approximately 3.8m AHD. However, it is noted that basement construction below 2.5m AHD for car parking purposes is very likely.

BUILDING FOUNDATIONS

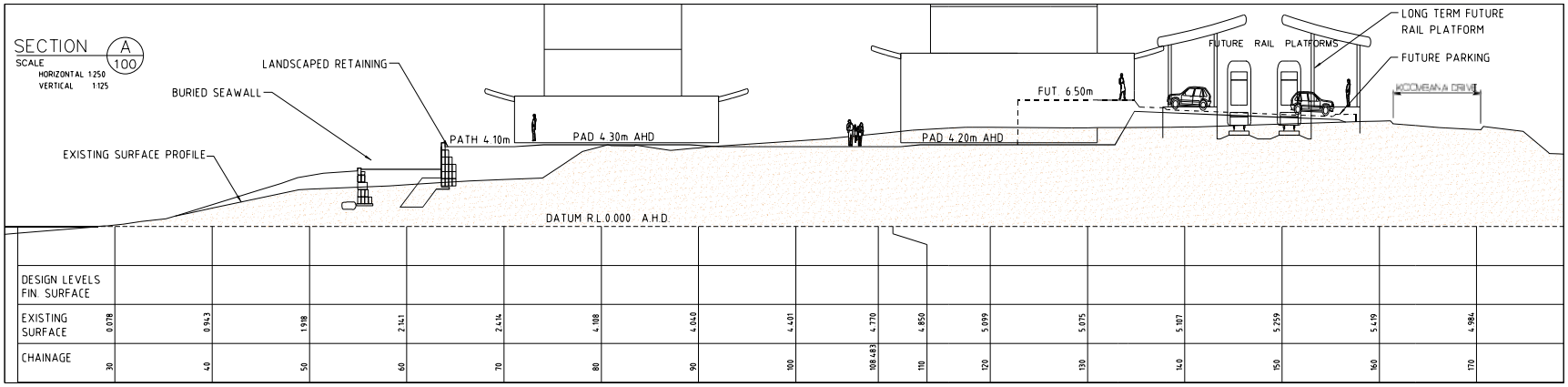
Piled building foundations are recommended, due to the number of storeys proposed, with the piles to be driven into the high strength basalt rock below the surface. The building piles are nominally 600mm diameter with the number and spacing to be confirmed based on building design.

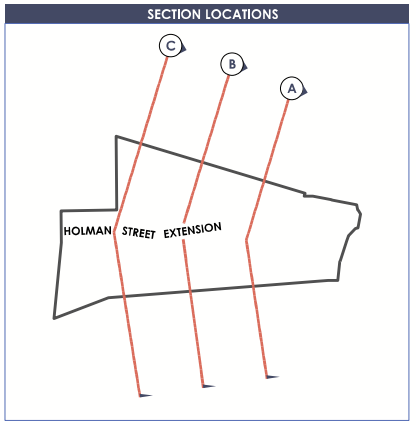
The pile design parameters and construction methodologies should be considered further by the building's structural engineers. The risk design factors relating to the site itself and knowledge of ground conditions should be considered in relation to design and installation methods.

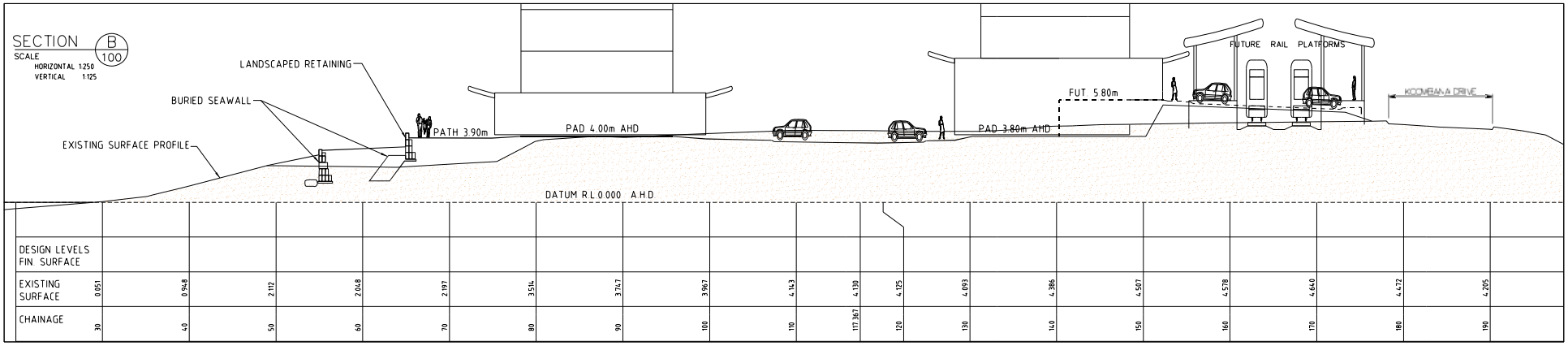
It is also proposed that each building footprint would contain one or two storey basement levels for car parking purposes. Due to the nature of sand materials on site and tight construction area, it is expected that temporary construction support such as sheet piling for ground excavation will be required.

