Figure 01_Local Structure Plan Map

ENDORSEMENT OF THE EMPLACEMENT LOCAL STRUCTURE PLAN COCKBURN COAST

The Western Australian Planning Commission resolved on 19 December 2014 to endorse the Emplacement Local Structure Plan Cockburn Coast as a guide for subdivision and development within the locality.

Signed for and on behalf of the Western Australian Planning Commission

an officer of the Commission duly authorised by the Commission pursuant to section 24 of the *Planning and Development Act 2005* for that purpose in the presence of

M. Wrecker
Witness

23.12.2014
Date

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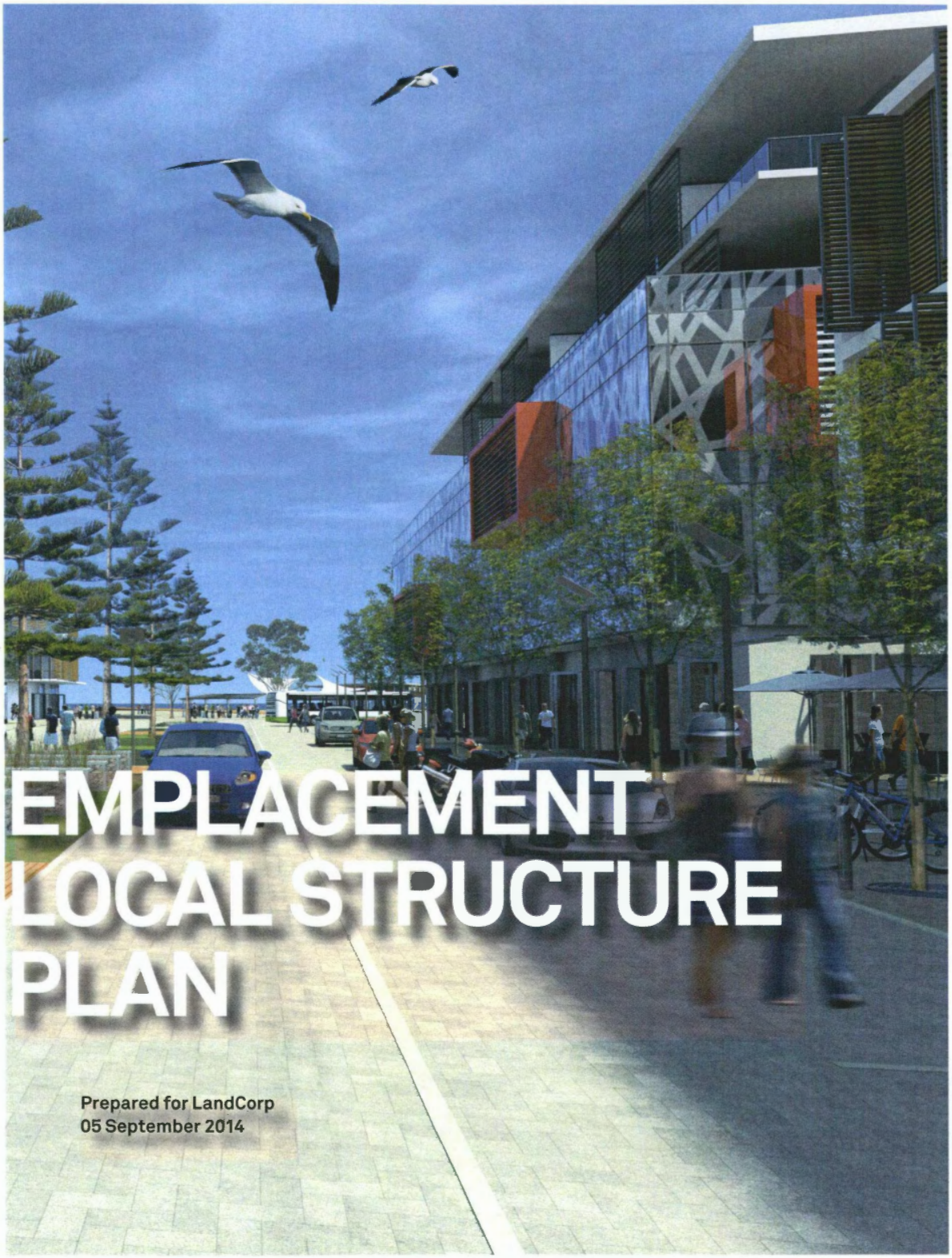
Architecture
Interior Design
Landscape Architecture
Planning
Urban Design

Australia
China
Hong Kong SAR
Singapore
Thailand
United Kingdom



EMPLACEMENT LOCAL STRUCTURE PLAN

Prepared for LandCorp
05 September 2014

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ENDORSEMENT PAGE

This structure plan is prepared under the provisions of the City of Cockburn Local Planning Scheme No. 3.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

19 December 2014

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015.*

Date of Expiry: **19 October 2035**

Version Control

Version Number	Date Published	Checked By	Authorised	Notes
1	July 2013	Gary McCullough	Chris Melsom	
2	July 2014	Scott Davies	Chris Melsom	Incorporate WAPC comments, City of Cockburn comments and revised LWMS drainage requirements.
3	July 2014	Robina Crook	Chris Melsom	Incorporate City of Cockburn and WAPC comments dated 29 July 2014
4	12 September 2014	Robina Crook	Scott Davies	Incorporate WAPC comments dated 12 August 2014

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File Source: G:\pro\pla\02\PPP0235\12 Reports\Local Structure Plans\Emplacement Structure Plan\Emplacement Updated LSP and Appendicies August 2014\140821_Revised_Hilltop_Emplacement_LSP.indd

00____Executive Summary

Located along the ridge line separating the coast from the bush, Emplacement will be the new high point, a manufactured horizon line that offers the opportunity for a new architectural topography, an integrated landscape of nature and built form.

It has long been acknowledged that the Cockburn Coast presents a unique opportunity to create an exciting mixed use community that celebrates the best of the West Australian coastal lifestyle. Following the endorsement of the District Structure Plan (DSP) 2009 by the Western Australian Planning Commission and later the adoption of the District Structure Plan 2 (DSP2) 2012 by the City of Cockburn, the Emplacement Local Structure Plan (henceforth referred to as the 'Local Structure Plan') provides the next step in bringing to fruition this unique opportunity.

The Local Structure Plan sets out to establish a sustainable community that celebrates the areas past as well as promoting creative ideas, innovation and development. By embracing the targets founded by the DSP and DSP2 the contemporary urban Local Structure Plan will provide a guiding framework for subdivision and development through the coordination of land use, community facilities, services and infrastructure. Given the fragmented nature of land ownership within the structure plan area it is important to ascertain a common development objective to ensure a cohesive and fluent development outcome.

The Emplacement Local Structure Plan forms one of three Local Structure Plans for the larger Cockburn Coast area, being the smallest in area and is characterised by 3 to 8 storey residential development. Specifically, the Structure Plan is 20.2 hectares in area, and is located approximately 18km southwest of the Perth CBD and 4km south of Fremantle between the recent developments of Port Coogee and South Beach. The Local Structure Plan area is generally bound by Cockburn Road to the west, Rollinson Road to the North, the South Fremantle Power Station and Switchyard to the South, and Beeliar Regional Park and the proposed Cockburn Coast Drive to the East.

The City of Cockburn Town Planning Scheme No. 3 sets out that the provisions, standards and requirements specified under Part 1 of this Local Structure Plan shall have the same force and effect as if it were a provision, standard or requirement of Town Planning Scheme No. 3. The Local Structure Plan will apply to the subdivision and development of all land located within its boundaries.

The history of Emplacement is characterised by industrial development including the once pulsating Robb Jetty, Cockburn Coast cattle industry and South Fremantle Power Station. By recognising and learning from the past, the Emplacement Local Structure Plan lays the foundations for an exciting future, transcending from under utilised industrial land to an active residential community. The future for the Emplacement Local Structure Plan area is one formed around a diverse mix of people and land uses. These land uses include:

_Residential zones with densities ranging from R40 to R160
_Building heights generally in the vicinity of 3 to 8 stories
_Mixed use zoning allowing for an interface between Residential Zones and areas of dense activity or traffic flow
_Green links providing a connection to the Indian Ocean

00____Executive Summary

Residential development at Emplacement will create a new built form topography upon the existing undulating landscape. High and low places will be emphasised by the contrasting scale of built form surrounding them. Links to Beelier National Park add value to the residential offer. Pocket parks and integrated greenery with built form create a calming, natural feel throughout the precinct, despite the intensity of development.

Item	
Total Area Covered by Structure Plan	20.2 hectares
Area of Specific Land Use	
_Mixed Use (Residential/ Commercial)	2.47 hectares
_Residential	11.36 hectares
Estimated Lot Yield	34 lots
Estimated Number of Dwellings	1734 dwellings
Estimated Population	3486 people
Number of High Schools	Zero high schools
Number of Primary Schools	Zero primary schools
Estimated Retail Floor Space	6000 square metres
Estimated Employment Provided	266 jobs
Area of Public Open Space	
_Neighbourhood Parks	0.8172 hectares
_Local Parks	1.0749 hectares

Structure Plan Summary Table

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PART ONE - STATUTORY

1.0 Structure Plan Area

1.1 Structure Plan Area

The Local Structure Plan applies to the land contained within the inner edge of the broken line shown on the Local Structure Plan Map (Figure 01) and specifically comprises of the lots identified in Table 01 below.

1.2 Existing Lots

Lot	Area (ha)
Lot R44048 Cockburn Rd	0.084ha
Lot 101 Emplacement Cr	0.468ha
Lot 102 Emplacement Cr	0.388ha
Lot 103 Emplacement Cr	0.643ha
Lot 104 Emplacement Cr	0.200ha
Lot 105 Emplacement Cr	0.202ha
Lot 107 Emplacement Cr	0.200ha
Lot 108 Emplacement Cr	0.200ha
Lot 114 Emplacement Cr	0.709ha
Lot 120 Emplacement Cr	0.851ha
Lot 109 Emplacement Cr	0.379ha
Lot 110 Emplacement Cr	0.201ha
Lot 111 Emplacement Cr	0.419ha
Lot 119 Emplacement Cr	0.261ha
Lot 115 Emplacement Cr	0.300ha
Lot 116 Emplacement Cr	0.344ha
Lot R43945 Emplacement Cr	0.302ha
Lot R43944 Cockburn Rd	0.063ha
Lot 208 Cockburn Rd	1.186ha
Lot 29 Cockburn Rd	0.827ha
Lot 30 Cockburn Rd	0.827ha
Lot 31 Cockburn Rd	0.827ha
Lot 32 Cockburn Rd	0.830ha
Lot 17 Cockburn Rd	2.087ha
Lot 123 Cockburn Rd	1.310ha
Lot 106 Emplacement Cr	0.200ha
Lot 118 Emplacement Cr	0.270ha
Lot 125 Emplacement Cr	0.808ha
Lot 126 Emplacement Cr	0.732ha
Portion of	
Lot 7 Davilak Av	0.3627ha
Lot R44273 Cockburn Rd	0.340ha
Lot 28 Davilak Av	0.2540ha
Lot 9000 Cockburn Rd	0.532ha
Lot 15 Glennister Rd	1.366ha

Table 01_Existing Lots within Emplacement Local Structure Plan

Figure 01_Local Structure Plan Map

ENDORSEMENT OF THE EMPLACEMENT LOCAL STRUCTURE PLAN COCKBURN COAST

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Signed for and on behalf of the Western Australian Planning Commission

an officer of the Commission duly authorised by the Commission pursuant to section 24 of the *Planning and Development Act 2005* for that purpose in the presence of

M. Wrecław
Witness

23.12.2014
Date

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2.2 Use Class Permissibility

The use class permissibility for each zone is as set out in Table02 of this Local Structure Plan.

The permissibility of any uses is determined by cross referencing between the list of use classes on the left hand side of the Zoning Table and the list of zones at the top of the Zoning Table.

The symbols used in the cross reference in the Zoning Table have the following meanings;

- 'P' means that the use is permitted by the Local Structure Plan providing the use complies with the relevant development standards and requirements of the Town Planning Scheme No.3.
- 'D' means that the use is not permitted unless the local government has exercised its discretion by granting planning approval
- 'A' means that the use is not permitted unless the local government has exercised its discretion and has granted planning approval after giving special notice in accordance with Clause 9.4 of Town Planning Scheme No. 3
- 'X' means a use that is not permitted by the Local Structure Plan
- Single Detached houses (Single House) are included in the dwelling mix of Cockburn Coast, but it should be noted that this typology is only considered appropriate as forming a small portion of dwellings. As a result, Single Detached houses (Single House) are to be approved at the discretion of Council and will be considered only when:
  - Development is located within Residential zones coded R40; and
  - Development achieves a minimum height of three storeys; and
  - The lot size in not greater than 230m^2 ; and
  - Vehicle access to the lot is via a rear laneway and all parking areas (garages and carports) are located at the rear of the lot

Development seeking large amounts of Single Detached houses (Single House) is inappropriate in achieving the aims and objectives of the Local Structure Plan.

Use Class		Residential	Mixed Use
Residential Uses			
Ancillary Accommodation		P	D
Bed and Breakfast		A	D
Child Care Premises		A	D
Civic Use		D	P
Dwelling	Aged or Dependant Persons	P	P
	Caretaker's	P	P
	Grouped	P	P
	Multiple	P	P
Educational Establishment		D	D
Home Business		A	P
Home Occupation		D	P
Home Office		P	P
House	Lodging	A	D
	Single	D	X
Place of Worship		D	D
Residential Building		D	D
Tourist Accommodation		D	D
Commercial Uses			
Commercial	Bank	A	P
	Garden Centre	X	X
	Market	X	A
	Nursery	X	X
	Office	X	P
	Showroom	D	D
	Veterinary Consulting Room	X	D
	Veterinary Hospital	D	D
Entertainment Uses	Amusement Parlour	X	D
	Betting Agency	X	P
	Club Premises	A	D
	Fast Food Outlet	X	P
	Hotel/Tavern	D	P
	Motel	A	P
	Public Amusement	A	D
	Reception Centre	A	X
	Recreation-Private	X	P

Use Class		Residential	Mixed Use
	Restaurant	A	P
Health Services	Consulting Rooms	D	A
	Health Studio	A	D
	Medical Centre	D	X
	Hospital	A	X
Shop	Convenience Store	A	P
	Lunch Bar	A	P
	Shop	X	P
	Home Store	A	A
Transport	Commercial Vehicle Parking	D	X
	Motor Vehicle , Boat and Caravan Sales	X	X
	Motor Vehicle Hire Premises	X	X
	Motor Vehicle Wash	X	X
	Petrol Filling Station	X	A
	Service Station	X	A
Animal Establishment		X	X
Cinema/Theatre		X	X
Funeral Parlour		X	X
Hardware Store		X	X
Night Club		X	X
Restricted Premises		X	X
Trade Display		X	X
Veterinary Centre		X	X
Vehicle-Disused		X	X
Industrial Uses			
Industry	Cottage	A	A
	Extractive	X	X
	General	X	X
	General (Licensed)	X	X
	Light	X	X
	Noxious	X	X
	Service	X	X
Storage	Fuel Depot	X	X
	Storage Yard	X	X
	Warehouse	X	X
Transport	Motor Vehicle Repair	X	X
	Motor Vehicle Wrecking	X	X
	Transport Depot	X	X

Use Class		Residential	Mixed Use
Marine Engineering		X	X
Rural Uses			
Agriculture Extensive		X	X
Agriculture Intensive		X	X
Agroforestry		X	X
Animal Husbandry - Intensive		X	X
Farm Supply Centre		X	X
Hobby Farm		X	X
Rural	Industry	X	X
	Pursuit	X	X
Uses Not Listed			
Uses not Listed		In accordance with Clause 4.4.2 Town Planning Scheme No. 3	

Table 02_Use Class Table

3.0 Operation Date

In accordance with Clause 6.2.12.1 of Town Planning Scheme No. 3 this Local Structure Plan shall come into effect once endorsed by the Western Australian Planning Commission.

The Local Structure Plan will be reviewed by the City of Cockburn in 5 years from its date of endorsement by the Western Australian Planning Commission. The review of the Local Structure Plan will relate only to affordable housing provision for Cockburn Coast and parking standards in relation to the Integrated Transport Plan. The review will consider the progress made towards the achievement of the 20% affordable housing targets and parking standards for Cockburn Coast as prescribed by the DSP and DSP2, 2012. The review may make recommendations in respect of variations to provisions, standards and requirements to facilitate affordable housing outcomes and targets.

4.0 Relationship to the Scheme

The provisions, standards and requirements specified under Part 1 of this Local Structure Plan shall have the same force and effect as if it were a provision, standard or requirement of Town Planning Scheme No. 3. In the event of there being any inconsistencies or conflict between the provisions, standards or requirements of Town Planning Scheme No. 3 and the provisions, standards or requirements of this Local Structure Plan, then the provisions, standards or requirements of Town Planning Scheme No. 3 shall prevail with the exception of the Use Class Permissibility for which the Local Structure Plan shall prevail.

5.0 Public Open Space Provision

The following table lists public open spaces shown within the Local Structure Plan area.

5.1 Public Open Space

Public Open Space	Size
Local Park	1.0749ha
Neighbourhood Park	0.8172ha

Table 03_Public Open Space

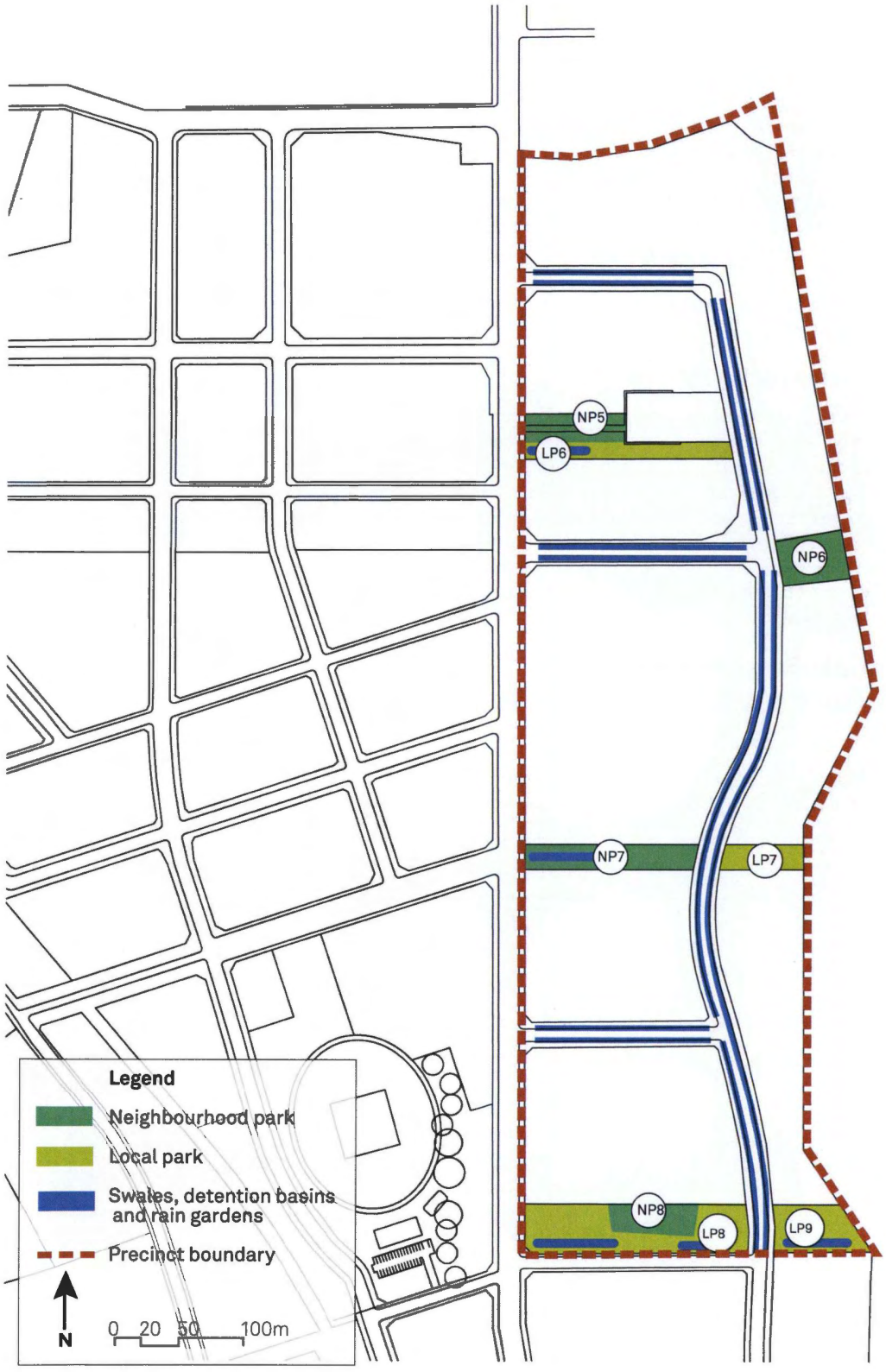

Figure 02_Open Space Plan

6.0 Residential

6.1 Proposed Residential Density

The Residential density of a lot shall be in accordance with the Residential Design Code shown on the Local Structure Plan Map.

Development within a Mixed Use zone is to be in accordance with the Residential Design Code as designated below:
_Mixed Use: Residential R100

The development standard is specified in the Cockburn Coast Design Guidelines for Robb Jetty and Emplacement (June 2013).

Calculation Methodology to ascertain achievement of residential density targets is prescribed in Town Planning Scheme No. 3 for the Cockburn Coast Development Area (DA33)'.

7.0 Affordable Housing

In calculating low income households Table 04 shall be used as a guide and is based on the percentiles of income distribution as set out in section 2.1 of the Cockburn Coast Affordable Housing Strategy 2012. Within the Local Structure Plan affordable housing will target the low to moderate income household.

Median Household Income	$79,861	
Moderate Income Bracket	80% Median	120% Median
Annual Income	$63,889	$95,833
Weekly Income	$1,229	$1,843
Affordable Weekly Rental Benchmark (30%)	$369	$553
Affordable Purchase Benchmark	$264,057	$396,085

Table 04_Affordable Housing Benchmarks for Perth Statistical Division
Source: Department of Planning

Table 04 is to be applied consistent with any necessary updates.

	Calculation	Sources
Median Household Income	Median Weekly Household income for Perth, multiplied by 52, then indexed by Wage Price Index for WA (with Sept 2011 as baseline)	ABS Census 2011, Basic Community Profile, Greater Perth GCCSA, table B02, "Median Total Household Income". ABS Cat 6345.0 Wage Price Index, Table 2B, Total Hourly Rates of Pay Excluding Bonuses; WA; Private and Public; All Industries.
Affordable Purchase Benchmark	Present Value of a 25 year loan, with monthly repayments at 30% of Household Income, an interest rate of 6.45%p.a, plus a 10% deposit.	Reserve Bank of Australia, Indicator Lending Rates, Table F5, Housing Loans, Banks, Variable, Standard.

7.1 Affordable Housing Target

The DSP sets an aspirational target of 20% Affordable Housing product. The tenure, type and manner of affordable housing shall be guided by the Affordable Housing Strategy.

7.2 Floorspace Bonus

The local government may grant a floorspace bonus in the event that a development includes the provision of affordable housing at the following ratio:
_Affordable yield 10% = 30% floorspace bonus
_Affordable yield 20% = 40% floorspace bonus
_Affordable yield 25% = 45% floorspace bonus

All floorspace bonuses will be based on the maximum floorspace allowable for the site as per the Cockburn Coast Design Guidelines for Robb Jetty and Emplacement (June 2013). Where deemed appropriate the local government may allow for the transfer of a floor space bonus within the Cockburn Coast, as defined by the DSP2 (2012).

Where dwellings with two bedrooms are provided a further floorspace bonus can be applied at the following ratio may be granted:
_ Affordable yield 10% = 15% floorspace bonus
This bonus is to be applied only to the provided affordable dwellings.

Where family housing (i.e dwellings with three or more bedrooms) is provided a further floorspace bonus may be granted at the following ratio:
_Affordable yield 10% = 30% floorspace bonus
This bonus is to be applied only to the provided affordable dwellings.

8.0 Subdivision and Development Requirement

8.1 Affordable Housing Development Application Information

Where an application proposes to use the floorspace bonus as outlined by Section 7.2 of this Local Structure Plan the application for Planning Approval shall include an Affordable Housing Report. This report shall include, but not be limited to, the following information:

_Evidence of an agreement between the developer and a recognised affordable housing provider to manage housing and tenants
_Target eligible households for affordable housing product (as defined by the most up to date ABS data)
_Demonstration of ongoing tenure arrangement for affordable housing product

8.2 Lot Design Guidance

Lot size within areas coded R80 and above shall be of a minimum area of 800m² with a minimum depth of 20 metres and a minimum width of 40 metres. Should an alternative lot size be proposed it will be considered on its planning merits having regard to the aims and objectives of this Local Structure Plan.

8.3 Noise Attenuation

Where it is deemed necessary, development applications shall address the issue of noise attenuation.

To ensure sustainable development occurs, the local authority will require that certain development, as defined below, be accompanied by a report prepared by a qualified acoustic consultant, certifying that the design features of the development will achieve a satisfactory level of noise attenuation.

Where residential development may be exposed to noise impacts from existing non-residential uses and activities, the onus will be on the designers and developers of the new residential development to demonstrate to the satisfaction of the local authority that impacts have been assessed and addressed. This includes, but is not limited to, development abutting Cockburn Road.

8.3.1 Cockburn Road

For developments located adjacent to Cockburn Road, as part of the design process, an acoustic assessment shall be undertaken and included as part of the development application with the aim being to demonstrate the construction method will adequately reduce internal noise levels to meet the standards stated in SPP5.4. Given the proposed layout, the first row of buildings along Cockburn Road will act as an acoustic barrier to developments located behind. Hence improvement constructions are required for the first row of buildings only.

The following source noise levels should be used for development located adjacent to Cockburn Road;
_ Facing Cockburn Road – 62dB (A)
_ Perpendicular to Cockburn Road – 59dB (A)

SPP5.4 requires a notification be placed on the Certificate of Title for lots where residences are exposed to transport noise and that noise received exceeds the SPP 5.4 outdoor 'Noise Target'.

8.3.2 BRT/LRT

To accommodate the future BRT/LRT public transit alignment similar measures as stated to accommodate development adjoining Cockburn Road may be required by the local authority.

8.4 Existing Industrial Buffer Zones

Where residential, or other sensitive land use is proposed, within an existing industrial land use buffer, applicants shall provide a technical analysis to seek to reduce or mitigate that buffer. Such analysis must be in accordance with the requirements of the relevant State Planning Policy relating to industrial buffers.

8.5 Traffic/Management Assessment

As required by Western Australian Planning Commission's Liveable Neighbourhoods, an assessment of the impacts on current and future traffic movements is to be provided with all subdivision and development proposals.

8.6 Spring Flora and Vegetation Survey

A Spring Flora and Vegetation Survey will be required prior to any subdivision or development in the area identified as VT1 in Appendix C (Emplacement Ecological Assessment, June 2012) to determine the presence of threatened ecological communities, priority flora, rare flora or other significant flora.

8.7 Interface Treatment to Regional Reserve

All development proposals are required to ensure adequate interface, including fencing to the Primary Regional Road Reserve to protect the conservation value of the Beeliar Regional Reserve.

8.8 Fire Management Plan

8.8.1 Bushfire Prone Area

All land within 'Bushfire Prone Areas' as shown in Figure 03 will be subject to the preparation of a Fire Management Plan to determine the detailed BAL levels for the application of AS3959 "Building in Bushfire Prone Areas", unless it can be demonstrated that development is further than 100m from a bush fire hazard.

Land within 100 metres of moderate or extreme bushfire hazard is required to have a notation included on the Certificate of Title advising of that risk and that the relevant Fire Management Plan pertaining to the land must be implemented.

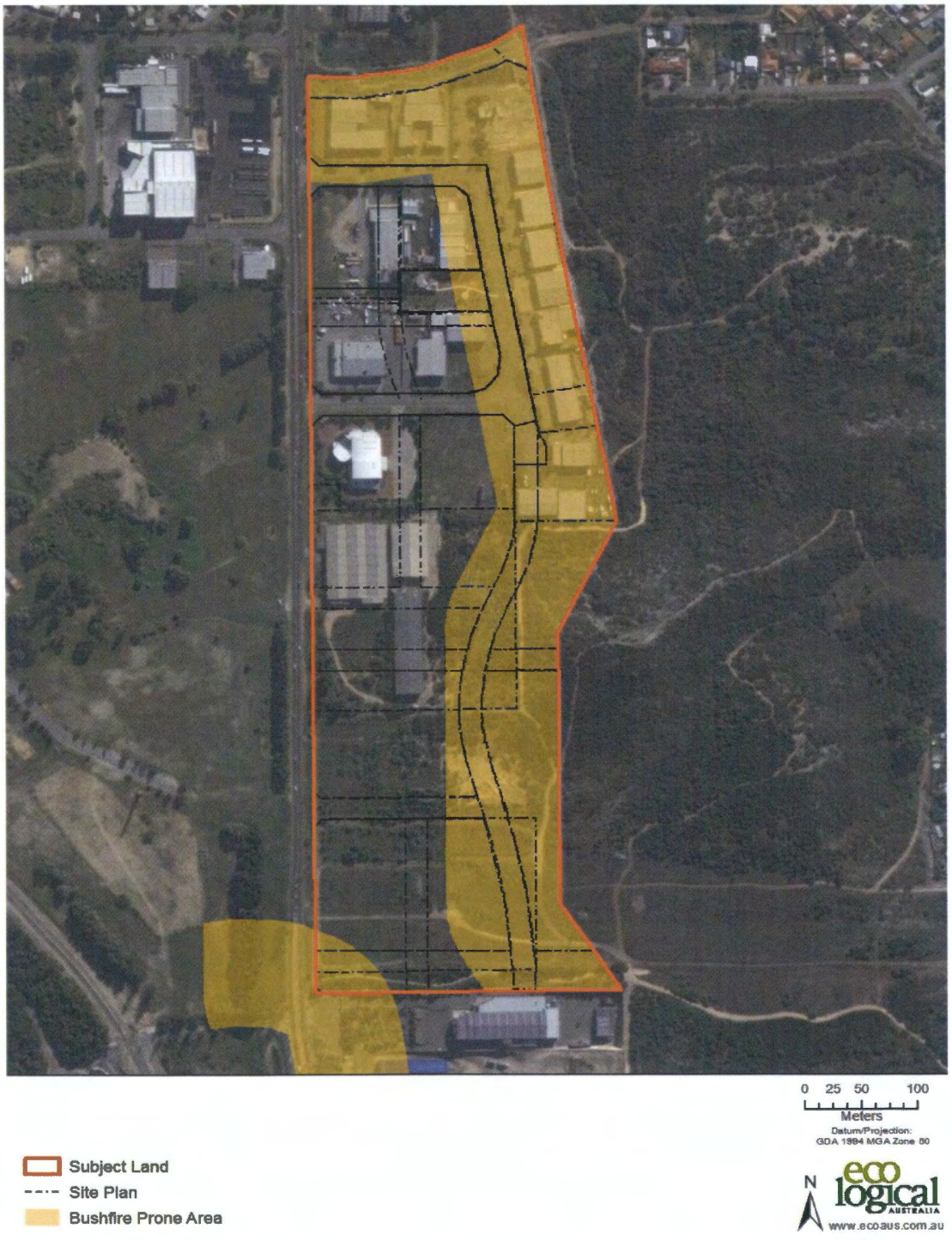

Figure 03_Bush Fire Prone Area

9.0___Building Heights

9.1 Building Heights

Development within the Local Structure Plan shall generally be in accordance with the Building Height Plan (Figure 04). The local authority may consider variations to the Building Height Plan. Variations must accord with the aims and objectives of the Local Structure Plan and the Cockburn Coast Design Guidelines for Robb Jetty and Emplacement (June 2013).

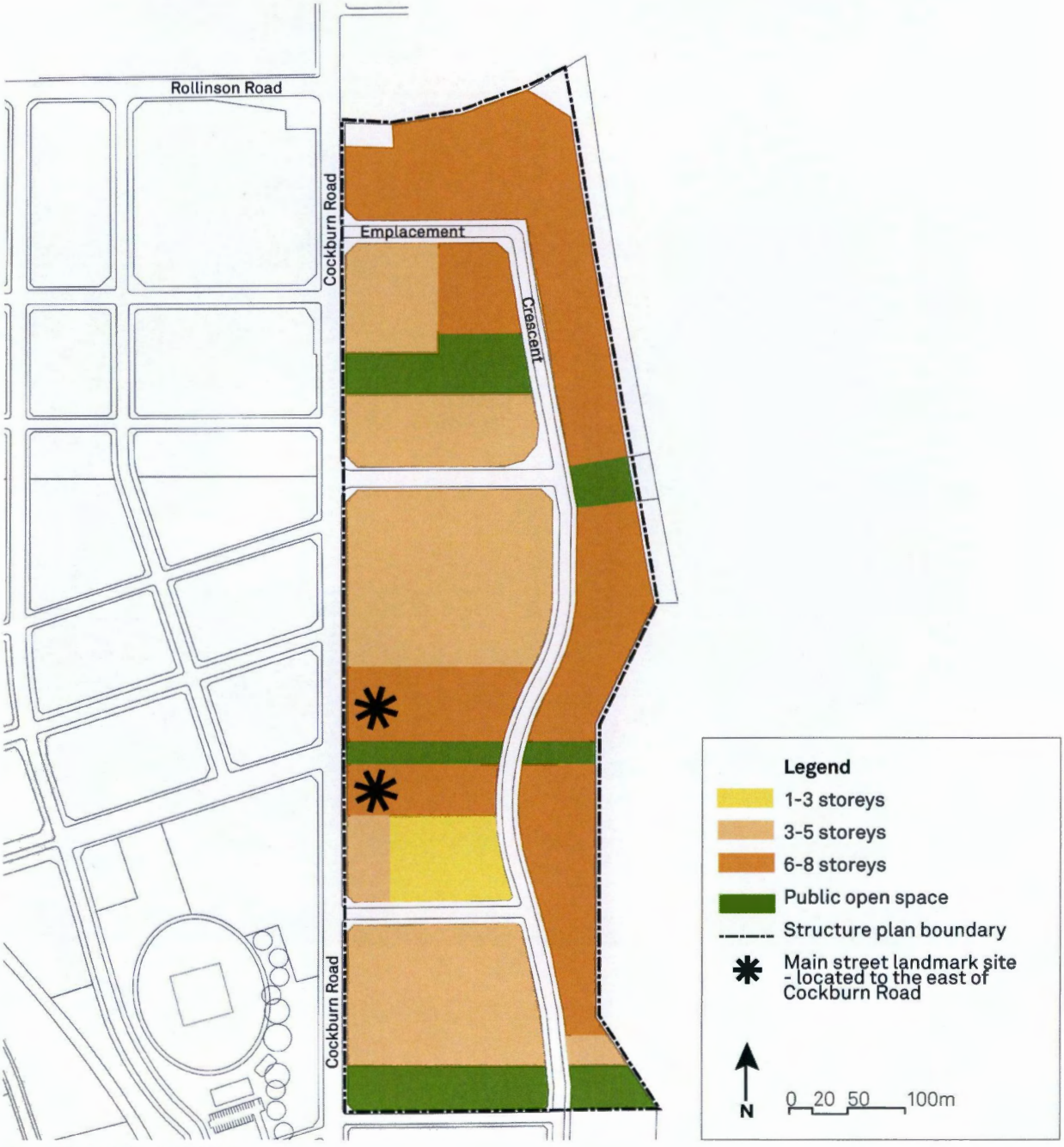

Figure 04_Building Height Plan

9.2 Landmark Sites

The Building Height Plan identifies a number of landmark sites. These sites are to be developed in a manner as per the Local Structure Plan. Within the Local Structure Plan area, two sites are identified being:

_Main Street
A multi storey development at the junction of Cockburn Road and the local public open space should provide a gateway to the Robb Jetty Main Street identifying it as a community hub and local centre.

All development within these sites shall be in accordance with the Cockburn Coast Design Guidelines for Robb Jetty and Emplacement (June 2013).

10.0___Detailed Area Plan Requirements

10.1 Application of Detailed Area Plans

Detailed Area Plans are required prior to development within the Local Structure Plan within the Mixed Use zone and for all lots abutting Cockburn Road.

Detailed Areas Plans are to be applied to the street block to ensure the coordination of development.

10.2 Detailed Area Plan Principles

Detailed Area Plans are required to specifically address (but not limited to) the following design elements and variations at a street block level to coordinate development:

_Identify variations to Cockburn Coast Design Guidelines for Robb Jetty and Emplacement (June 2013), as required
_Coordinate access to car parking to and from Cockburn Road, with a preference for access via other local streets and the reduction of crossovers
_Identify and coordinate the location, access and use of shared end of trip facilities
_Provide a continuous and consistent approach to landscaping within each street block
_Coordinate the location and access to pedestrian access ways where in fragmented land ownership
_Coordinate the location and form of landmark development
_Identify preferred land uses within each street block
_Provide guidance on staging of development
_Provide guidance in relation to buffering or attenuating noise impacts, as required

11.0___Operation and Implementation

11.1 Variations to the Residential Design Codes

Unless otherwise specified in the Cockburn Coast Design Guidelines for Robb Jetty and Emplacement (June 2013), as amended or an adopted detailed area plan the Residential Design Codes shall apply.

PART TWO - EXPLANATORY

1.0____Planning Background

Located along the ridge line separating the coast from the bush, Emplacement will be the new high point, a manufactured horizon line that offers the opportunity for a new architectural topography, an integrated landscape of nature and built form.

1.1 Introduction and Purpose

Following the adoption of the DSP2, the Emplacement Local Structure Plan provides the next step in bringing to fruition this unique opportunity. The Local Structure Plan sets out to establish a sustainable community that celebrates the area's past as well as taking on creative ideas, innovation and development. By embracing the targets founded by the DSP and DSP2 the Local Structure Plan will provide a guiding framework for subdivision and development through the coordination of land use, community facilities, services and infrastructure. Given the fragmented nature of land ownership within the Local Structure Plan area it is important to ascertain a common development objective to ensure a cohesive and fluent development outcome.

Figure 05_Cockburn Coast Regional Location Map

1. Future transit route and connection to South Fremantle
2. Community Facility
3. Primary north-south local and distributor road
4. Landscape corridor
5. Cockburn Road landscape boulevard
6. Future Cockburn Coast Drive Reserve
7. Robb Jetty 'main street' local centre
8. Robb Jetty beach front urban plaza
9. Future 'urban' primary school and playing field
10. Parkland Corridor
11. Ridge line development
12. Beeliar Regional Park bushland
13. Power station commercial, hospitality and tourism centre
14. Gateway development sites

Figure 06_Cockburn Coast Master Plan (District Structure Plan Part 2)

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1.2 Land Description

1.2.1 Location

The Emplacement Local Structure Plan area, being 20.2 hectares in size, is located approximately 18km southwest of the Perth CBD and 4km south of Fremantle between the recent developments of Port Coogee and South Beach. The Local Structure Plan area is generally bound by Cockburn Road to the east, Rollinson Road to the North, the South Fremantle Power Station and Switchyard to the South, and Beeliar National Park and the proposed Cockburn Coast Drive to the East. Refer Figure 06.

The Local Structure Plan forms one of three Local Structure Plans to be prepared within the Cockburn Coast area. These areas are as set out by DSP2 and as identified by Figure 08.

1.2.2 Area and Land Use

Historically, the Local Structure Plan area has accommodated a range of industrial uses, some of which remain in operation today. The following list outlines some of the current land uses within the Local Structure Plan Area.