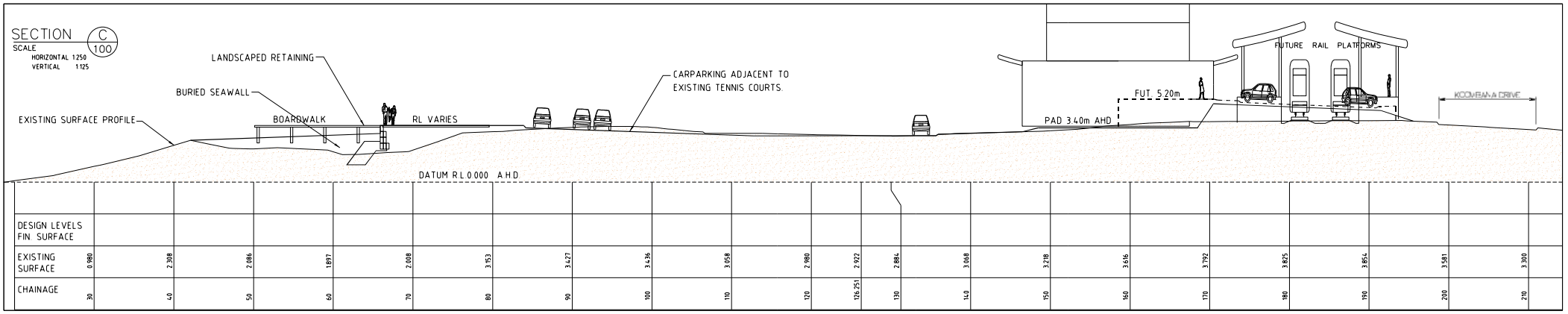
The Geotechnical Report (refer **Appendix E**) estimates foundation levels to vary between approximately 0.5m to 1.0m AHD for the construction of basement levels across the five building sites. This is expected to involve dewatering and it is very likely that ground water levels may be higher than these levels. The base of these excavations should be adequately proof compacted prior to the construction of the building proceeding.

Buoyancy uplift pressures will also need to be considered in the building design and there will be a requirement to tie the structure to the basement slab to prevent uplift pressures. It is also recommended that basements are constructed to be impermeable to groundwater.









Source: TABEC

PRELIMINARY INDICATIVE SITE LEVELS

Koombana North

A Landcorp Project

0m 2 4m
s: 1:125@A1 (vertical)
0m 5 10m
s: 1:250@A1 (horizontal)
d: 06 Nov 2012
p: 06/099/043A

figure 26

3.7.2 EXISTING INFRASTRUCTURE

3.7.2.1 WASTE WATER

The Water Corporation of WA is responsible for the operation of existing wastewater services in the City of Bunbury.

The site falls within the existing catchment area of the Casuarina Drive pump station which is located on the north of Holman Street at the intersection of Casuarina Drive. Existing development surrounding this area is gravity fed to this location and there is a pipe invert in Holman Street at 0.61m AHD. At this invert, there is sufficient cover for a new waste water main extension along Holman Street and lot connections to be provided to all development within the Koombana North precinct.

Based on the proposed zoning and development intent for Koombana North, the Water Corporation has advised that there does not appear to be any significant constraints relating to waste water servicing. The pump station was originally sized to cater for this area of land and there is sufficient capacity to accommodate the proposed Koombana North development.

The Casuarina Drive waste water pump station is operating at approximately 5 hours/day and the only constraint is emergency overflow storage capacity. However, on site land area is available to the Water Corporation and it is the Corporation's responsibility to develop operational overflow storage when required.

3.7.2.2 WATER SUPPLY

AQWEST is responsible for providing scheme water in the City of Bunbury and manages the existing mains surrounding the Koombana North site. There is presently a 150mm main which runs along the southern road reserve boundary of Koombana Drive. This main crosses the Leschenault Inlet and connects to services on the eastern side of the Leschenault Inlet. It also extends around to Blair Street, connecting to the 200mm water mains which service the Bunbury CBD.

There is a 200mm water main in the western road reserve of Casuarina Drive and this services the existing development on both sides of Casuarina Drive, including the Marlston Hill area. There is a small 50mm PE water main located in Holman Street.

3.7.2.3 POWER SUPPLY

The proposed Koombana North development will be serviced with power from an existing 22kV high voltage (HV) cable located on the southern side of Koombana Drive. This would result in the requirement of two 150mm ducts to be bored under Koombana Drive to allow the HV cable to be extended in a HV ring arrangement.

A requested load of 2500kVA has been required from Western Power for the Koombana North precinct. Preliminary advice from Western Power at the date of Feasibility Report indicates there is capacity for the 2500kVA of load to serve this development. Should additional power be required, supply will be dependent on other development planned in the surrounding area.

3.7.2.4 GAS SUPPLY

There is existing medium pressure gas distribution infrastructure in close proximity to the Koombana North site. A 150mm PVC main is located along the northern Koombana Road reserve; however this deviates more centrally within the road reserve for the crossing over the Plug. There is also an existing 100mm PVC main in Holman Street along the southern road reserve boundary. WA Gas Networks have advised that there appears to be sufficient capacity in the current assets based on modelled requirements.