_Southern Trading Australia
_Marlin Insulation Solutions
_Tradelink
_Far West Scallop Industries
_Stazo Marine Equipment
_Stepping Stones Wellness Clinic
_Cleantex Textile Hire
_Flow Serve Australia
_Metro Ice
_Appealing Signs and Print Copy
_Alba Edible Oils

As identified, the western most border of the Local Structure Plan area is provided by Cockburn Road. This road currently functions as the primary north-south route for road freight and regional traffic.

Figure 07_Aerial of the Cockburn Coast Development Area looking North

Figure 08_Three Local Structure Plan Areas

1.2.3 Legal Description and Ownership

The legal description and ownership of all lots within the Local Structure Plan area are as shown in the "Table 05_ Legal Description and Ownership".

Lot	Volume & Folio Number	Area	Ownership
Lot. R44048 Cockburn Rd	Vol: LR3106 Fol: 264	0.084ha	State of WA
Lot. 101 Emplacement Cr	Vol: 2037 Fol: 263	0.468ha	Private Ownership
Lot. 102 Emplacement Cr	Vol: 2101 Fol: 438, Vol: 2101 Fol: 439, Vol: 2101 Fol: 440, Vol: 2101 Fol: 441, Vol: 2101 Fol: 437	0.388ha	Private Ownership
Lot. 103 Emplacement Cr	Vol: 2037 Fol: 265	0.643ha	Private Ownership
Lot. 104 Emplacement Cr	Vol: 2037 Fol: 266	0.200ha	Private Ownership
Lot. 105 Emplacement Cr	202ha Vol: 2037 Fol: 267	0.202ha	Private Ownership
Lot. 107 Emplacement Cr	Vol: 2037 Fol: 269	0.200ha	Private Ownership
Lot. 108 Emplacement Cr	Vol: 2099 Fol: 924, Vol: 2099 Fol: 925, Vol: 2099 Fol: 926	0.200ha	Private Ownership
Lot. 114 Emplacement Cr	Vol: 2037 Fol: 276	0.709ha	Private Ownership
Lot. 120 Emplacement Cr	851ha Vol: 2037 Fol: 282	0.851ha	Private Ownership
Lot. 109 Emplacement Cr	379ha Vol: 2037 Fol: 271	0.379ha	Private Ownership
Lot. 110 Emplacement Cr	Vol: 2037 Fol: 272	0.201ha	Private Ownership
Lot. 111 Emplacement Cr	Vol: 2037 Fol: 273	0.419ha	Private Ownership
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Lot. 116 Emplacement Cr	Vol: 2037 Fol: 278	0.344ha	Private Ownership
Lot. R43945 Emplacement Cr	Vol: LR3038 Fol: 206	0.302ha	Private Ownership
Lot. R43944 Cockburn Rd	063ha Vol: LR3106 Fol: 260	0.063ha	State of WA
Lot. 208 Cockburn Rd	Vol: 1883 Fol: 623	1.186ha	Private Ownership
Lot. 29 Cockburn Rd	Vol: 1220 Fol: 271	0.827ha	Private Ownership
Lot. 30 Cockburn Rd	Vol: 1267 Fol: 155	0.827ha	Private Ownership
Lot. 31 Cockburn Rd	Vol: 1258 Fol: 802	0.827ha	Industrial Land Development Authority
Lot. 32 Cockburn Rd	Vol: 1272 Fol: 721	0.830ha	Industrial Land Development Authority
Lot. 17 Cockburn Rd	087ha Vol: 1203 Fol: 190	2.087ha	Private Ownership
Lot. 123 Cockburn Rd	310ha Vol: 2052 Fol: 986	1.310ha	Private Ownership
Lot. 106 Emplacement Cr	Vol: 2142 Fol: 066, Vol: 2142 Fol: 067, Vol: 2142 Fol: 068	0.200ha	Private Ownership
Lot. 18 Emplacement Cr	Vol: 2733 Fol: 822, Vol: 2733 Fol: 823, Vol: 2733 Fol: 824, Vol: 2733 Fol: 825, Vol: 2733 Fol: 826, Vol: 2733 Fol: 827	0.270ha	Private Ownership
Lot. 125 Emplacement Cr	Vol: 2172 Fol: 918	0.808ha	Private Ownership
No. 126 Emplacement Cr	Vol: 2172 Fol: 919	0.732ha	WA Land Authority
Portion of			
Lot. 7 (122) Davilak Av	Vol: 1216 Fol: 635	6.358ha	WAPC
Lot 44273R (168) Cockburn Rd	Vol: LR3038 Fol: 208	1.297ha	State of WA
Lot. 28 (158) Davilak Av	Vol: 1883 Fol: 624	3.638ha	WAPC
Lot. 5 (251) Cockburn Rd	Vol: 2680 Fol: 957	41.558ha	WAPC
Lot. 9000L (120) Glennister Rd	Vol: 357 Fol: 75A	8.328ha	MRPA

Table 05_Legal Description and Ownership

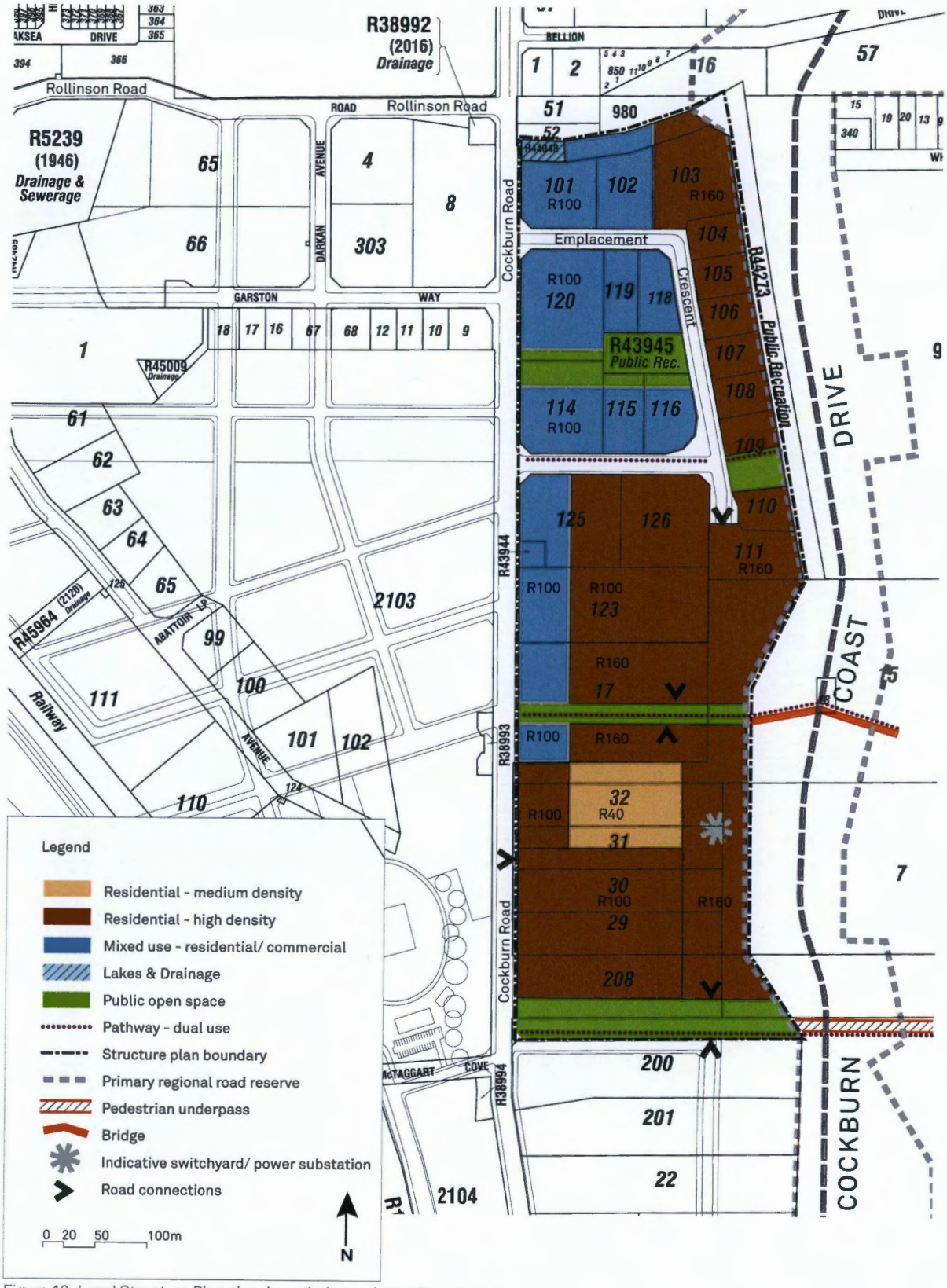


Figure 10_Local Structure Plan showing existing cadastre boundaries

2.0 Planning Framework

2.1 Regional Planning

2.1.1 Metropolitan Region Scheme

In August 2009, the Metropolitan Region Planning Committee (MRPC) acting under delegated authority from the Western Australian Planning Commission (WAPC) resolved to proceed with Amendment 1180/41 to the Metropolitan Region Scheme. The amendment proposes to rezone the North Coogee industrial area to an Urban zone, and to rationalise and realign the Parks and Recreation and Primary Regional Roads reservations to reflect the strategic planning intent and land use planning proposals within Cockburn Coast District Structure Plan.

The amendment proposed the following changes to the MRS:

- Rezone approximately 91.55ha of Industrial zone land to the Urban zone.
- Minor rationalisation of Parks and Recreation reservation to the west of the Primary Regional Roads reservation and within the coastal Parks and Recreation reserve to the Urban Deferred zone, totalling 5.15ha.
- Realignment and rationalisation of Primary Regional Road reservations between Rockingham Road and the Fremantle Port freight rail line; and
- Rezoning of part of the South Fremantle Power Station Site to 'Urban Deferred'.

As a result, the Local Structure Plan area which was once primarily zoned 'Industry' has now been rezoned to 'Urban'.

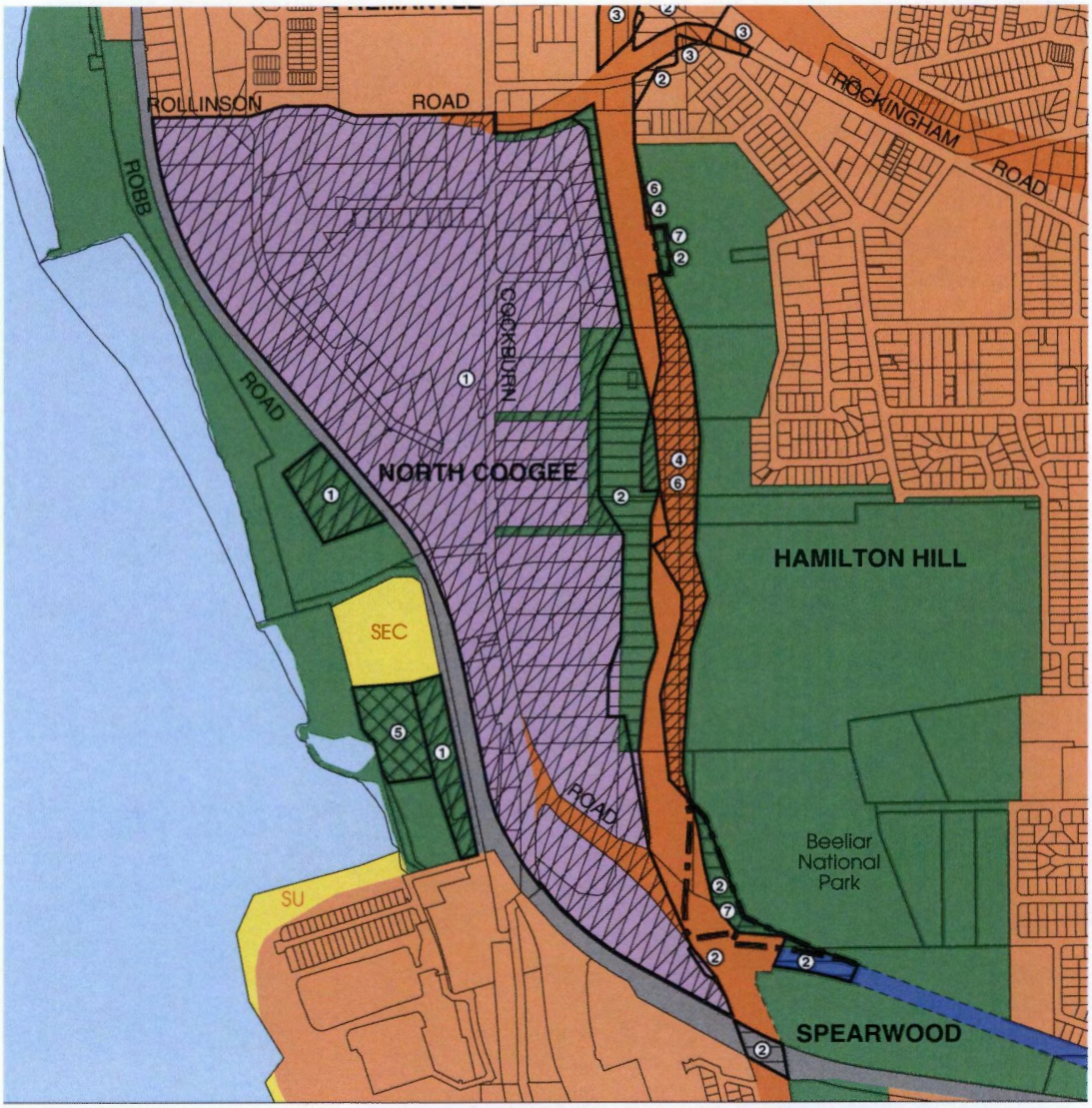
2.1.2 Town Planning Scheme

The land was recently rezoned via Amendment No. 89 to the City's Town Planning Scheme No. 3 to 'Development Zone'. The land is part of Development Area No. 33 as shown on the Scheme map and there are specific provisions for this area contained within Schedule 11 of Town Planning Scheme No. 3. One of these provisions includes the need for structure planning to occur to enable subdivision and development in a coordinated manner.

2.1.3 Directions 2031 and Beyond and The Outer Metropolitan Sub Regional Strategy

As identified by Directions 2031 and Beyond, the south west subregion encompasses the Cities of Cockburn, Kwinana and Rockingham. These areas have experienced considerable economic and population growth with Directions 2031 identifying and capitalising on this trend. As a planned urban growth area the Cockburn Coast is recognised by these documents as new oceanside community with an estimated population of 10,800.

The redevelopment of Cockburn Coast as a unique coastal urban development is underpinned by the five strategic themes that drive Directions 2031: Liveability; Prosperity; Accessability; Sustainability; and Environmental responsibility.



Cockburn Coast Precinct - proposed major amendment 1180/41
as advertised

11 August 2009

Figure 1

Legend

Proposed:
- urban deferred zone
- primary regional roads reservation
- urban zone
- parks and recreation reservation
- public purposes (SU) reservation

Notice of delegation
- Bush Forever area
- Bush Forever removal

Existing:
- urban zone
- industrial zone
- waterways reservation
- railways reservation
- public purposes (SEC & SU) reservation
- parks and recreation reservation
- other regional roads reservation
- primary regional roads reservation

:592bw1.fig
:6 Sep 2009
Produced by Mapping & GeoSpatial Data Branch, Department of Planning, Perth WA
On behalf of the Western Australian Planning Commission.
Base information supplied by Western Australian Land Information Authority LI 430-2009-2

GDA

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

N

Scale 1:12500

0 300

metres

Figure 11_Proposed Major Amendment 1180/41 for the Cockburn Coast Precinct

2.2 District Structure Plan

2.2.1 Cockburn Coast District Structure Plan

The Cockburn Coast District Structure Plan (DSP) was endorsed in September 2009 and sets out to provide a statutory and land use framework intended to inform future detailed planning and the preparation of local structure plans. The Cockburn Coast District Structure Plan 2 further builds upon this with greater detail and refinement.

2.2.2 Cockburn Coast District Structure Plan 2

The Cockburn Coast District Structure Plan 2 (DSP2) serves as a key guiding document, which builds upon the core principles of the 2009 District Structure Plan and enables greater certainty going forward into the local planning phase.

The DSP2 identifies a number of key drivers and opportunities that underpin its vision and intent, in turn forming the foundation of the Emplacement Local Structure Plan.

These include
_Create a sub regional economy
_Develop and integrated transport plan
_Embed green infrastructure into the development
_Create key physical links which bring people to the coast and
_Maximise the coastal, cultural and regional amenity.

The DSP2 identifies three logical, distinct and separate local structure plan areas within the larger DSP2 area. These are
_Robb Jetty Precinct
_Emplacement Precincts
_Power Station Precinct

The Emplacement precinct is identified as providing the majority of high density residential opportunities within the Cockburn Coast project area. It is envisaged that the Emplacement Local Structure Plan area will capitalise on the available views from the natural ridge line running through its core.

The DSP2 sets density and yield targets, height projections, as well as identifying the provision and location of key public open space areas. These have been addressed by the Local Structure Plan.

2.3 Policies

2.3.1 State Planning Policy No. 1 - State Planning Framework

This policy sets out the key principals relating to environment, economy, community, infrastructure and regional development to guide the way future development and decisions occur. The Cockburn Coast project specifically addresses all criteria listed above and the relevant S.P.Ps listed below, creating the potential for a sustainable urban development in this unique metropolitan location.

2.3.2 State Planning Policy No. 3 Urban Growth and Settlement

This policy sets out the principles and considerations which apply to planning for urban growth and settlement in Western Australia. It is a broad sector policy under *Statement of Planning Policy No.1: State Planning Framework* and is implemented by more detailed policies on particular

Figure 12_Master Plan as proposed by District Structure Plan 2

matters relating to planning for urban settlements that require additional guidance. The policies detailed within this section of the report provide a summary and brief response to the items recognised by this policy as being integral to the successful development of Western Australia.

2.3.3 State Planning Policy 3.6 Development Contributions for Infrastructure

The policy sets out development contribution provisions for standard infrastructure items applied by the Western Australian Planning Commission (WAPC) on the subdivision, strata subdivision, or development of land; and provides a consistent, accountable and transparent system for local governments to plan and charge for community infrastructure items which are not included in the standard provisions through development contribution plans. The Local Structure Plan is accompanied by a Developer Contribution Plan which will play an integral role in achieving the visions set out within this document in an equitable manner.

2.3.4 State Planning Policy 4.2 Activity Centres for Peel and Perth

The Structure Plan area contains a Neighbourhood Centre in the form of the Main Street Plaza. The development of this centre has been guided by the requirements of State Planning Policy 4.2. The main purpose of this policy is to specify broad planning requirements for the planning and development of new activity centres and the redevelopment and renewal of existing centres in Perth and Peel. It is mainly concerned with the distribution, function, broad land use and urban design criteria of activity centres, and with coordinating their land use and infrastructure planning. Other purposes of the policy include the integration of activity centres with public transport; ensuring they contain a range of activities to promote community benefits through infrastructure efficiency and economic benefits of business clusters; and lower transport energy use and associated carbon emissions. The policy also reflects the WAPC's intention to encourage and consolidate residential and commercial development in activity centres so that they contribute to a balanced network.

2.3.5 State Planning Policy 5.4 Road and Rail Transport Noise and Freight considerations in Land Use Planning

Given the location of major road infrastructure within the Structure Plan Area the provisions contained within State Planning Policy 5.4 are particularly relevant in the development of the Local Structure Plan. This policy aims to promote a system in which sustainable land use and transport are mutually compatible. Through specifically addressing noise attenuation matters in design and the interface between land uses the plan provides a manner of development in keeping with the requirements and principles of SPP5.4.

2.3.6 Draft State Industrial Buffer Policy and EPA Guidance

The structure plan area includes a number of existing industrial uses. These industrial land uses are likely to continue to operate for many years to come and have existing land use buffers in place. This Local Structure Plan identifies appropriate buffer and interface requirements in accordance with the requirements of the Draft State Industrial Buffer Policy and Environmental Protection Agency (EPA) guidance.

2.3.7 Liveable Neighbourhood

Structure plans are to be prepared based on the framework provided under Liveable Neighbourhoods. The primary measure of achievement for structure plans is compliance with the objective and requirements of Element 1 - Community Design.

This Local Structure Plan has been prepared in accordance with the requirements of Liveable Neighbourhoods in a number of ways. Firstly, Liveable Neighbourhoods promotes mixed land use planning and design, which plays a key role in characterising the proposed Emplacement Local Structure Plan. Liveable Neighbourhoods also outlines that achievement of sustainable urban outcomes will require higher residential densities in many areas. The Cockburn Coast provides an intensity of residential density suitable to allow for a sound and sustainable urban outcome ranging from Residential R40 to Residential R160. Furthermore, densities and land uses have been provided in a manner that is supportive of public transport, specifically the proposed Bus Rapid Transit (BRT) system. This is again in keeping with the principles of Liveable Neighbourhoods.

In sum, all elements of the Local Structure Plan are in support of Liveable Neighbourhoods.

2.4 Other Approvals and Decisions

Improvement Plan 33 (IP33) was prepared for the Cockburn Coast project area under the provisions of Part 8 of the Planning and Development Act 2005.

The purpose of IP33 was to prevent inappropriate development within Cockburn Coast whilst the District Structure Plan was being prepared and subject to additional appropriate statutory and governance arrangements being put in place.

IP33 recognises that Cockburn Coast has been identified for future urban development, moving away from its historical industrial use, and also recognises that Cockburn Coast is subject to intense development pressure. Therefore, IP33 provides the mechanism to 'halt' inappropriate development until such time that a robust statutory and governance framework has been implemented to guide future development.

IP33 also enables the WAPC to acquire land by agreement or compulsorily for future redevelopment, if necessary.

3.0 Site Conditions and Environment

3.1 Environmental Assets and Constraints

Cockburn Coast has a long history of disturbances, including clearing and infrastructure developments within the site and in the surrounding areas, the vegetation of the study site is largely modified from its original state and is significantly degraded. One weed species, bridal creeper (*Asparagus asparagoides), should be managed during construction phase to prevent the spread of the plants.

However, there are patches of vegetation in good condition that would provide potential foraging habitat for Black Cockatoos. Carnaby's Black Cockatoo was identified during the field survey as present and utilising this habitat. An impact assessment of clearing the Local Structure Plan area was carried out using both the Significant Impact Guidelines 1.1 and draft Department of Sustainability, Environment, Water, People and Community (DSEWPaC) referral guidelines. Both assessments were based upon the same level of clearing, but have different outcomes as a requirement of the mechanisms.

When assessing the impact based on the Significant Impact Guidelines 1.1 clearing of 2.96ha of good quality feeding habitat is unlikely to be considered critical to the survival of the Black Cockatoo species. This outcome is partly due to the site being connected to a larger corridor of bushland, Manning Park, which is part of Beeliar Regional Park which provides feeding habitat.

However, if assessed based on the draft DSEWPaC referral guidelines, clearing the vegetation and development of the Emplacement Local Structure Plan area, it would have a direct impact on Black Cockatoo feeding habitat and given this, referral to DSEWPaC may be required. It is important to note, however, that the referral guidelines used in this assessment are in the draft phase and are open to interpretation; referral may not be required unless to ensure legal certainty. It is recommended that clearing of the feeding habitat, which occurs primarily on the eastern edge of the site, be minimised or avoided. Furthermore, vegetation type 1, which occurs on the limestone ridge on the eastern side of the site, has similarities to a DEC-listed TEC, (Melaleuca huegelii — Melaleuca acerosa [currently M. systena] shrublands on limestone ridges). A vegetation survey in spring (when annual species are present) would be required to confirm whether VT1 is a TEC.

The Ecological assessment (June 2012) recommendations based on the likely impacts, in particular to Carnaby's Black Cockatoo are:

- Clearing of the 2.96ha of foraging habitat should be minimised or avoided;
- A further assessment of VT1 is required in Spring to provide certainty on its status as a TEC; and
- Where possible clearing and development be undertaken in areas that are degraded.

The full report can be found in appendix C of this report.

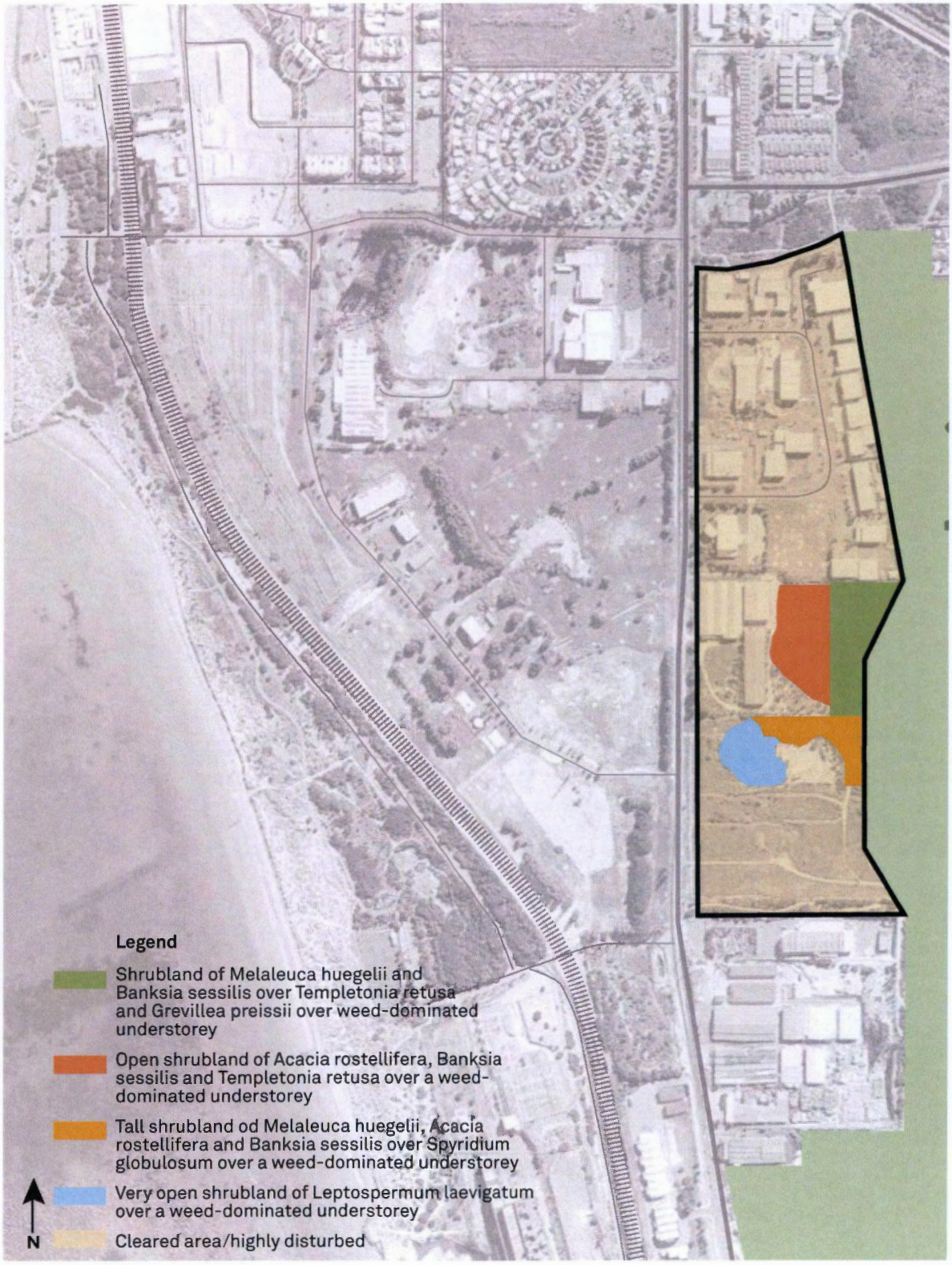


Figure 13_Vegetation Type Analysis

3.2 Land Form and Soils

The project area consists largely of Safety Bay Sands which has a high rate of hydraulic conductivity, meaning that there is limited surface water runoff as the sandy soil is very porous. Tamala limestone follows the ridge line in a north-south direction along the Safety Bay Sands adjacent to the coastline. Refer Figure 14.

The topography of the site is indicative of its coastal location, which consists of a primary dune system of around 5 metre AHD in the west and a secondary dune system in some sections.

The site gently rises up to a ridge line that runs north-south through the eastern section of the project area. This ridge line is steep in parts and also consists of some east-west valley formation. The ridge line reaches heights of 50m AHD in parts. Overall the site is suitable for urban development.

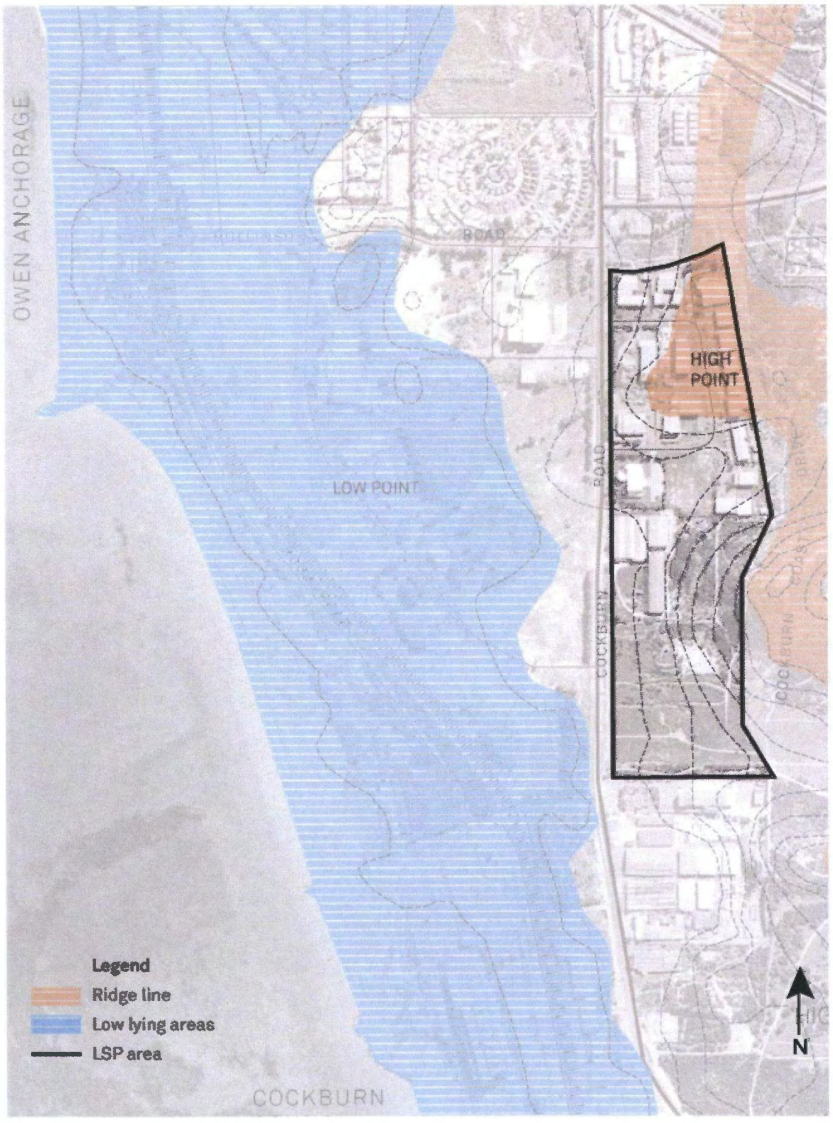


Figure 14_Landform Analysis

3.3 Ground Water and Surface Water

3.3.1 Surface Water

The nearest surface water body is the Indian Ocean, which is located along the western boundary of the Cockburn Coast area. Surface water is expected to infiltrate through sand on the Site, with some possible minor surface water run-off following the topography of the Site towards the Indian Ocean on the western boundary of the Site.

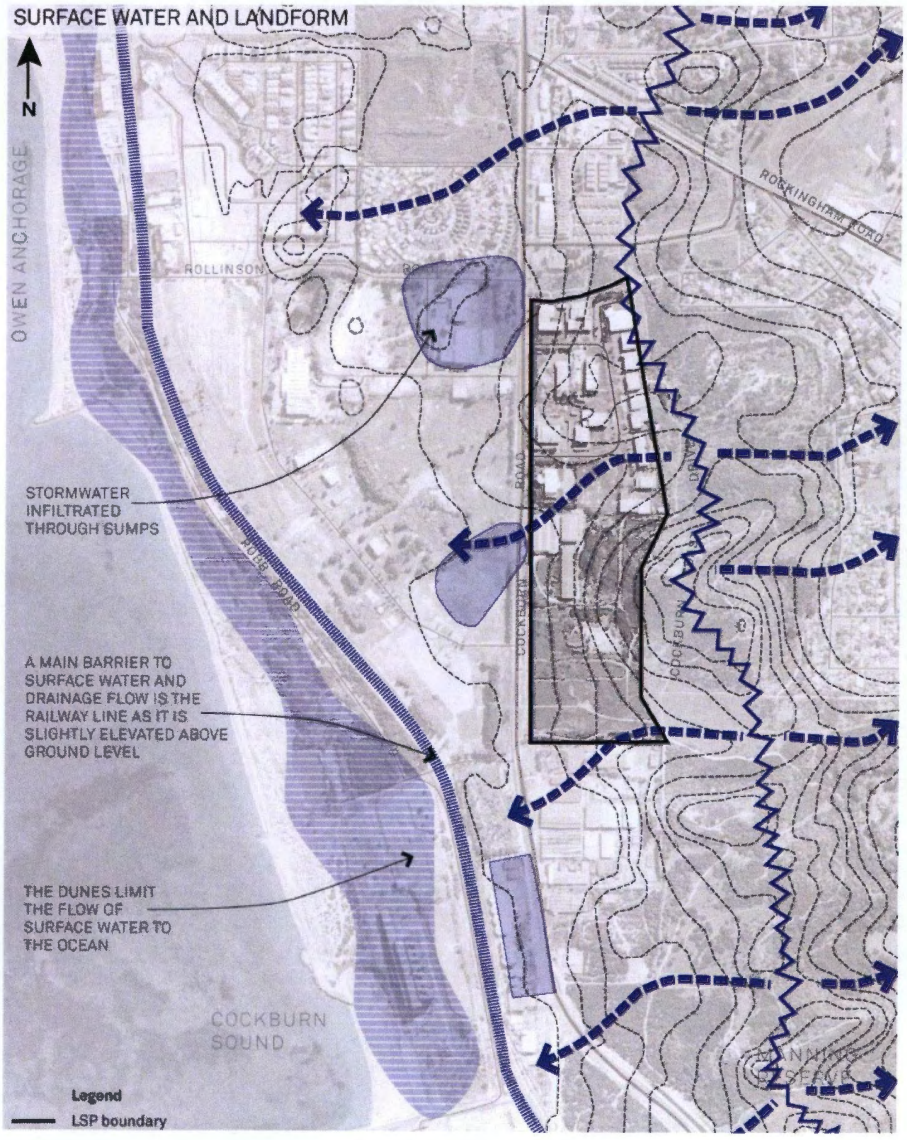


Figure 15_Surface water analysis

3.3.2 Ground Water

The Perth Groundwater Atlas indicates the Site is located above the Superficial (Unconfined) Aquifer (DoW, 2010). The depth to the superficial aquifer varies across the Emplacement site between 3m below ground level and 15m below ground level. Groundwater on the site is therefore generally deep and as a result not a constraint to development.

Groundwater beneath the Site will flow in a westerly direction towards the Indian Ocean, which is considered to be the discharge location for groundwater from the Site (DoW, 2010). Given the proximity of the Site to the Indian Ocean it is considered likely that groundwater beneath the Site will be subject to tidal influences and saline intrusion. As such, the use of groundwater on the site has its risks of salt water incursion and the historical contamination that has occurred from previous land uses such as landfills and industrial sites.

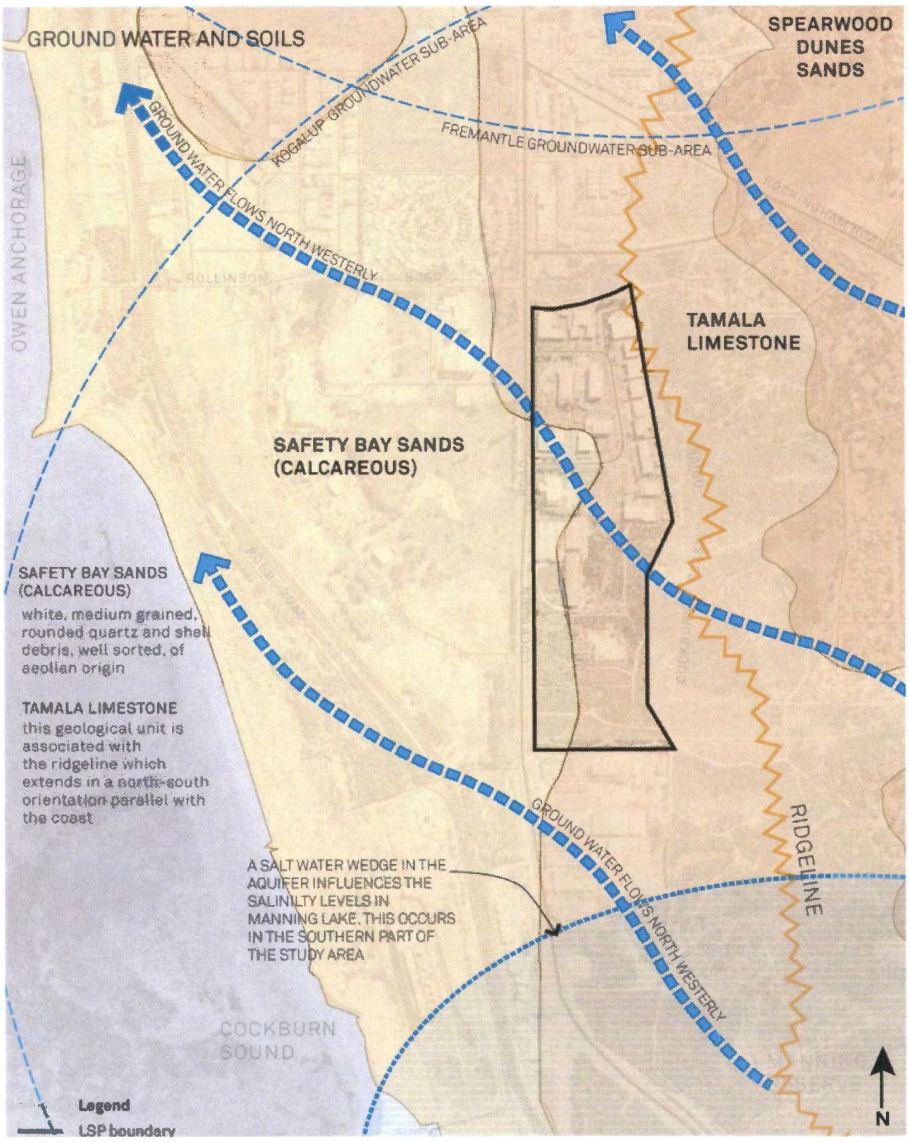


Figure 16_Ground water analysis

3.4 Bushfire Hazard

The bushfire hazard assessment by Ecological Australia was prepared following the methodology subscribed by Planning for Bushfire Protection Guidelines (2010) and is illustrated at Figure 17. The map displays areas of low, moderate and extreme hazard based upon the predominant vegetation (Figure 13) and the effective slope (see contours and slope labelling). Of particular importance, the map identifies extreme hazard currently within the centre of the site and adjacent to the east within the Cockburn Coast Primary Regional Road Reserve and Beeliar Regional Park.

Figure 17_Foreshore Bushfire Hazard Ratings (Eco Logical 20120)

3.5 Heritage

A Cultural Heritage Strategy has been prepared, and is included as Appendix D, to inform the development of the Cockburn Coast District Structure Plan Part 2 and associated Local Structure Plans. It provides the basis for the identification, ongoing management, care and interpretation of the indigenous, historic and maritime heritage sites located within in the project area.