3.7.2.5 TELECOMMUNICATIONS

There are fibre-optic communication cables currently located in the Koombana Drive road reserve and also extending along Casuarina Drive. However, with the National Broadband Network (NBN) rollout, the subdivider is responsible for providing pit and pipe infrastructure for the fibre to be installed. It is noted that Bunbury is within the footprint of the NBN rollout and fibre is due to commence being installed in existing development areas in Bunbury within three years.

The communications design may require the inclusion of a Fibre Distribution Hub (FDH) within road reserves. FDHs are unpowered street side cabinets which are used to provide an optical connection point between the distribution and local network.

The NBN Co will only typically pull fibre through greenfield subdivisions with 100 lots or more, however, given that the Koombana North project is likely to include more than 100 units, it is expected that a developer agreement could be struck with the NBN Co to ensure this project receives NBN fibre. As part of the developer agreement conditions, the NBN Co will take over ownership of the assets upon completion and ensure that fibre is ready 3 months prior to the first occupancy for a new development.

3.7.2.6 STORMWATER DRAINAGE

As noted in **Section 3.6.1.2** above, there is an existing 1,650mm diameter drainage pipe (Luciana Park Drain) located to the south of Koombana Drive and which discharges into the Leschenault Inlet, via a gross pollutant trip.

3.7.3 INFRASTRUCTURE UPGRADES REQUIRED

3.7.3.1 WATER SUPPLY

AQWEST have advised that the Koombana North project is readily serviceable from the surrounding potable water reticulation infrastructure. There are no significant upgrades required and there appears to be sufficient capacity in the existing system. While the most appropriate service connection locations will be resolved during detailed design phases, it is likely that a new water reticulation main extension along Holman Street will be required to provide connections to the five building sites within Koombana North from the internal road extension. Alternatively, if required, the three southern building footprints could be serviced from bored connections under Koombana Drive to the existing 150mm main.

3.7.3.2 POWER SUPPLY

The installation of Western Power infrastructure to service this development in a single stage will include all HV power cabling, including the provision of a 35mm HV cable to each of the five proposed Development Sites. Two switchgears will also be required, which are likely to be located in POS or sites provided by road reserve boundary extensions.

The subdivision power requirements will include a 630kVA transformer on each lot and will be installed at the time of building construction. The developer of each site is to apply to Western Power for the installation of their transformers, with the exact location will be determined at the detailed built form design stage. It is also noted the end user can apply to Western Power to upgrade their transformer, up to a maximum of 1,000kVA, as required.

Street lighting will also be installed, in accordance with Western Power and the City of Bunbury's requirements, to adequately light the extension of the Holman Street. Power connections will also be provided to POS areas for landscaping purposes, including lighting, as necessary and other public facilities.

3.7.3.3 GAS SUPPLY

The current gas main can be extended within the Holman Street extension during construction subdivision works to provide connection locations to each of the five proposed Development Sites in this project.

3.7.3.4 SEAWALL

As noted in **Section 2.3.5.3** above, the construction of a seawall in the vicinity of the northern boundary of the site has been identified as a required measure to protect development within the subject site from extreme storm events.

The seawall will be located on the northern side of the proposed foreshore promenade on the northern side of proposed Development Sites 1 and 2, as depicted indicatively on the Structure Plan. The seawall is to be buried at the back of the beach profile, with the beach material modifying the wave climate and enabling the reduction in size of the required seawall and the elevation of its toe above current normal water levels.

The seawall will match in with the existing block wall beachfront treatments and the proposed beach access at the western end of the site and the abutment to the rail/pedestrian bridge over the Plug at the eastern end, extending as part of the foreshore promenade. The seawall will match with this formation, completing the protective element of the works. A pathway extends under the bridge and separates the elevated formation from the Plug seawalls. Essentially, the existing pathway and Plug seawall elements provide protection to the toe of the old railway formation that makes up the bridge abutment and the POS at the western boundary of the site.

In addition, the area between the proposed seawall and the foreshore dune is to be filled with sand to provide storm buffer sand storage for the beach. Adding sand to the existing foreshore berm will reduce the future recession of the beach during extreme events including sea level rise. An indicative cross-section for the proposed buried seawall is shown in **Figure 27** below.

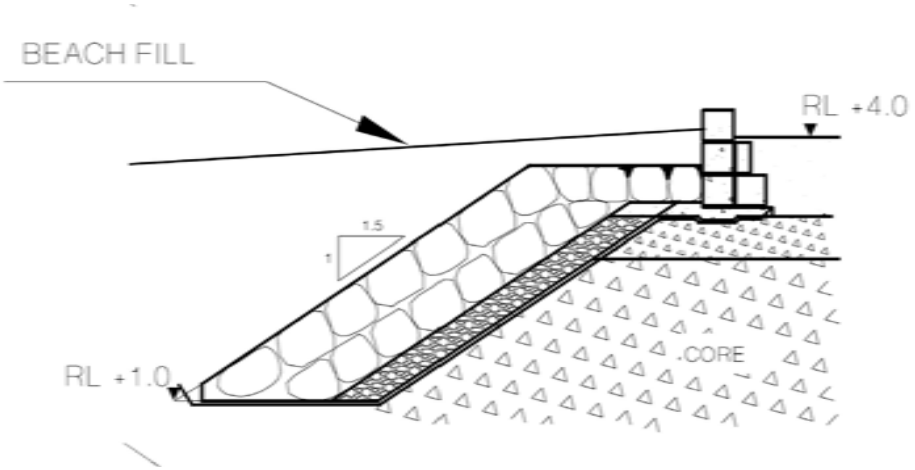


Figure 27 – Indicative Buried Seawall Cross-Section

The installation of a buried seawall is represents a conservative approach to protection of the Koombana North development. The design and finished level and alignment of the rock seawall across the Ski Beach will be progressed during detailed design phases for the project.