The Cultural Heritage Strategy identified that the Cockburn coastline and the limestone ridge behind it contains a number of significant indigenous, historic and maritime sites with the most visually prominent being the South Fremantle Power Station and the Robb Jetty Abattoir Chimney. The area also includes landscape plantings, sculptures, shipwrecks, the South Beach Horse Exercise Area and the Robb Jetty Camp a site of importance and significance to Aboriginal people.

The Emplacement Precinct contains one place of historical importance and heritage value as explored in Table 08 - Places of Historical Significance.

Key themes and stories associated with the places in the Cockburn Coast District Structure Plan Part 2 study area were identified in the Cultural Heritage Strategy to inform place-making opportunities. The following theme is associated with the Emplacement Precinct:

Defence _The South Beach Battery (remains) is a remnant of a larger military complex that has associations with the military defence operations of Western Australia during World War Two.

The recognition and incorporation of the distinctive heritage of the area is a significant component of the urban renaissance of Cockburn Coast and is integral to creating a distinct and meaningful place. To guide the Local Structure Plans, the Cultural Heritage Strategy includes strategies setting out how to protect and transmit the heritage values of each place, in accordance with relevant legislative requirements.

A summary of these heritage management strategies relevant to the South Beach Battery (remains) in the Emplacement Precinct is provided below. Please refer to the Cultural Heritage Strategy, for detailed actions for each management strategy:

_Retain and conserve the remaining South Beach Battery
_Whilst views from the South Beach Battery to the Indian Ocean may not be retained in future planning, an overlook over the project area should be protected by the linear public open space down to Cockburn Road.
_Integrate interpretation of the site in the Cockburn Coast project to communicate the tangible and intangible values and history of the place to the community
_Consideration should be given to the partial reinstatement of earth embankments to allow an appreciation of its original form

With regard to the views from the South Beach Battery to the Indian Ocean, height modelling was undertaken by the DSP2. Residential densities and their associated heights have been adjusted to accommodate the height modelling and ensure such views are maintained.

Figure 18_ The Cockburn Coast was used for military training during WWII (State Library of WA)

Figure 19_ Emplacement Battery

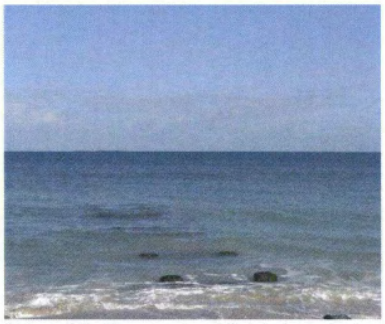


Figure 20_ Remnants of Robb Jetty today

Figure 21_The South Fremantle Power Station

Place	Heritage List	Status/Category
South Beach Battery (remains)	City of Cockburn - Local Government Inventory	Category D

Table 08_Places of Historical Significance

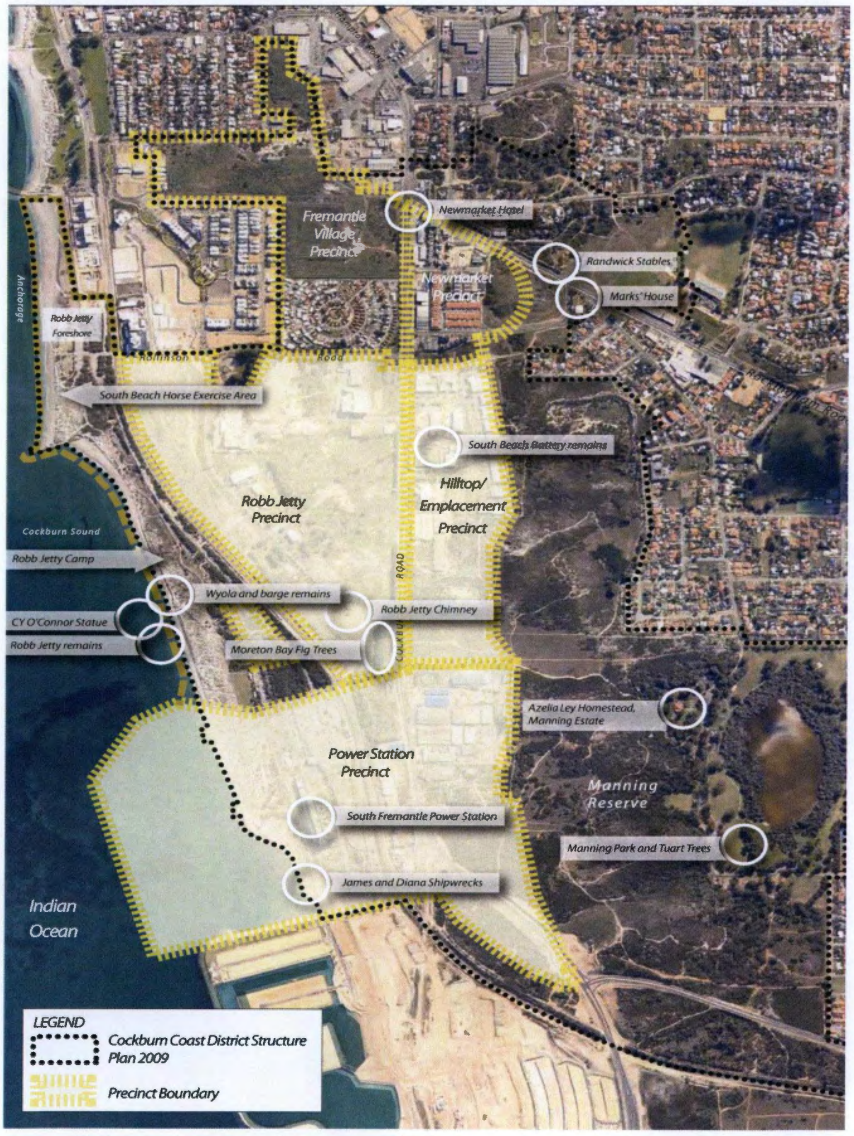


Figure 22_Places of Heritage Significance (TPG)

4.0 Context and Constraint Analysis

4.1 Existing Transport Analysis

The Cockburn Coast development site is a former industrial area. A small number of industrial uses are still in operation; however the majority of the land is suitable for redevelopment. The area to be covered by the proposed Emplacement Local Structure Plan is currently used for industrial purposes. The existing road network is illustrated in Figure 23. Cockburn Road (State Route 12) is a strategic road running north-south carrying approximately 17000 vehicles throughout the day. The route functions as the primary north – south route for freight and regional traffic. It has a speed limit of 60kph at the northern end and 70kph at the southern end with the transition point located south of the intersection with Emplacement Crescent. Currently the industrial uses on the proposed Emplacement Local Structure Plan connect to Cockburn Road via Emplacement Crescent and a small number of access points direct from the industrial sites.

There are already a number of pedestrian and cycle facilities within and surrounding the proposed Emplacement Local Structure Plan. There is a sealed shoulder on both sides of Cockburn Road to the south whilst a shared pedestrian / cycle path runs from the south east along the coast to the northwest. Route SW10 which forms part of the Perth Bicycle Network enters the study area at Rockingham Road, north of the proposed Local Structure Plan area.

Although there are a number of pedestrian routes in the area, there are currently limited opportunities for pedestrians to cross Cockburn Road. Pedestrian stages are included in the signals at the intersections of Cockburn Road with Spearwood Avenue, Rockingham Road and Douro Road providing crossing points at these locations.

There are a number of bus services currently operating in the Cockburn Coast area providing a connection to Fremantle and to the east. Only one bus service (service 825) runs north – south along Cockburn Road south of Rockingham Road in close proximity to the proposed Local Structure Plan area. The frequency of this service is limited with a maximum of two services operating in the peak hours.

Figure 23_Existing Road Network

4.2 Major Services and Infrastructure

As part of the DSP2 an Infrastructure Master Plan was established to ensure a coordinated approach to the delivery of service infrastructure across the project area and to guide the preparation of Local Structure Plans and subsequent subdivision. This report is included as Appendix F.

4.2.1 Sewer

The development area currently has a number of lots which are served by a reticulated gravity sewer system. The current Water Corporation Sewer Strategy for the area is shown in Appendix F. The existing system in this area consists of the following:

_Gravity sewer lines serving all existing lots in the area. Typically pipe sizes are 225mm .
_A small private sewer pumping station.

All sewerage infrastructure is owned and operated by the Water Corporation excepting the private pumping station. All serviced lots in the area would be rated and pay an annual charge. Industrial uses may have specific agreements in place with the Water Corporation.

4.2.2 Water Supply

All lots within the development area are served with reticulated potable water supply delivered by a piped system which exists within existing road reserves accordance with minimum Water Corporation criteria regarding quality and pressure. Water supply is served from the Hamilton Hill high level tank and supply area. All water supply assets are owned and operated by the Water Corporation of WA.

4.2.3 Roadworks

Existing lots within this development area are fronted by a sealed and curbed roads system. The main through road is Cockburn Road which carries traffic into and out of the area. Cockburn Road is the main freight route for existing commercial business in the area. All major services at one point or another exist within the Cockburn Road reserve.

4.2.4 Drainage

All rain that falls within the Cockburn Coast development area is infiltrated on site. The DSP2 identifies that this will continue upon development of the area, with all new lots required to infiltrate their own rainfall on site. The DSP2 also recognises the need for a number of existing draining sumps to be phased out and more aesthetically pleasing infiltration areas incorporated within public open space. Detailed landscaping and engineering designs will ensure that the required infiltration volumes can be accommodated.

4.2.5 Power

As part of DSP2, Western Power has carried out a feasibility study looking at how the development may be served with power supply staged through to the ultimate development from a distribution point of view. A number of existing sub feeders were examined as possible options to the supply of the development, with none being considered appropriate due to relocations, reliability, established development increases in areas such as Port Coogee, and limited capacity. Whilst some existing feeders have been identified as being able to supply the initial load of development ultimately a new feeder

will be required. It is also likely that major reinforcement will be required for both transmission and distribution assets to increase capacity. Ultimately a new feeder is likely to be required to be installed from the Amherst sub-station to the development area. It is also likely that major reinforcement will be required for both transmission and distribution assets to increase capacity.

Western Power through a feasibility study has indicated that a sub-station may be required within the Cockburn Coast area. A sub-station typically requires a land area of 1 hectare. Western Power is addressing this possible requirement in conjunction with the Terminal Substation relocation.

Installation of a new feeder is proposed to occur by direct horizontal drilling within existing road reserves. Hence, future road reserves need to take into account the installation of HV infrastructure. Existing power supply infrastructure in Cockburn road indicates that underground power cables adjacent to Cockburn Road are within private property. As such, the planning of the revised Cockburn Road reserve needs to accommodate these cables so that expensive relocations do not occur.

4.2.6 Telecommunications

Telstra landline telecoms system exists to a reasonable level in the area. The National Broadband Network (NBN) would be involved in the provision of telecommunications for the development area. Current policy is that for developments greater than 100 dwellings the NBN will provide optic fibre caballing to each dwelling. The developer will be required to provide pip and pit for each stage of development in accordance with NBN specifications.

Figure 24_Exisiting Infrastructure of the Cockburn Coast

4.3 Existing and Regionally Planned Employment Nodes

The Cockburn Coast is well located between economically significant centres in the southern metropolitan area of Western Australia, namely Fremantle, Rockingham, Kwinana and Henderson. It is also well connected to other major employment areas at Cockburn Central and Spearwood industrial area. However, given the LSP areas historical industrial use and zoning, its immediate surrounds are existing residential suburbs.

It is important when considering the existing and planned employment nodes within the Emplacement Local Structure Plan Area to consider the project as part of its larger purpose. This being the creation of the Cockburn Coast as envisioned by the District Structure Plan 2.

According to the employment targets set within Directions 2301, the South West subregion is expected to increase its employment self-sufficiency rate to 70% by 2031, requiring the creation of 41,000 new jobs, an increase from the already existing 52,000 in 2008. This allows the Cockburn Coast a unique opportunity to assist in the maturation of the employment economy within these targets. Specifically, the District Structure Plan 2 identifies the opportunity to provide between 2,310 and 3,125 jobs towards the Directions 2031 employment target. Whilst Cockburn coast will not become as economically productive as the identified strategic industrial centres it will play a valuable role in providing high quality employment within the subregion. The DSP2 notes the importance of the Cockburn Coast's role in competing with, but not cannibalising the existing and future economies within the subregion.

Figure 25_Commercial Vibe Imagery

4.4 Reserves, Open Space and Community Facilities

The existing recreational infrastructure and activities that are significant to Cockburn Coast have been identified and where possible integrated into the proposed Cockburn Coast development. These elements include parks, beaches, significant trees, heritage and art elements, sandy tracks and pathways. Refer to figure 26.

It is important to preserve these existing elements where we can as they play a vital role in defining the character of Cockburn Coast and provide rich historical memories which remain in the landscape.

4.4.1 Beaches

The beaches of Cockburn Coast have a unique character and function which should be preserved. Catherine Point Reserve and C.Y O'Connor Beach are currently the most utilised swimming beaches in the Robb Jetty Precinct. At present the beaches of South Beach all the way south to South Fremantle Powerstation are currently being used as a recreational beach for horses, dogs and people. There are very few beaches in the Perth metropolitan area that allow these kinds of activities to occur together. Although the beaches will become considerably busier with the increased population in the area, it is crucial that the existing function of the beach be preserved. The aim is for horse facilities to remain at McTaggart Cove to provide facilities for horses with a horse float car park, where the dunes are lower and there will be less disturbance to future residential uses, thus minimising potential land use impacts.

Sandy beach tracks which are currently used by people and horses provide a network of movement to and from the beach and through the dunes. With careful measures these tracks can be enhanced whilst ensuring the protection of the coastal dunal system.

4.4.2 Parks

McTaggart Cove Reserve is a key beach side picnic spot with toilet facilities, shelters, bbq and seating opportunities. The Robb Jetty structure plan ensures that its function remains and is enhanced with additional facilities to cater for the new residents and visitors to Cockburn Coast.

4.4.3 Heritage

Heritage elements such as the ship wrecks, remnants of the Robb Jetty, Robb Jetty Chimney, the turret and significant trees should be preserved and made a feature in the landscape, as these heritage elements play a crucial role in the history and story telling of the place.

4.4.4 Artwork

The "Human Race" art installation designed by artist Tony Jones follows the original line of the cattle race that ran from the jetty.

The Bronze Statue of C.Y O'Connor riding his horse is also designed by artist Tony Jones. It is located about 30 metres off the beach at the spot where it is said that the engineer took his own life in 1902.

These artworks should be preserved as they are valued by the community and reveal historical stories and mysteries of the past.

Figure 26_Existing Recreational Facilities

4.5 Contaminated Sites

Contamination is an important issue for Cockburn Coast, particularly as development may introduce generally more sensitive land uses than currently exist in the Local Structure Plan areas. Contaminated sites have been addressed within the Emplacement Local Structure Plan included in Appendix H in accordance with the Contaminated Sites Act 2003 (CS Act) (and relevant regulations and guidelines) as summarised in the Preliminary Assessment undertaken as part of Local Structure Plan consideration or are to be addressed using a staged approach to investigation and management. Further details of these are provided below.

As required by DSP2 and as recommended in relevant guidelines, a preliminary assessment of all lots within the Local Structure Plan area to identify known and suspected contaminated sites that have been reported to the DEC in accordance with the CS Act has been undertaken. This Preliminary Assessment comprised a review of the Basic Summary of Records (BSR) information provided by the Department of Environment and Conservation (DEC) to determine if a site had been reported to DEC as a known or suspected contaminated site, review of previous investigations undertaken by GHD and, where no investigations have been undertaken, a review of available historical aerial photographs to determine if there are any further indications of potentially contaminating land uses/activities at lots within the LSP area.

It is expected that development proposals respond to contamination issues. Further work is expected to be in accordance with the CS Act and relevant guidelines.

4.5.1 Staged Approach to Contaminated Site Investigations and Management

Relevant guidelines including those published by the DEC recommend a staged approach be adopted for investigation and management of potential or known contamination issues which provides for the following:

- Preliminary Site Investigation (e.g. collecting background knowledge, such as historical, geographical, geological and hydrogeological information to determine if past or present land uses have or have potential to have caused contamination);
- Detailed Site Investigation (e.g. investigation to collect soil, groundwater, gas/vapour samples at a site to determine if contamination is present, substance types, concentrations, extent and assessment of risks posed to human health and the environment);
- Site Management Plan (development of an effective and practical management strategy to address the risks posed by contamination); and
- Remediation, validation, ongoing management (e.g. remediation by methods such as on site or off site treatment of contamination, off-site disposal and subsequent testing to demonstrate the remediation has been effective, or other management measures such as modification of proposed land uses or controls on access via management plans or Memorial On Title).

This staged approach ensures that each stage of work is appropriately informed, provides greater opportunity to characterise sites in sufficient detail and allows appropriate action to be taken (where necessary) to address identified contamination issues in accordance with the CS Act.

4.5.2 Land use Response to Contamination

The Local Structure Plan responds to issues of contamination across the LSP area according to knowledge gained from a staged approach to investigation and management that has already been implemented for a number of key land holdings throughout the area. In the staged approach to assessment, consideration of known and potential contamination issues has been undertaken for these land holdings and their surroundings with respect to proposed forms of development and potential or actual risks these may pose for such development.

From current information, contamination issues have not however been identified to impose constraints requiring widespread land use responses across the LSP area. Where contamination issues have been identified at particular land holdings, consideration has been given to the severity, extent and possible management options to address them where deemed necessary in accordance with a risk based approach. Consideration of land use has been part of this process where locating forms of land use at/near known contamination which are suitable from a risk perspective can offer a more sustainable management option than undertaking remediation work. For example, in a location where a historic bunker oil leak has resulted in contamination at depth below ground level, the land use plan has been revised to ensure that no buildings are located over the known impacted area.

It is expected that development proposals will respond to contamination issues by informed stakeholders (including landowners). This will either be as part of work already being undertaken, consideration in the LSP process and future work to be undertaken to bring sites forward for development in accordance with a staged approach to investigation and management of contaminated sites.

4.5.3 Contaminated Sites List

GHD has undertaken a Preliminary Assessment of all lots within the LSP areas to identify known and suspected contaminated sites that have been reported to DEC in accordance with the CS Act. This Preliminary Assessment comprised a review of the Basic Summary of Records (BSR) information provided by the DEC to determine if a site had been reported to DEC as a known or suspected contaminated site, review of previous investigations undertaken by GHD and, where no investigations have been undertaken, a review of available historical aerial photographs to determine if there are any further indications of potentially contaminating land uses/activities at lots within the LSP area.

GHD has prepared tables for Emplacement which summarise the current status of contaminated sites investigations, known to GHD, at each of the lots contained within the LSP areas. These tables are presented as an appendices to this report.

4.6 Transport Noise

A Traffic Noise Assessment has been carried out by Herring Storer (Appendix B) to assess the noise received in accordance with State Planning Policy 5.4 'Road and Rail Transport Noise and Freight Considerations in Land Use Planning'.

4.6.1 Cockburn Road

Based on the acoustic assessment and modelling of current noise emissions from Cockburn Road, the following noise level should be used for development located adjacent to Cockburn Road;

_ Facing Cockburn Road – 62dB (A)
_ Perpendicular to Cockburn Road – 59dB (A)

For developments located adjacent to Cockburn Road, as part of the design process, an acoustic assessment shall be undertaken and included as part of the development application with the aim being to demonstrate the construction method will adequately reduce internal noise levels to meet the standards stated in SPP5.4. Given the proposed layout, the first row of buildings along Cockburn Road will act as an acoustic barrier to developments located behind. Hence improvement constructions are required for the first row of buildings only.

SPP5.4 requires a notification be placed on the Certificate of Title for lots where residences are exposed to transport noise and that noise received exceeds the SPP 5.4 outdoor 'Noise Target'.