3.7.3.5 ROADS & FOOTPATHS

ROADS

The proposed additional road construction for the Koombana North project involves the extension of Holman Street. This will involve the removal of the current turnaround loop and the reconfiguration of some of the existing street parking. The Structure Plan provides for vehicle access to each of the five Development Sites from the extension of Holman St.

The Structure Plan also makes provision for the construction of a temporary one-way parking area off the existing Koombana Drive carriageway (in the place of the future railway station). This parking area will provide additional visitor parking for the possible non-residential uses that may be developed at the ground floor on the on the southern side of proposed Development Site 3, 4 and 5.

The extension of Holman Street and the proposed parking street off Koombana Drive will be designed and constructed in accordance with the City of Bunbury's engineering standards, in relation to pavement thickness and width. The new Holman Street road reserve will be sufficient to accommodate the utilities on standard alignments, as specified in the utility provider's Code of Practice.

FOOTPATHS

As detailed in **Section 3.3.4.1**, there will be multiple pedestrian linkages throughout the Koombana North site. The ultimate detailed design for these areas will incorporate both the civil engineering and landscape requirements. The Koombana Bay Ski Beach foreshore area will be connected via the Ski Beach with the existing surrounding pedestrian network (i.e. Marlston Waterfront and east across the Plug). There will also be paved pedestrian connections from the Holman Street extension cul-de-sac head through to the promenade between the Development Sites.

The detailed civil engineering design will outline the physical aspects of these pedestrians linkages, including levels and material finishes. The extension of Holman Street may be constructed in raised sections to ensure slow vehicle movements are maintained for high pedestrian safety, given the shared pedestrian/vehicle nature of this space. A mixture of paving and road treatments may be included in the design to delineate the carriageway areas.

All footpath and pedestrian treatments will be designed in accordance with the City of Bunbury's guidelines and to the appropriate accessibility standards.

3.7.3.6 STORMWATER DRAINAGE

The proposed road reserve area (i.e. Holman St extension and cul-de-sac and north-south spine parking area) and impervious areas such as paved verges within the Koombana North Precinct site will be serviced with piped drainage. The drainage network will be constructed to the City of Bunbury's engineering standards and in accordance with the approved Local Water Management Strategy and Urban Water Management Plan.

The extension of Holman St will be longitudinally graded toward the west to follow the current Holman Street over land flood path design. The road is currently graded west to Casuarina Drive and then south towards Koombana Drive, for discharge into the Leschenault Inlet.

Due to the presence of groundwater levels relatively close to the surface, there is limited opportunity for underground storage and drainage infiltration. It is, however, proposed to treat the minor storm events on site, with above ground nutrient stripping and compensation. A small drainage area is proposed on the western edge of the Structure Plan which has sufficient capacity to cater for the 1 in 1 year event from road reserves. The drainage facility may require a tiered retaining wall to provide adequate storage volume and will incorporate some landscape measures, which will be determined at the detailed drainage and landscape design stage.

The adoption of 'Best Management Practices', which promote the dispersion and immediate infiltration of runoff, are proposed to be utilized where possible. These measures may include the use of porous paving for roads and car parking and the routing of runoff into medians, rain gardens, soak wells and road side swales. The applicability of these measures to the Koombana North Precinct will be assessed further during the detailed design phases.

Storm water collected in the piped network which exceeds the 1 in 1 year event will overflow the basin and it is proposed that a connection be provided to Council's existing 1,650mm drainage pipe crossing the area south of Koombana Drive for discharge into the Leschenault Inlet. A drainage easement is to be provided along the length of the westernmost pedestrian connection of the Structure Plan, to link the onsite treatment and nutrient stripping area on site with Council's existing drainage infrastructure to the south.

3.7.4 INDICATIVE DEVELOPMENT STAGING

It is presently LandCorp's intention to create new serviced titles for all proposed Development Sites in the initial phase of development, as outlined in **Figure 28**.

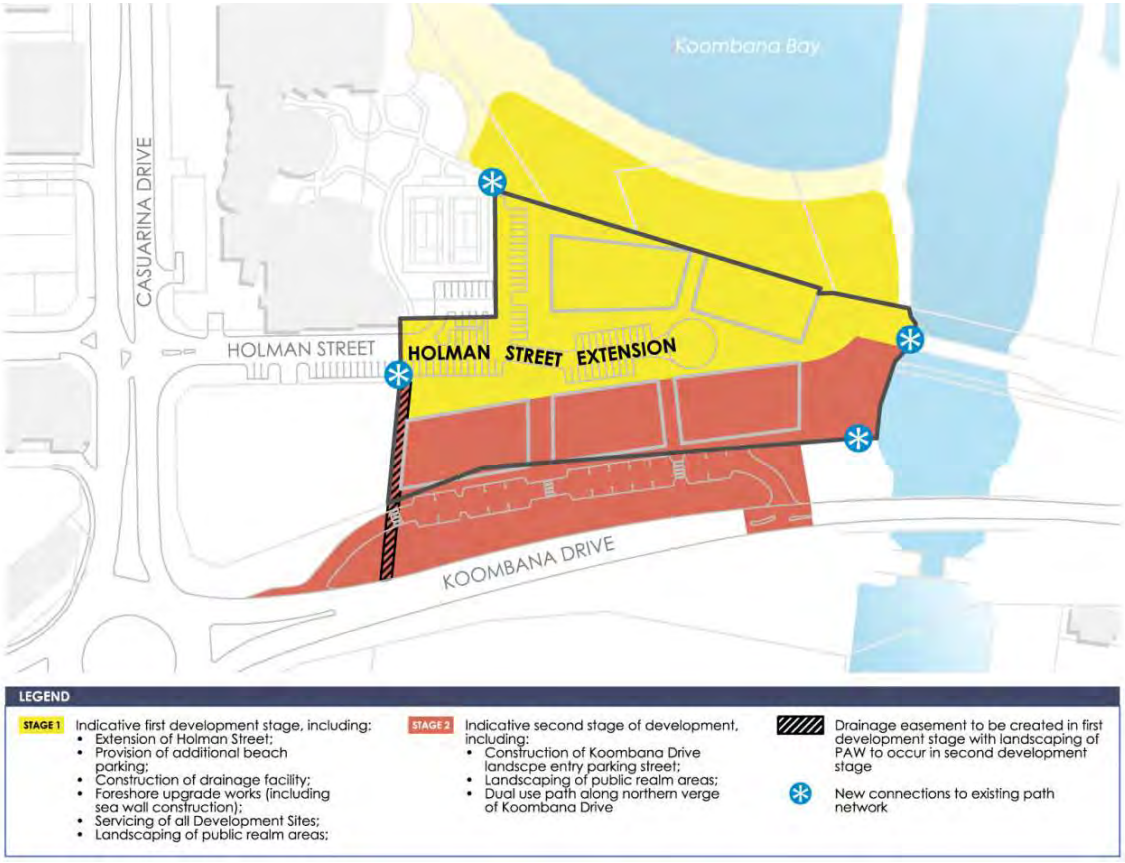


Figure 28 – Indicative Development Staging

As part of the initial development phase, Holman St will be extended and civil services will be provided to all five proposed Development Sites, given the relative efficiency of service installation at the one time. The initial phase of development will also include the creation of the drainage area adjacent to proposed Development Site 5 and the drainage connection to the south via the westernmost PAW.

The initial development phase will see the construction of additional beach parking in the north-south spine and the construction of the seawall within the foreshore area to protect the development area. The various public realm areas, including the Ski Beach, the north-south spine, the Holman St reserve (both existing and proposed extension) and the PAW between proposed Development Sites 1 and 2 will also be constructed and landscaped during the initial development phase. The new pedestrian paths constructed in the first stage of development will be connected to the surrounding path network at this time.

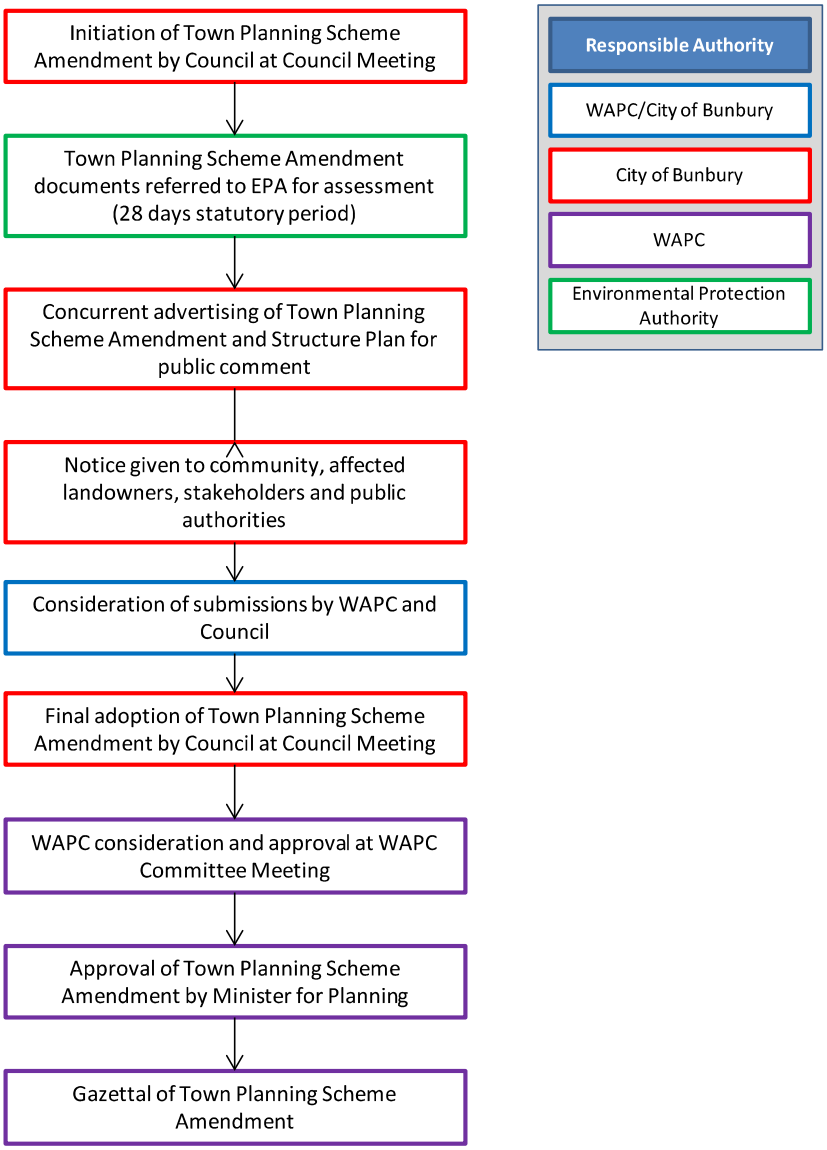
The creation of Development Sites 3, 4 and 5 is likely to occur in the second phase of development. This phase will also include the construction of the Koombana Drive landscape entry and parking street and the landscaping of the PAWs between Development Sites 3, 4 and 5 and to the west of Site 5. The construction of the PAW/footpath along the southern boundary of Development Sites 3, 4 and 5 is also identified to occur in the second phase of development.