Figure 27_The past and present of the Cockburn Coast is rich with industrial uses

4.7 Industrial Activities

Historically there have been a number of businesses located within the Cockburn Coast area. A small number of these existing land uses generate an offsite impact (see Figure 28) and therefore some adjacent land uses (such as residential) need more detailed consideration. The information found in this figure will be updated from time to time as these land uses cease, or where the buffer has been reduced via technical analysis. To view the most updated version of these buffers, see the City's online mapping system (constraints module) available via the City of Cockburn website.

Proposals for sensitive land uses (detailed in the relevant State Planning Policy) are required to provide a technical analysis to seek to reduce or mitigate that buffer. Depending on the nature of the buffer, the local government may seek advice from relevant government agencies. The technical analysis is required to be prepared in accordance with the requirements of the relevant State Planning Policy relating to industrial buffers.

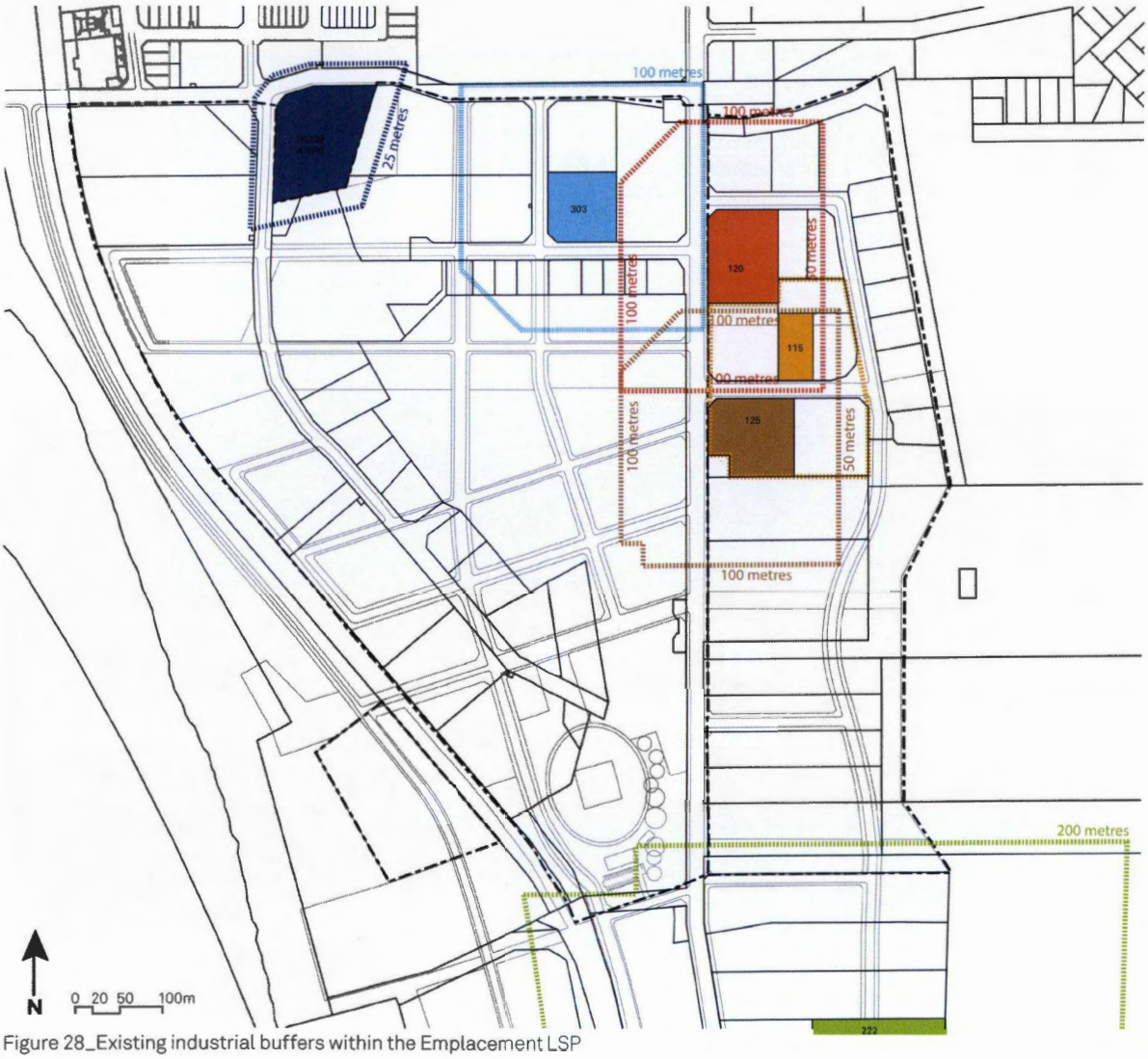


Figure 28_Existing industrial buffers within the Emplacement LSP

5.0____Local Structure Plan

5.1 Concept Approach to the Plan

The Emplacement Local Structure Plan is guided by the District Structure Plan (1 and 2). In preparing the Local Structure Plan, the keys drivers and structural elements behind the DSP1 & 2 where drawn upon to create the cohesive plan presented in this report. These drivers include:

_Sustainability and Green Infrastructure
_Integrated transport planning process
_A hierarchy of coastal activity nodes
_Development oriented transit system
_A vibrant and robust economy
_Bring the 'coastal experience' into the site
_Physical links to the coast
_New east-west linkages to the coast

In general, Cockburn Coast will build upon the existing infrastructure to create a new benchmark for mixed use and coastal neighbourhoods. It will become a major new attraction for the south-western metropolitan area of Perth.

Figure 29_Active Street Frontage

Figure 30_Embracing the past and present

Figure 31_Pedestrian Orientated design

Figure 32_Main Street perspective

5.2 Land Use

5.2.1 Proposed Land Uses and Integration

In accordance with the principles as set out for Land Use within the DSP2 the rationale distribution is based on the following;

_Focusing intensity and diversity of land use along the rapid transit alignment and specifically at proposed transit stations

_Locating a secondary activity centre along a more localised main street to service day to day needs of local residents

_Focusing recreational and entertainment opportunities at specific beach nodes such as Robb Jetty

_Providing for a range of residential opportunities, with height and density of residential buildings general responding to topography, green linkages and proximity to the coast and activity centres.

The rationale and land use classifications as illustrated on the Local Structure Plan are discussed in further detailed below;

5.2.2 Urban Corridors

In accordance with the 'Connected City' scenario as outlines by Directions 2031, the plan optimises the key transport linkages by enabling mixed use and high density residential development along high frequency transport routes. These corridors provide the opportunity and potential to accommodate increased medium rise – high density residential development.

Figure 33_Development with an Urban Corridor

5.2.3 Mixed Use Zone

The mixed use zone will promote sustainable and affordable living opportunities by allowing people to pursue a lifestyle that integrates living, working and leisure in one location.

Within the Emplacement LSP area, the mixed use zone is located along Cockburn Road to provide for flexibility in the type of land uses that may benefit from its prominence and accessibility. This being said, the mixed use classification needs to be carefully managed so that it does not detract or disperse activity from the two centralised activity centres. In accordance with the DSP2 the prescribed definition of a Mixed Use is not overly prescriptive and is guided by a number objectives. Objectives include promoting a vibrant mixed use environment, providing a continuous active frontage in the public realm, encouraging pedestrian use of Cockburn Road through the provision of awnings/canopies and active frontages and promoting and supporting rather than detract from the two primary activity centres.

Figure 34_Mixed Use streets create an active streetscape

5.2.4 Residential Zone

Residential zones represent the predominant use within the Emplacement Local Structure Plan. It is anticipated that a range of residential development typologies will be achieved, generally in accordance with those set out by DSP2:

_Single detached house ('Single House') and terrace housing
_Low rise apartment (3-5 storeys)
_Medium rise apartments (6-8 storeys)
_High rise apartments (above 8 storeys)

The location of residential densities is based on transit oriented design principles, optimising available ocean views and new urbanist principles. The densities achieve the designed dwelling yield and mix as required by DSP2 (refer 5.2)

Whilst single detached housing ('Single House') is to be included in the dwelling mix of Cockburn Coast it should be noted that this typology is only considered appropriate as forming a small portion of dwellings. As a result,

58 single houses are to be approved at the discretion of Council and will be considered only when:
_Development is located within residential zones coded R40; and
_Where development achieves a minimum height of three storeys; and
_Where the lot size is no greater than 230m²; and
_Vehicle access to the lot is via a rear laneway and all parking areas (garages and carports) are located at the rear of a lot.

Development seeking inappropriate amounts of single housing would be considered inappropriate in achieving the objectives of the Local Structure Plan.

A concept plan is proposed taking into account existing cadastre boundaries and the desire to maintain 'super lots' for optimal development. Whilst the concept plan is in no way mandatory it provides a clear direction for the subdivision of land and ensures a dwelling mix in keeping with DSP and DSP2.

Figure 35_Indicative Concept Plan

5.3 Residential

5.3.1 Densities

Table 06 compares a breakdown of the dwelling mix proposed by the Local Structure Plan in comparison to the yield targets set by the DSP2. Whilst the Local Structure Plan does not match the targets of the DSP2, it should be noted that the DSP2 is set over the entire Cockburn Coast project area, comprising of all three Local Structure Plans (Robb Jetty, Emplacement, and Power Station) . Each local structure plan area contains a distinct character of density with the Emplacement Local Structure Plan being focused on high density residential development.

Building Typology	Indicative Density	DSP2 Target (% Component)	Emplacement LSP Yield (% Component)	Emplacement LSP Dwelling Yield
High Density	R160	25%	47.08%	712
High Density	R100	11.6%	25.72%	389
High Density	R80	31.6%	0%	0
Medium Density	R40	1.1%	2.05%	31
Mixed Use	R100	11.3%	25.15%	381
Activity Centre	R-AC 0	19.4%	0%	0

Table 06_Target Yield (minimum) based on Town Planning Scheme No 3 at 85%

5.3.2 Housing Diversity and Lot Sizes

Cockburn Coast will provide a diversity of housing types and urban form through a mix of green title (lower density) and strata title developments. While the size of lots or land areas (through lot amalgamation) is not restricted, it is important that any development be undertaken to add to the quality and experience of the surrounding streets. Guiding principles will be used to assess subdivision and development proposals to ensure that the quality of the public realm is not compromised and that no single form or style of development is allowed to dominate over large areas or street elevations.

An active and interesting street is usually one where a number of buildings have been developed by separate owners, on separate lots and at different times. Development proposals in Cockburn Coast will be required to address these qualities through careful design and articulation of built form, building orientation and facade treatment. To that end, proposals will be assessed to ensure that a range of lot size and type is provided and that the character objectives of each precinct are addressed. The following principles will be considered:

- Lots created through subdivision (and amalgamation) should provide for development in accordance with the objectives and requirements stated for each precinct.
- Amalgamation will generally not be supported where contiguous land occupies an entire street block unless it can be clearly demonstrated that precinct objectives, character statements and development requirements are addressed. Specifically, development on large areas must:
  - Provide a range of lot sizes in each built form typology (i.e. mixed use, high and medium density residential) whilst still meeting the density criteria, character and general height limits as prescribed by the LSP.
  - Provide a mix of densities and housing types in each street block. It is not considered acceptable for a single street block to be provided in a homogenous manner resulting in only one lot /dwelling size.
  - In the event of amalgamation or development on two or more street frontages, the Design Guideline criteria for each frontage will need to be addressed.
  - Where subdivision or amalgamation is proposed on a lot with a designated density of Residential R80 or greater, lot size should generally be less than 1ha unless it can be clearly demonstrated that precinct objectives, character statements and development requirements are addressed.
  - Where a number of parcels are in single ownership or are to be amalgamated, lot sizes should facilitate and coincide with a logical and effective staging of development on the subject land.
  - Where an application seeks to create or develop on a lot greater than 1ha a Detailed Area Plan shall be provided and approved by the City of Cockburn prior to issuing any development or subdivision approval.

To encourage innovation in the development of housing typologies, the minimum design standards and density requirements as set by the Design Guidelines Local Planning Policy shall be flexibly applied. Each application will be approved on its individual merit based upon innovative response to the assigned density, exceptional urban design and amenity outcomes, and the provision of housing diversity. In particular, innovative solutions for small residential lot solutions will be considered for medium density land areas where all other design requirements have been met.

5.3.3 Lot Orientation and Outlook

As a result of the coastal location, lot density and layout has been formed to capitalise on the available views to the Indian Ocean. Green corridors are a prominent feature of the Local Structure Plan, with lots being oriented to take advantage of this visual link between Beeliar National Park and the coast. Through the appropriate application of building heights and visual lineal links, the Local Structure Plan proposes to provide the best possible outlook for the site. This will be further enhanced and enforced through the Design Guidelines Local Planning Policy.

Given the nature of the Local Structure Plan it will be possible for subdivision plans,allowing the creation of superlots to take into account climate responsive and solar orientated design, during the design phase. It should be ensured that all developments takes climate responsive elements into account in its design during subdivision and building design processes.

5.3.4 Affordable Housing

The DSP1 and DSP2 adopted a 'stretch' target of 20% (or approximately 970 units) proviso of 'affordable 'product for all development within the Cockburn Coast. As the progressed into Local Structure Planning, it is necessary to ensure that the various objectives and targets of the CCDSP Pt 1 & 2 are carried through, where possible to implementation. This includes trying to achieve the 20% stretch target for the provision of affordable housing and resulted in the preparation of this Affordable Housing Strategy.

In order to understand how to implement affordable 'product' across the Cockburn Coast project, it is important to first understand what constitutes 'Affordable Housing'.

As this definition is formulaic, it is necessary to determine the benchmark of a low income household. This is as set out in Table 07. It is noted that very low income households will be catered for through the social housing sector. Low to moderate income households will be the target market for affordable housing delivered by the private sector.

Median Household Income	$79,861	
Moderate Income Bracket	80% Median	120% Median
Annual Income	$63,889	$95,833
Weekly Income	$1,229	$1,843
Affordable Weekly Rental Benchmark (30%)	$369	$553
Affordable Purchase Benchmark	$264,057	$396,085

Table 07_Affordable Housing Benchmarks for Perth Statistical Division
Source: Department of Planning

The research, literature review and scenario modelling undertaken as part of the Affordable Housing Strategy identified a number of key elements which have guided and shaped the recommendations made. These key elements include;

- The Judith Stubbs and Associates recommendation of a minimum 15% affordable rental and purchase accommodation in all new release and redevelopment areas is warranted, with 20% being considered as a reasonable 'stretch' target.
- State government policy does not support the mandatory provision of affordable housing.
- As a result inclusionary zoning is not considered as an appropriate mechanism of implementation. In addition to Dwelling Density based initiatives are not considered relevant given the Residential Design Codes applied to the area.
- Plot Ratio Bonuses are considered to be most applicable and attractive as a mechanism for achieving affordable housing. In the case of this local structure plan, these are referred to as 'floor space bonuses' given there is no plot ratio applicable.
- The most successful methodology of achieving affordable housing will utilise a factor of mechanisms such as those listed by this report.

_Of development sites and placed downward pressure on land values. The sustained withdrawal of credit availability for this sector and weak consumer demand has placed continued pressure on land values over the last 30 months. This in turn affects the attractiveness of affordable housing provision by the private sector.

_In considering the feasibility of plot ratio bonuses as a mechanism for achieving affordable product within the typologies proposed by the Cockburn Coast District Structure Plan Part 2, sites characterised by heights of 3 to 5 stories with a density coding of Residential R80 are considered the most feasible in today's market conditions.

_The study has demonstrated that the adoption of a mix of mechanisms could deliver 15% affordable housing, with the 20% target set by DSP and DSP2 remaining as a stretch target.

The below table outlines the potential for the provision of affordable housing across the DSP area (including Robb Jetty, Emplacement and the Power Station precincts).This table is provided as guidance only to demonstrate the potential provision of affordable housing within the Cockburn Coast as it meets the vision and objectives of DSP and DSP2.

	Percentage of Total Dwellings 5193
Development of State Land (based on delivery of 15% Affordable Housing)	3.1%
Private Development Incentives	11.88%
Total	15%
Social Housing Investment above what will be provided on State Land (based on take up of 5% of total housing stock)	5%
Total	20%

Table 08_Potential affordable housing yield expressed as a percentage to allow for flexibility of future development scenarios

An important element of the provision of affordable housing, is the provision of affordable housing product in perpetuity. The aspiration for the provision of affordable housing is for majority of product to be provided in perpetuity.

In addition to the above, development should deliver an appropriate mix of affordable product, including product that is suitable for families. Additional incentives are offered for the provision of this type of housing.

5.3.5 Mechanisms for Implementation

While a number of mechanisms are explored in the Affordable Housing Strategy, the mechanism which is promoted by incentives contained in this local structure plan is the notion of a plot ratio bonus.

The Affordable Housing Strategy further detailed the Plot Ratio Bonus which has been translated to a floorspace bonus as a mechanism suggesting the following as a reasonable sliding ratio of bonus.

_Affordable yield 10% = 30% bonus
_Affordable yield 20% = 40% bonus
_Affordable yield 25% = 50% bonus

The City of Cockburn may further examine the potential to transfer the floor space bonus but this should be contained within Cockburn Coast.

5.3.6 Location of Affordable Housing

Given the dense and walkable nature of the Local Structure Plan affordable housing is considered appropriate within any area of the LSP. It is especially encouraged in the Mixed Use areas as well as along the BRT alignment. This will allow for residents to benefit from co-location with amenities and therefore encourage affordable living in addition to provision of affordable housing.

5.3.7 Review of Affordable Housing Provisions

The Local Structure Plan will be reviewed by the City of Cockburn in 5 years from its date of endorsement by the Western Australian Planning Commission to examine the progress made towards the achievement of the 20% affordable housing targets for Cockburn Coast as prescribed in the DSP.

The review will focus on the success of the various incentive mechanisms to encourage the development of affordable housing by the private sector. Should the review determine that the incentives are not working effectively the review may recommended an alternative approach to planning for affordable housing.

The revised LSP (if deemed to be required by the review) should be endorsed by the WAPC within the sixth year of the original structure plans endorsement by the WAPC.

5.4 Visual Landscape Assessment

Building heights are generally in keeping with the range expressed by the DSP2. In accordance with DSP2, the majority of development across the Local Structure Plan Areas will be a minimum of 5 storeys in height, and will most likely be multi- storey apartments. Generally, building heights respond to the topography of the land, with the highest residential development being focused on the ridge line. Residential development will be encouraged on the upper levels of commercial/retail multi-storey buildings, to facilitate all hours activation of activity centres and provide building surveillance of the streets below.

Building heights respond directly to topography, maximising the views to the ocean, particularly for residential development across the site. Within the Local Structure Plan area taller buildings are reserved for activity nodes. Contextually, the height of existing adjacent development is well considered, with propose building heights allowing for mediation between existing and new development. This is particularly relevant for development in the north of the structure plan area.

Figure 36_Views to the Indian Ocean are available from the Local Structure Plan area

5.5 Movement Network

5.5.1 Movement Network

The volumes on routes through the Emplacement LSP have been measures and are included as an appendices to this report. The flows are recorded in passenger car units (PCUs). The PCU estimates the relative impact that different types of vehicles have on the highway network compared to a single car.

The flow on Cockburn Road will more than double in 2031, with Cockburn Coast in place. Although there are a number of routes into and out of the development area, the majority of trips will use Rollinson Road, Main Street and McTaggart Cove to access Cockburn Coast as these will be signalised. The Emplacement LSP will be connected to Cockburn Road in four locations.

Vehicles will only be able to turn left into and out of these streets due to the existence of a proposed median on Cockburn Road. Trips wishing to turn right into and out of the Emplacement LSP will therefore be required to travel through the Power Station precinct and access Cockburn Road at the McTaggart Cove intersection.

5.5.2 Indicative Road Cross Sections

The Emplacement LSP consists predominantly of local streets as illustrated in Figure 37. Some of these local streets will have shared zones giving greater priority to pedestrians and cyclists. Cross sections for local streets with and without the shared zones are illustrated in Figure 38 and Figure 39.