It is noted that this staging is indicative only and assumes that the Perth to Bunbury fast rail service is not likely to be developed in the medium term. The staging outline is therefore subject to change in the future at the time of implementation. The exact staging will be heavily influenced by the market conditions at the time of development and may see the two broad stages identified above divided into a number of smaller sub-stages with the incremental release of the Development Sites to the market. The progressive staging and delivery of the various aspects of the public realm will be considered further, should the option of developing smaller sub-stages be pursued. Finally, it is noted also that the staging of development may alter significantly should a decision to construct the Perth to Bunbury fast rail service be made in the short to medium term future. The development staging strategy for the site would be thoroughly revisited if this was to occur.

4 IMPLEMENTATION

4.1 AMENDMENT NO. 63 TO CITY OF BUNBURY TOWN PLANNING SCHEME NO. 7

As discussed in **Section 1.2.1.3**. of this report, an amendment to TPS 7 is presently being progressed by the City of Bunbury concurrently with the Structure Plan for the Koombana North Precinct. This concurrent amendment outlines the key elements that are specific to the Koombana North site that are to be addressed in the preparation of the Structure Plan and provides the statutory mechanism for the preparation and approval of the Structure Plan. This Structure Plan has been prepared in consultation with the City of Bunbury to ensure that all of the requirements of the proposed Special Use Area No. 57 (as proposed in Amendment No. 63) have been suitably addressed. The assessment and approval process for the amendment to TPS 7 is outlined below.



4.2 AMENDMENTS TO THE GREATER BUNBURY REGIONAL SCHEME

A further amendment(s) to the GBRS is likely to be required to update some of the zone and reserve boundaries as a result of the proposed Structure Plan layout. These possible amendments are presented in **Figure 29** and discussed in further detail.

It is anticipated that the Department of Planning will take carriage of these changes, via the inclusion in an omnibus amendment to the GBRS at the appropriate time, with the involvement of the City of Bunbury and Public Transport Authority, as applicable. Where changes relate to reservations only, an amendment to the GBRS only will be required (and not to TPS 7). Where changes relate to reservations and zones, amendments will be required to both the GBRS and TPS 7.

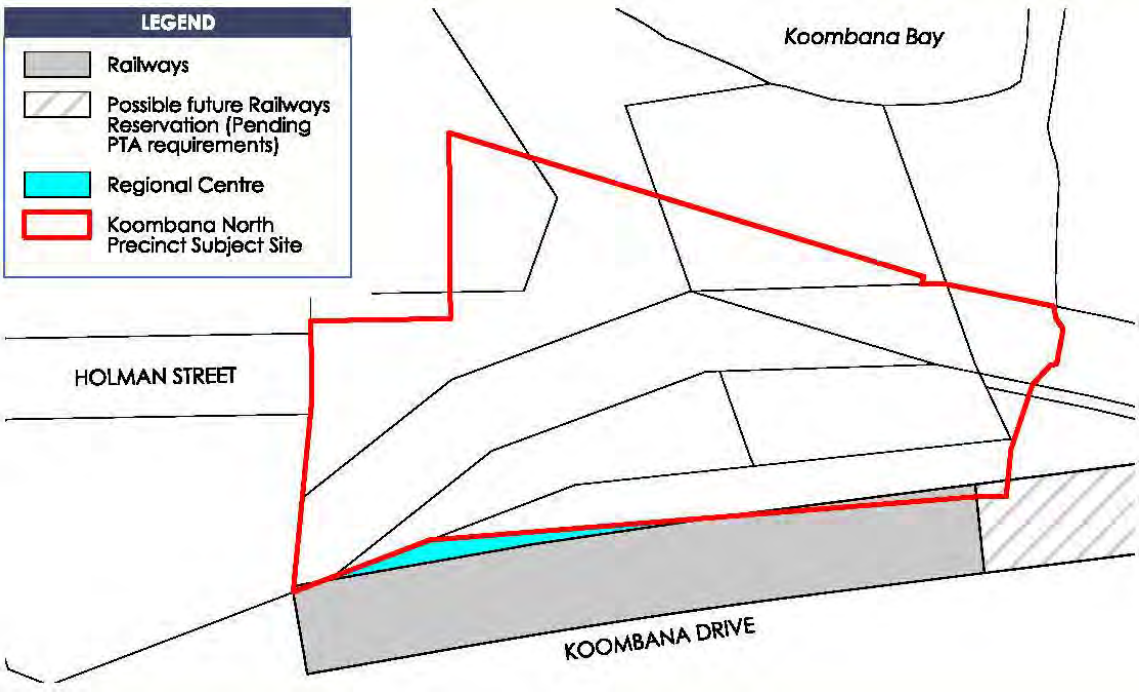


Figure 29 – Future GBRS Amendments

4.2.1 RAILWAYS RESERVE

The Public Transport Authority has engaged GHD to undertake a detailed assessment of the alignment for the possible future Perth to Bunbury fast train. It is understood that this alignment design work is being progressed in collaboration with Main Roads WA, which is presently undertaking its own design work for the Bunbury Outer Ring Road. Upon the conclusion of the various rail and road design tasks presently underway, the PTA and the WAPC will commence the process of the reserving land for the rail alignment in the GBRS. It is anticipated that the land required for the future station platform adjacent to the Koombana North Precinct will be incorporated as a Railways reservation as part of an amendment to the GBRS. The exact details of the reserve requirements will be determined by the PTA and WAPC. It is anticipated that the preparation of the amendment is likely to commence in 2013.

4.2.2 OTHER REGIONAL ROADS RESERVE

As a result of the proposed Structure Plan layout, a minor amendment to the GBRS (and consequently TPS 7) will be required to include portion of the existing Koombana Drive Other Regional Road Reserve within the Regional Centre Zone (and consequently Special Use Area No. 57). The proposed Structure Plan layout seeks to ensure that a continuous built form edge is provided to the possible future railway platform and this cannot occur without the minor incursion in to the existing Koombana Drive road reservation as identified for proposed Site 5. Given the proposed staging outlined in **Section 3.7.4** above, it is anticipated that the required amendments to the GBRS and TPS 7 can be undertaken without delaying the development of the affected areas.

4.3 LAND ASSEMBLY

Thompsons Surveyors have been engaged by LandCorp to facilitate the land amalgamation process, involving the closure and consolidation of various road and railway reserves and parcels of Unallocated Crown Land. A draft Deposited Plan (No. 73512) has been received by Landgate and is in order for dealings (31 May 2012).

The Department of Regional Development and Lands (RDL) has indicated that a number of additional actions will be need to be undertaken in order to facilitate the creation of new freehold titles. These include road closures, reserve amendments, Mining Act clearances and Native Title Act clearances. These matters are being progressed by LandCorp and its Consultant Team in collaboration with the relevant government agencies.

A further road closure and amalgamation process with need to be undertaken to include the portion of the existing Koombana Drive reserve within proposed Site 5, as outlined in **Section 4.2.2** above. This will be undertaken by LandCorp following the approval of the Structure Plan.

4.4 MANAGEMENT PLANS AND TECHNICAL REPORTS

In accordance with the requirements of the Scheme, a number of Management Plans and Technical Reports will be required at various stages in the planning process.

The following documents have been prepared to inform the preparation of the Structure Plan and are included as Technical Appendices in **Part 3**:

- Appendix A – Coastal Stability & Setback Review (JFA)
- Appendix B – Road Traffic Noise Assessment Report (LGA)
- Appendix C – Flora and Vegetation Survey (Ekologica)
- Appendix D – Fauna Assessment (Greg Harewood)
- Appendix E – Report on Geotechnical Investigation (Coffey Geotechnics)
- Appendix F – Detailed Site Investigation (Golder Associates)
- Appendix G – Acid Sulphate Soil Management Plan (Golder Associates)
- Appendix H – Ethnographic Survey (Bradley Goode)
- Appendix I – Transport Assessment Report (SKM)
- Appendix J – Local Water Management Strategy (Strategen)

In addition, the following items will be required during the subdivision approval and implementation phase:

- Landscape Management & Master Plan;
- Construction and Environmental Management Plan; and
- Urban Water Management Plan.