Within the Emplacement LSP, a shared zone is proposed on one of the east-west links. This link will form an east-west greenway connecting the coast and Manning Reserve. This shared street forms part of the pedestrian priority network proposed in the Integrated Transport Plan.

The Local Streets without the shared zone have two general traffic lanes totalling 6m in width. These traffic lanes would be converted to a shared surface on the shared zone streets.

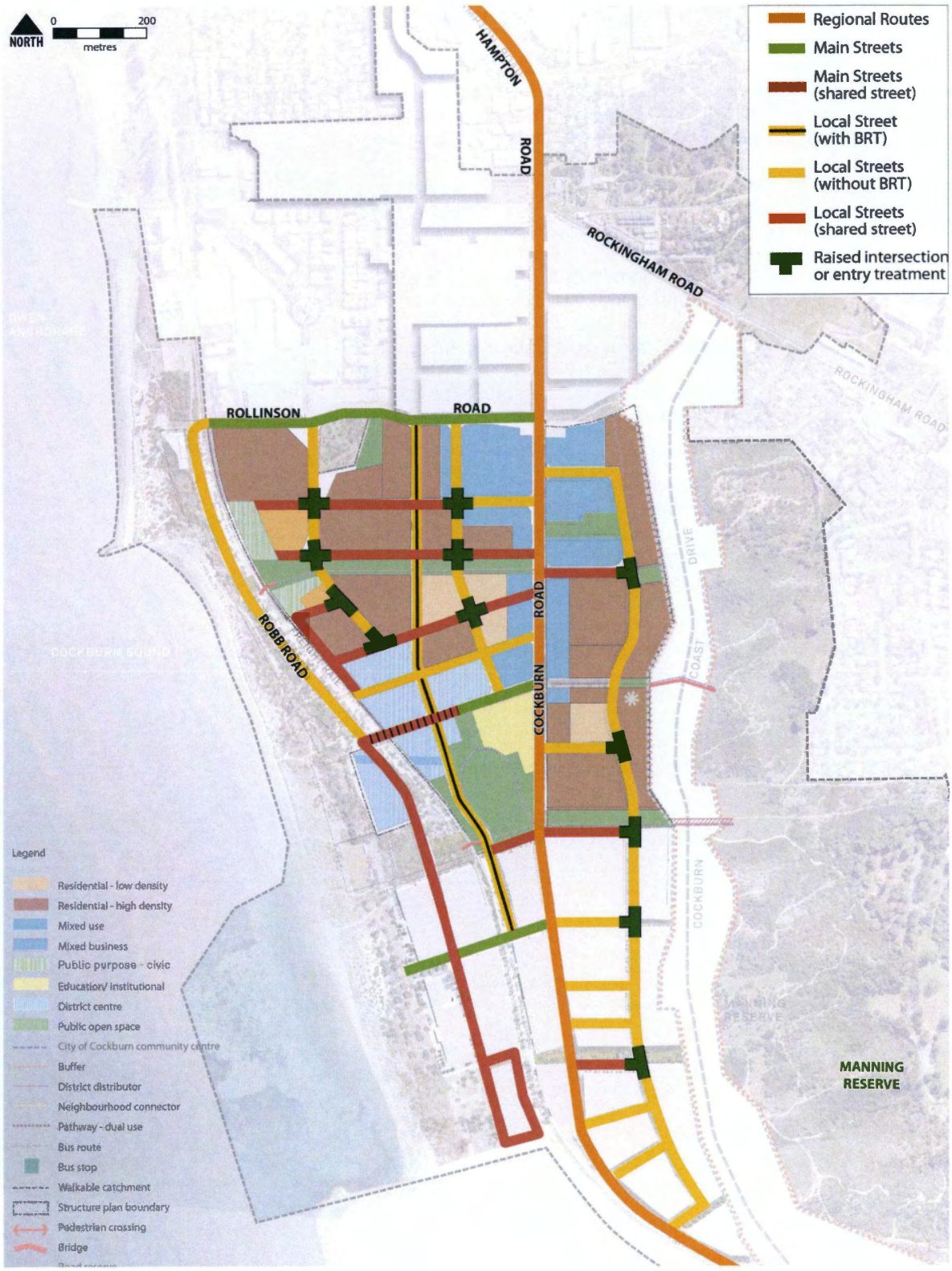


Figure 37_Road Hierarchy for all precincts

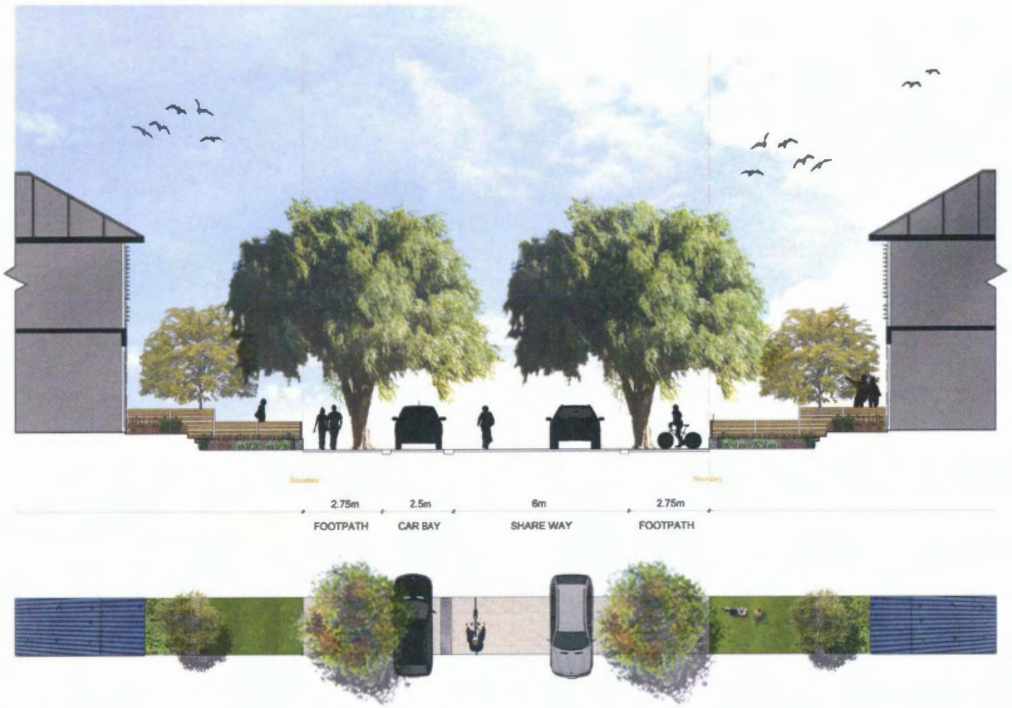


Figure 38_Section through Local Street with a shared surface

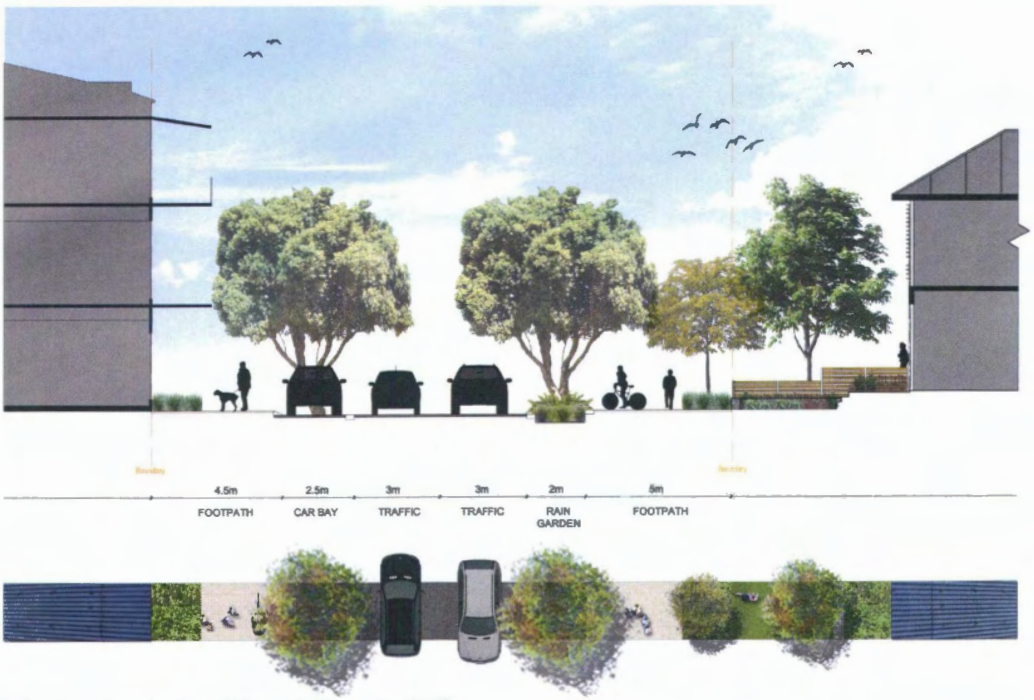


Figure 39_Section though a Local Street (without the BRT)

5.5.3 Permeability and Accessibility

The Emplacement LSP area will be designed to provide a permeable walking and cycling network, with visual and physical connectivity to other streets and places. There will be clear visual links between streets and places with adequate lighting provision along the routes. The design of the streets within the Cockburn Coast development has been carefully linked with the design of the Bus Rapid Transit System (BRT) as defined in Part 5.5.5 of this Local Structure Plan. BRT stops are located approximately every 400-600 metres. The proposed BRT coupled with the stop locations for existing services in the area, means that all of the residential dwellings in the Emplacement LSP area are within 500m walk of bus stops.

The existing transport network allows for east-west movements on the road network to the north of the Emplacement LSP via Rockingham Road and to the south of the precinct via Spearwood Avenue. Off road routes are currently provided for pedestrians and cyclists from Cockburn Road eastwards through the Emplacement LSP and through the Manning Reserve to the developments in the east. There are currently only a small number of crossing points on Cockburn Road.

As part of the Cockburn Coast development, signalised intersections are proposed at Rollinson Road, McTaggart Cove and Main Street. These will provide potential crossing points for pedestrians and cyclists, improving the connections between Cockburn Coast and the areas to the east and between the Emplacement LSP and the remainder of the Cockburn Coast development to the west of Cockburn Road. Two pedestrian crossing points will also be provided along Cockburn Road, further enhancing the connectivity of the development and adequately matching the desire lines. The location of the crossings will allow for more direct access for pedestrians and cyclists.

With regards to the existing north-south transport network, there are currently no cycle facilities along Cockburn Road between Rockingham Road and just south of Boyd Crescent. The road safety audit identified that there is an undesignated narrow hard shoulder that is being used by cyclists south of Boyd Crescent to Old Cockburn Road. Ultimately, Cockburn Coast will create a number of potential north-south routes. These will provide high quality routes for pedestrians and cyclists through the development, also connecting the development to the areas in the north and south. These routes will be in the form of shared paths providing an attractive route for non-motorised modes of travel. The BRT will provide an additional north-south connection through the area.

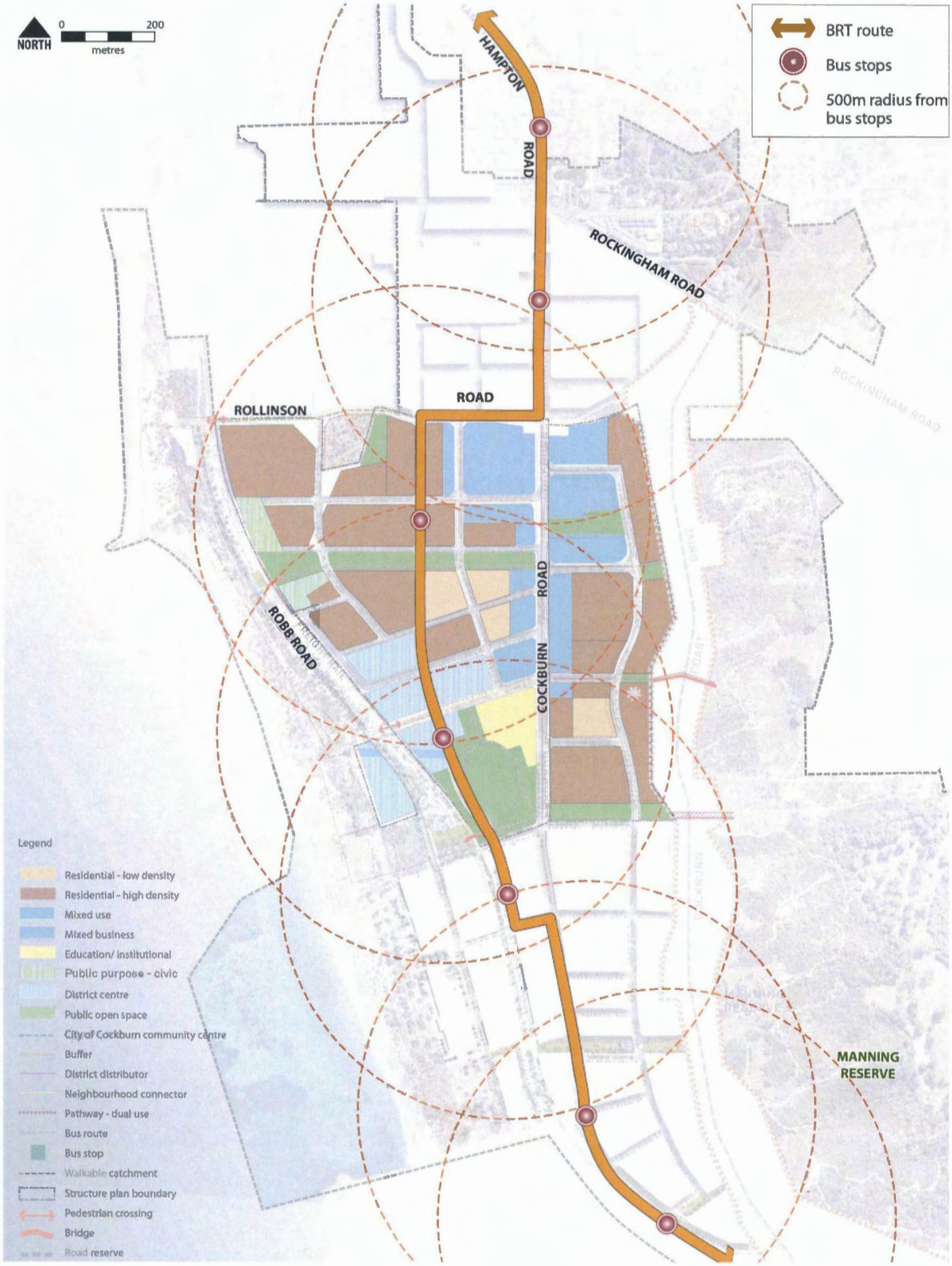


Figure 40_BRT Alignment

5.5.4 Traffic Management

Assessment of the proposed Rollinson Road / Cockburn Road intersection north of the Emplacement Local Structure Plan area indicates that delay will occur during the PM Peak hour with the development in place. Although queuing will be evident on Cockburn Road, the delay to vehicles will be minimal and vehicles in the queue will clear the stop line in one cycle of the lights. This level of congestion may be beneficial in the study area as this could encourage greater uptake of the BRT which would in turn reduce the demand on the intersections.

Consideration of the proposed McTaggart Cove / Cockburn Road intersection that would provide access to the Emplacement LSP area via the Power Station precinct, shows an excessive delay and poor Level of Service on McTaggart Cove East for right turning traffic. The intersection analysis indicates there will be significant difficulty turning to the north from the Emplacement LSP area in the evening peak. This is due to the high flow of traffic leaving the Fremantle area at the end of the day. In reality, people would choose not to make this movement in the evening peak or would travel straight ahead into Robb Jetty or Power Station precincts and find their way north through the development. The volume of vehicles turning to the north would not be high in this peak hour. Consideration could be given to the introduction of peak hour turn bans for these movements if this problem eventuates.

5.5.5 Proposed Public Transport Network

A Bus Rapid Transit (BRT) corridor will be created along Cockburn Road and through the development, connecting Fremantle to Rockingham. The BRT will help to encourage public transport use within Cockburn Coast and will reduce the reliance on private car travel. Although the BRT route does not enter the Emplacement LSP as illustrated on Figure 40, the route runs along Rollinson Road (close to the north west corner of the Emplacement LSP area) and then through the development. The proposed BRT bus stops are located within 500m of dwellings in the Emplacement LSP.

The local, district and regional services that currently operate in the study area will remain and will benefit from being able to use the dedicated facilities on the BRT route.

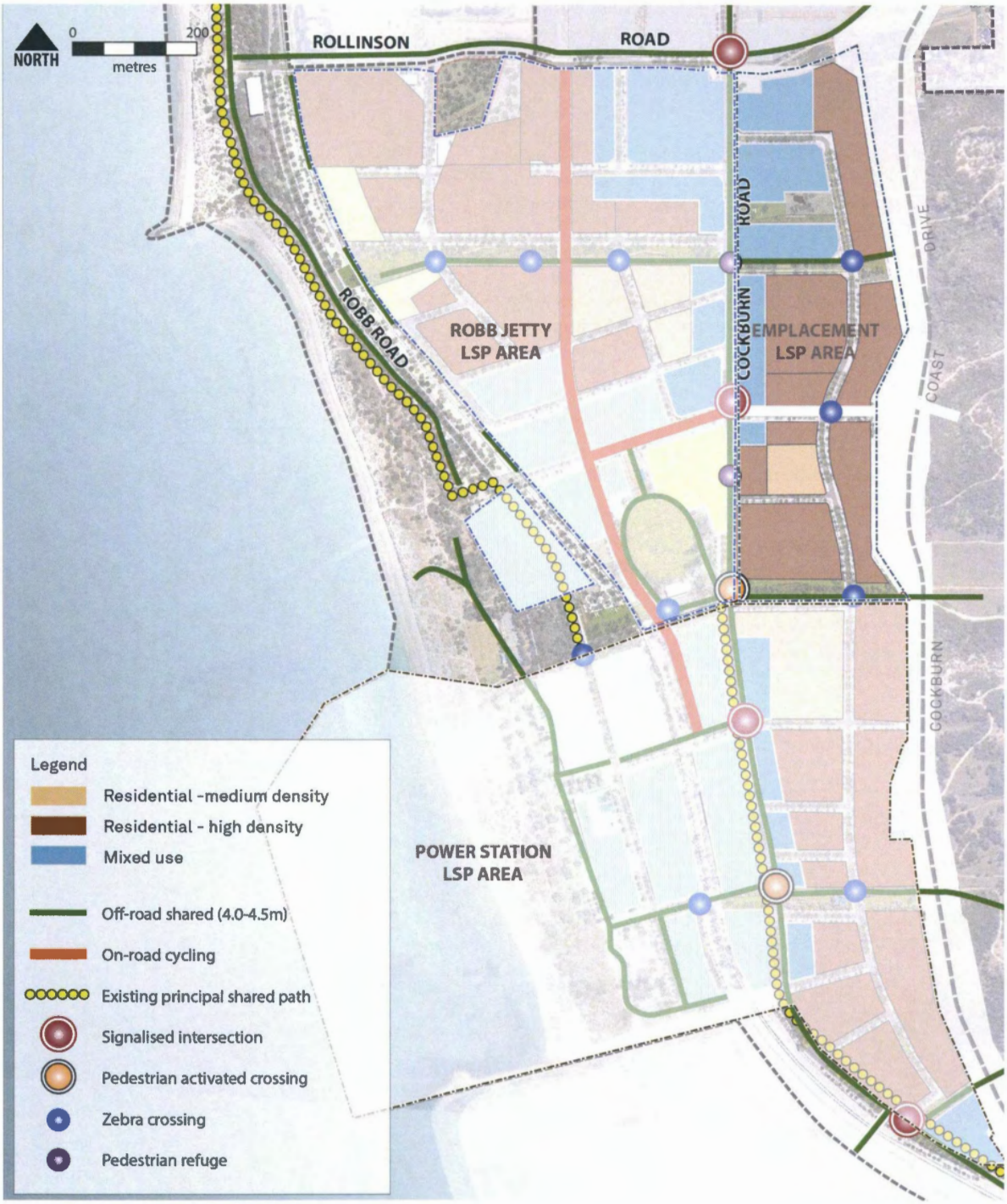


Figure 41_Proposed pedestrian and cyclist network

5.5.6 Proposed Pedestrian and Cyclist Network

There will be a number of controlled crossing points throughout the development as detailed on Figure 41. Signalised intersections on Rollinson Road, Main Street, McTaggart Cove, and to the south of the study area will provide crossing points for pedestrians and cyclists. Pedestrian movements will be accommodated in the proposed signal timings. Two pedestrian activated crossings will also be provided in the southern part of the study area. These crossing points will allow access between the Emplacement LSP area and Robb Jetty and Power Station precincts on the opposite site of Cockburn Road.