4.5 SUBDIVISION

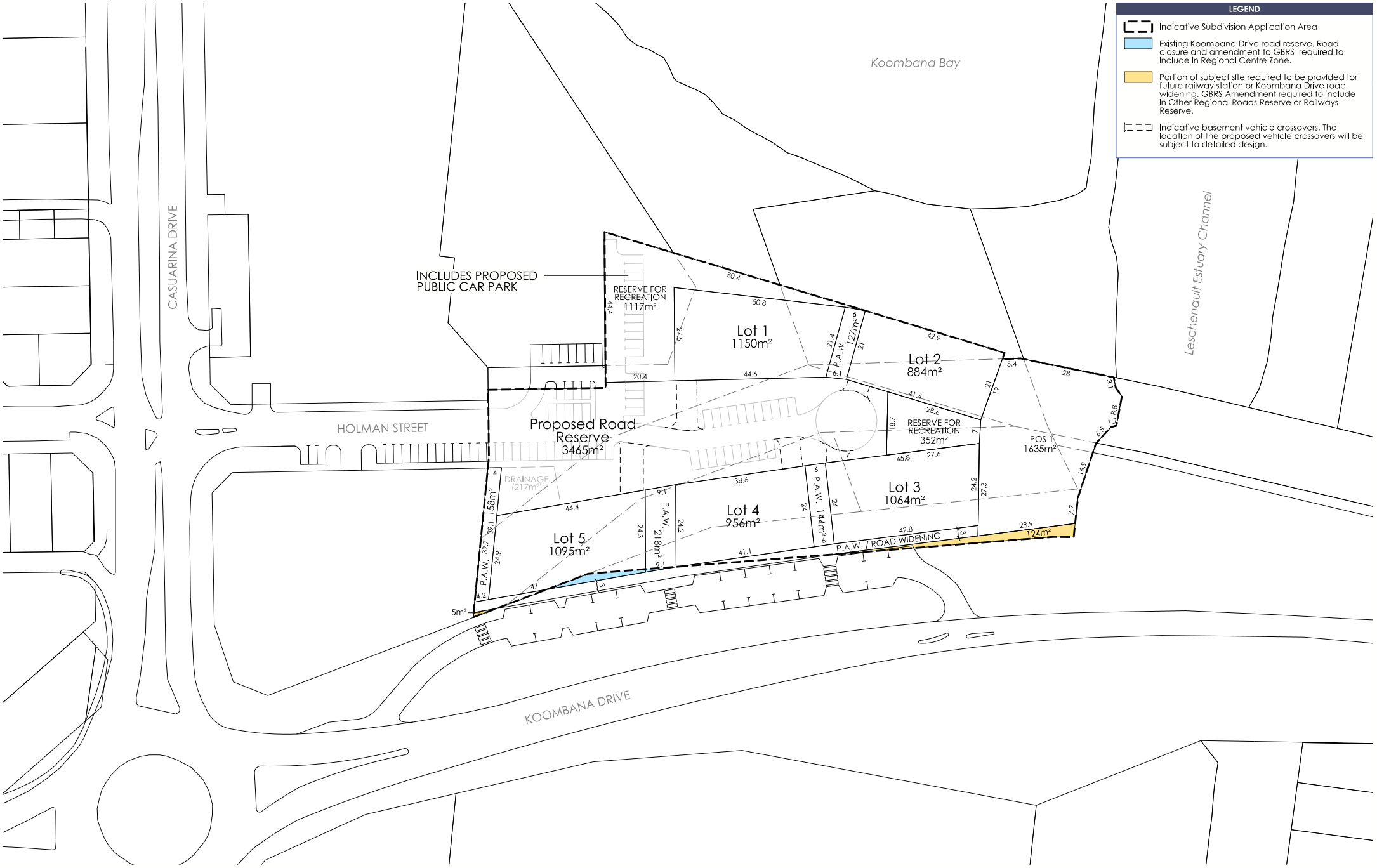
Following gazettal of Amendment No. 63 and the approval of the Structure Plan by the City of Bunbury and WAPC, a subdivision application(s) will be lodged for consideration and determination by the WAPC, on advice of the City of Bunbury and other relevant referral agencies. The subdivision application(s) will identify the proposed lot boundaries, road reserves and areas of public open space in accordance with the Structure Plan and will facilitate the creation of the proposed Development Sites. LandCorp will then release these lots to the market for purchase and delivery of the built form by a building developer. A Preliminary Subdivision Concept Plan is provided as **Figure 30**.

It is noted that the subdivision application(s) for the subject land may propose both subterranean and terrestrial lots boundaries, which may differ for each site. The option to identify a subterranean lot will allow for car parking to be provided underground outside of the proposed above ground building envelope. The terrestrial lot boundary will represent where building construction can occur above ground. This approach, if pursued, will serve to improve the efficiency of the parking provision within the Koombana North development area, but will not compromise the above ground built form outcome outlined in the Structure Plan. This possibility will be considered further at the detailed subdivision design stage and the exact position of the various boundaries will be outlined in the proposed subdivision application(s).

4.6 DEVELOPMENT APPLICATIONS

Development Applications (DAs) will be prepared for each individual development site. The DAs will provide detail regarding the proposed development, including the provision of parking, the proposed architectural form and compliance with the applicable standards and requirements of the *Part 1 – Structure Plan Statutory Provisions* for the relevant site.

For any proposed development with a construction value of $7 million, determination of a DA will be made by a Joint Development Assessment Panel (JDAP), with the advice of the City of Bunbury and WAPC. A proponent may elect to have a DA determined by the JDAP where the value of the development is more than $3 million and less than $7 million. Where development is proposed with a construction cost less than $3 million, a DA will be assessed and determination issued by both the City of Bunbury and the WAPC (as all development will occur on land abutting a Regional Open Space or Other Regional Roads Reservation).



PRELIMINARY SUBDIVISION CONCEPT PLAN

Koombana North - Bunbury Waterfront

A Landcorp Project

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s: 1:1000@A3
d: 30 Aug 2012
p: 06/099/013F

figure 30