Off road shared paths will be provided on the east-west links through the Emplacement LSP. These will connect the Emplacement LSP to the remainder of the development to the west and Manning Reserve to the east.

Zebra crossings are to be used throughout the residential streets within the Emplacement LSP for streets crossing the east west greenways. These will be combined with raised intersections and entry treatments in strategic locations for additional traffic calming. Modelling shows that the traffic volumes on these routes will not exceed the specified traffic volumes for a 2 lane undivided road.

Secure and convenient cycle parking will be provided within the Emplacement LSP. This will be located within or adjacent to buildings with fully secure cycle lock-up facilities in overlooked locations. This will provide added security and user safety.

5.5.7 Proposed Parking Strategy

The ITP recommended the minimization of the amount of private car parking to promote active and public transport; to reduce greenhouse gas emissions, reduce the amount of time spent travelling in private motor vehicles and to increase household affordability. The standards set forth for parking are generally more restrictive than conventional standards and market expectations for parking in the metropolitan region. The aim is to take advantage of the presence of the BRT and the diverse mix of uses in a compact area, to diminish the demand for private and visitor parking.

The ITP sets out the proposed parking rates recommended as a maximum for off-street parking. The rates detailed in the ITP are as follows:

Residential
- 1 per dwelling (regardless of size), including visitor bays, within 400m of quality public transport
- 1 per dwelling (regardless of size), plus 1 visitor bay per 4 units, greater than 400m from quality public transport

Retail / Commerce / Office
- 1 per 75m2 GFA, within 400m of quality public transport
- 1 per 50m2 GFA, greater than 400m from quality public transport

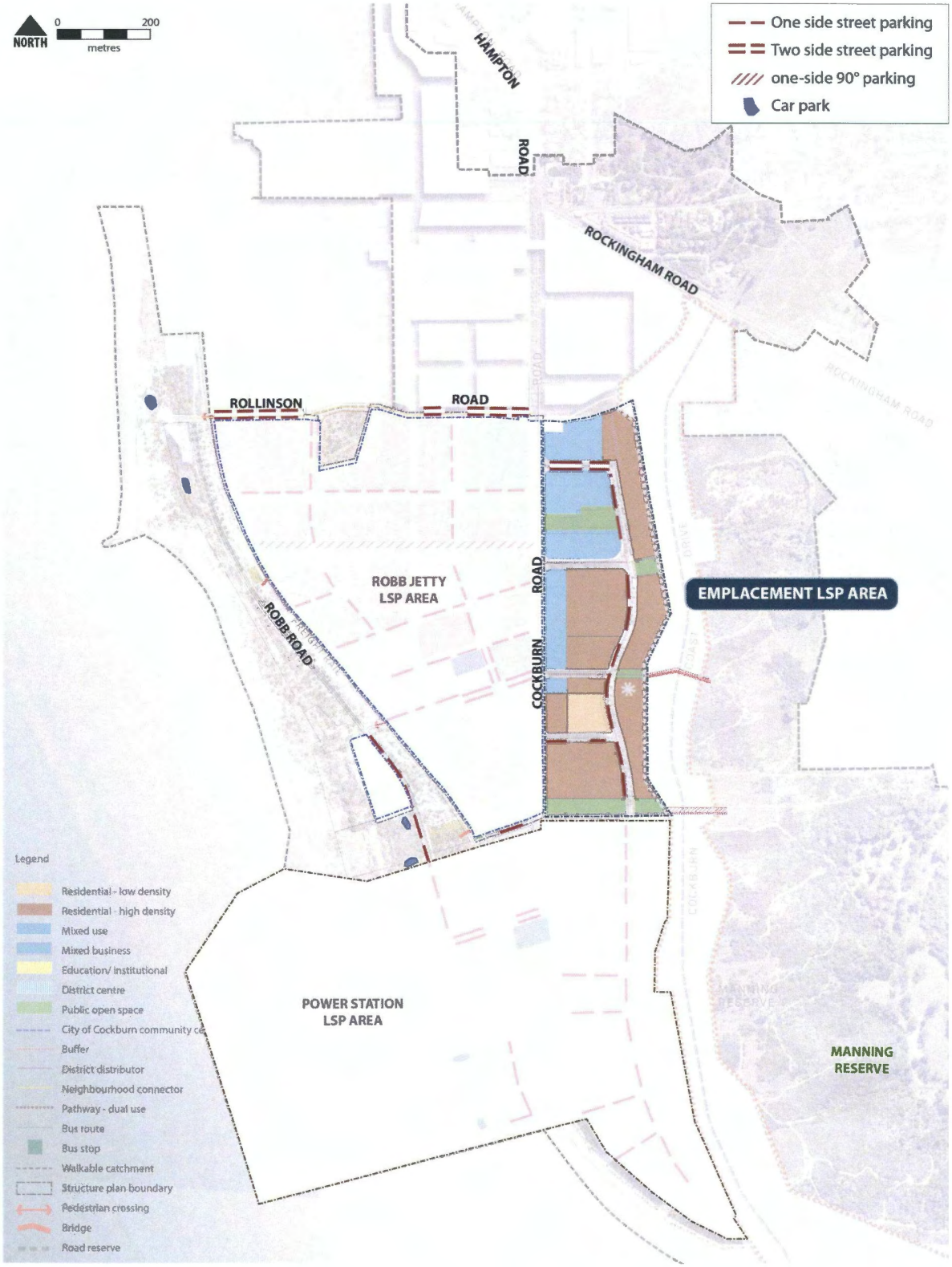


Figure 42_Proposed Parking Strategy

74 In order to reduce the number of trips and achieve the trip rates proposed for Cockburn Coast, the development should aspire to the rates detailed in the ITP. It is however recognised that whilst construction occurs there will need to be a period of transition. Initially there will be an increased dependency on private motor vehicles whilst the BRT is constructed, however once both the BRT and the development are complete the parking rates may be reduced.

During the period of transition, parking standards are to be in accordance with Town Planning Scheme No. 3. The LSP will be reviewed by the City of Cockburn in five years from its date of endorsement by the WAPC to examine the progress made towards the achievement of the parking rates as set out by the ITP and listed above. The review will focus on the ability to implement the ITP parking rates based on the availability of the Bus Rapid Transit System as well other integral elements of the overall ITP system as set out by DSP and DSP2.

The proposed parking areas in the Emplacement LSP area are illustrated in Figure 42.

Within the Emplacement LSP area, the parking spaces will be provided in conjunction with development with a requirement for the spaces to be efficiently shared between the uses. No shared public parking facilities are proposed in this precinct. Parking will also be located on-street on the local roads within the precinct.

On street parking will be short term during daylight hours to discourage use by employees within the development. Short-term parking will also help to improve the activity and vitality of the area. Parking will be priced appropriately to promote sustainable travel behaviour. Rather than relying on the car, people working at the development site will be encouraged to use the BRT and non-motorised modes.

It is the intent of the LSP to provide no additional parking at the beach which is consistent with the approach in the ITP. No additional parking will be provided at the beach for a number of reasons.

- The rail line provides a constraint in the area. Parking on the beach side of the rail line will put greater pressure on the rail crossing.
- Walking and cycling will be encouraged in the area in addition to operating the BRT through the Cockburn Coast development.
- Encouraging these modes of travel will reduce the number of trips by the private car and thus additional parking spaces will not be required.

Some additional parking spaces will however be provided on the green strip on the eastern side of the rail line available for use by those visiting the beach.

A Green Travel Plan will be required for commercial and retail space within the Emplacement LSP area to promote non-motorised modes of travel, use of the BRT and car sharing. Through this, employers will be able to influence the travel behaviour of their employees.

5.6 Open Space

The Emplacement Local Structure Plan area is proposed to be a unique coastal urban environment, with a high proportion of apartments it is therefore appropriate to provide additional public open space opportunities. These additional open spaces will replace the traditional backyard and allow residents to pursue a wide range of recreational opportunities that would otherwise have been pursued in the traditional backyard.

In accordance with the District Structure Plan the Local Structure Plan provides a functional and well distributed public open space schedule .

The open spaces have been zoned into the following categories:
-Local Park
-Neighbourhood Park

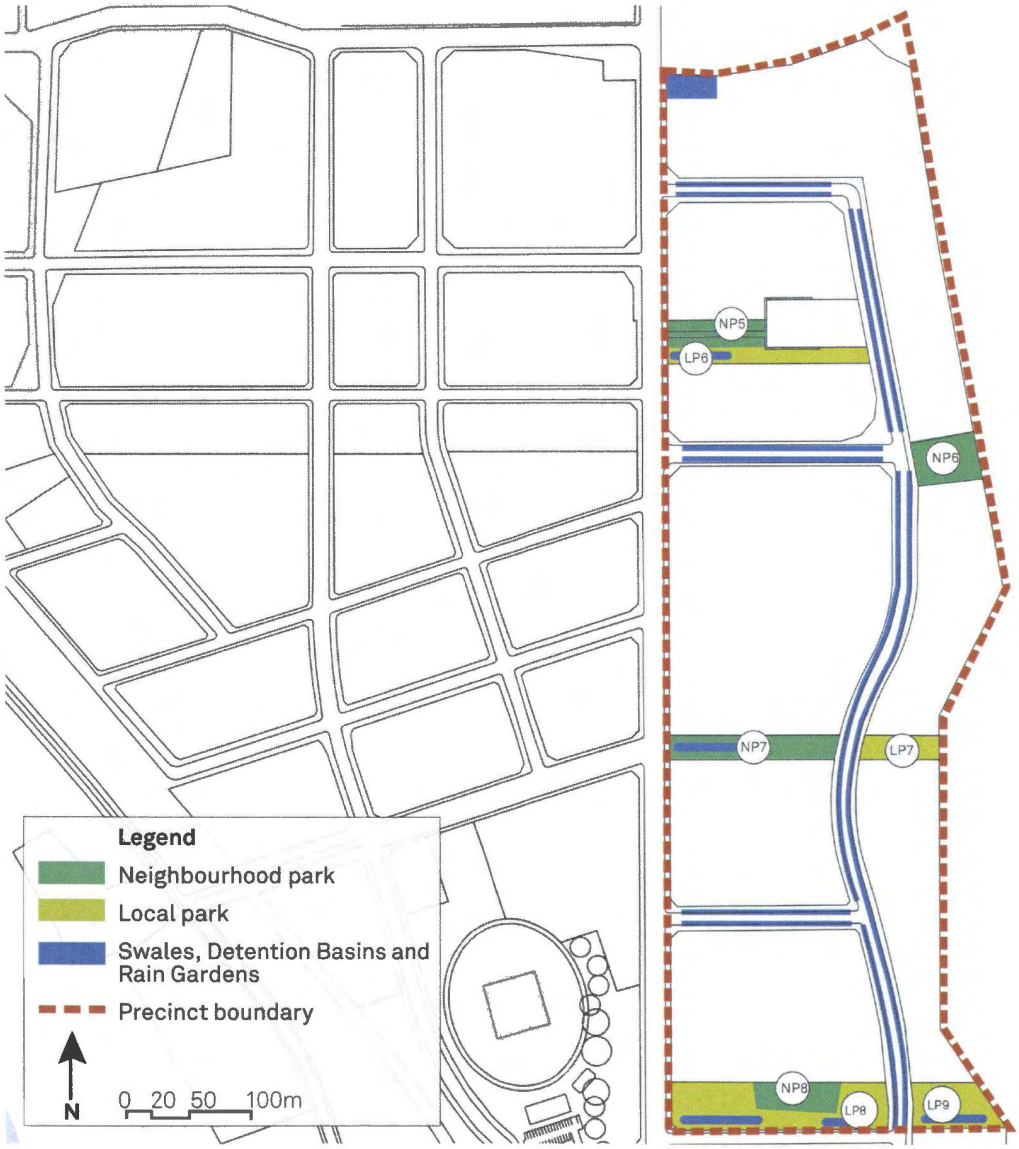


Figure 43_Open Space Schedule

5.6.1 Public Open Space Schedule

Site Area			20.285 ha
Deductions			
_Mixed Use	2.41935ha		
_Existing Roads	1.3084ha		
_Drainage Reserve R44048	0.0836ha		
_Gun Emplacement Reserve	0.3016ha		
_Surplus Restricted Open Space	0.0ha		
Gross subdivisable area			16.1729ha
Public open space @ 10 per cent			1.6172ha
Public open space contribution			
May Comprise			
_80% per cent unrestricted public open space	1.2938ha		
_20% per cent restricted use public open space	0.3234ha		
Unrestricted public open space sites			
_Neighbourhood 5	0.18415		
_Neighbourhood 6	0.1941		
_Neighbourhood 7	0.2046		
_Neighbourhood 8	0.1704		
_Local Park 6	0.18575		
_Local Park 7	0.1242		
_Local Park 8	0.4724		
_Local Park 9	0.2386		
_Sub Total		1.7742 ha	
Restricted public open space sites			
_Neighbourhood Park 7	0.064		
_Local Park 6	0.018		
_Local Park 8	0.036		
_Local Park 9			
_Sub Total		0.118ha	
Total Public Open Space Provision			**1.8922ha**

Table 09_Public Open Space Schedule

This table has been calculated as per the Liveable Neighbourhoods guidelines, it follows the public open space as provided and approved in the DSP2. DSP2 ensures that the provision of POS in the Cockburn Coast area is sufficient to promote the vision of the plan, and that the overall percentage of POS provided is compliant with the

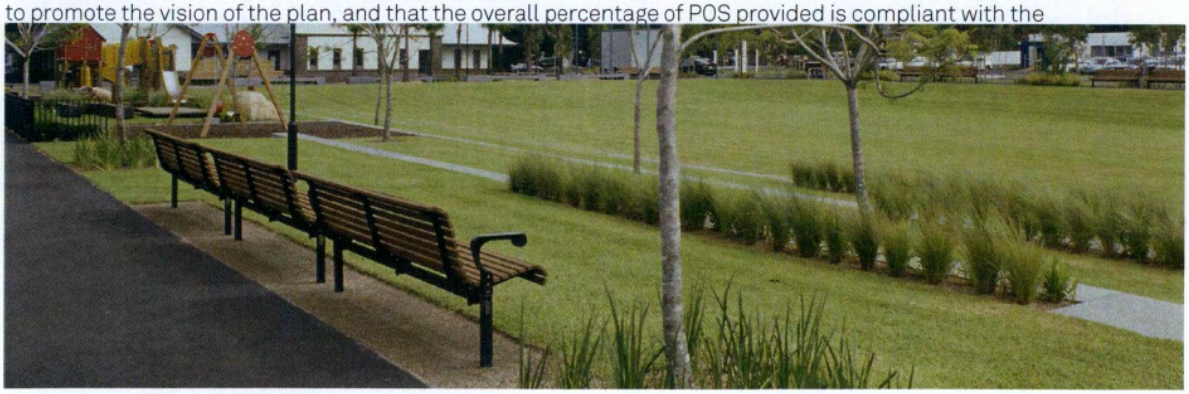


Figure 44_Public Open Space plays an integral role in the success of the Local Structure Plan

5.6.2 Neighbourhood Parks

The Emplacement precinct has been allocated three neighbourhood parks which have been strategically located so that residents are within close walking distance to a neighbourhood park. The neighbourhood park is to act as a "backyard" for families to enjoy and to promote interaction with the local community. Neighbourhood parks are designed to promote an active lifestyle with play equipment for youth and children, sporting facilities, general open kick around areas and bbq facilities. Plentiful shade and seating should be provided to create comfortable enjoyable places for people to rest. Neighbourhood parks should be designed to allow passive surveillance through CEPTED principles to provide a safe space for people to enjoy day and night. Neighbourhood parks should be predominantly lawn and garden bed areas to provide a tranquil place of refuge with pockets of paved areas at seating nodes.

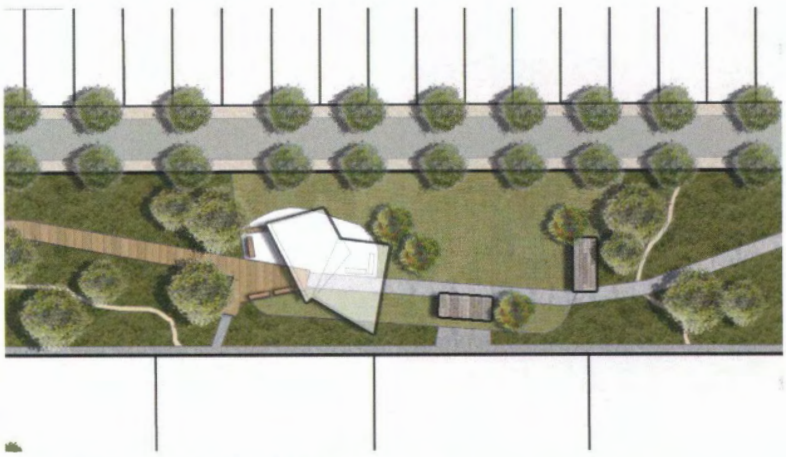


Figure 45_Concept Plan for a Neighbourhood park

Figure 46_Rooke Reserve, Victoria

5.6.3 Local Parks

Local parks are less intensively developed park areas for the local community to enjoy. They are predominantly planted areas with pockets of lawn areas, seating nodes and winding pathways. Planted garden beds are predominantly endemic species to attract native wildlife. Adequate shade should be provided through structures and trees to provide comfortable resting spaces for people to enjoy. Local parks provide a variety of spaces whether it be an open space to kick a football or a place to relax away from the hustle and bustle. The parks have been integrated into the development to allow passive surveillance from the neighbouring residents and passersby. Clear visibility with non-obstructive structures, low planting and adequate lighting will ensure that parks be a safe environment for the users and local residents.

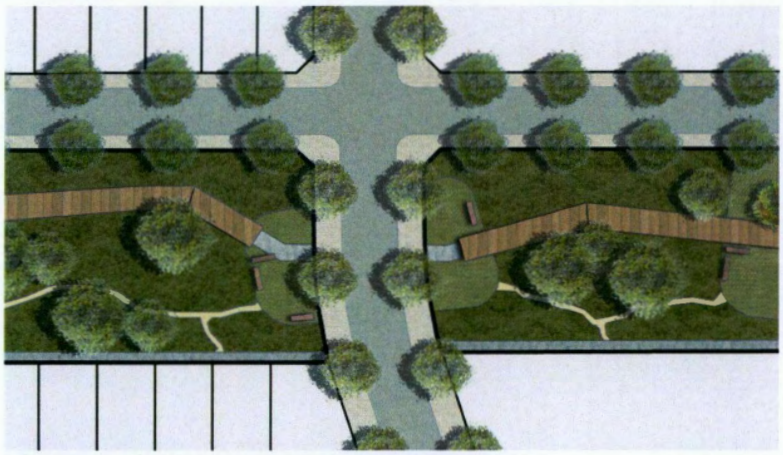


Figure 47_Concept Plan for Local Park

Figure 48_Port Coogee (Perth)

5.7 Planting Palettes

5.7.1 Under Storey Planting Palette

The planting palettes for the open spaces will help create an identity that is unique to Cockburn Coast. Using a variety of species that are endemic to the area, native to WA and even exotics that thrive in coastal sandy soils will help create a colourful, softness to the urban setting. Approval from the City of Cockburn needs to be sought on particular planting programmes prior to implementation.

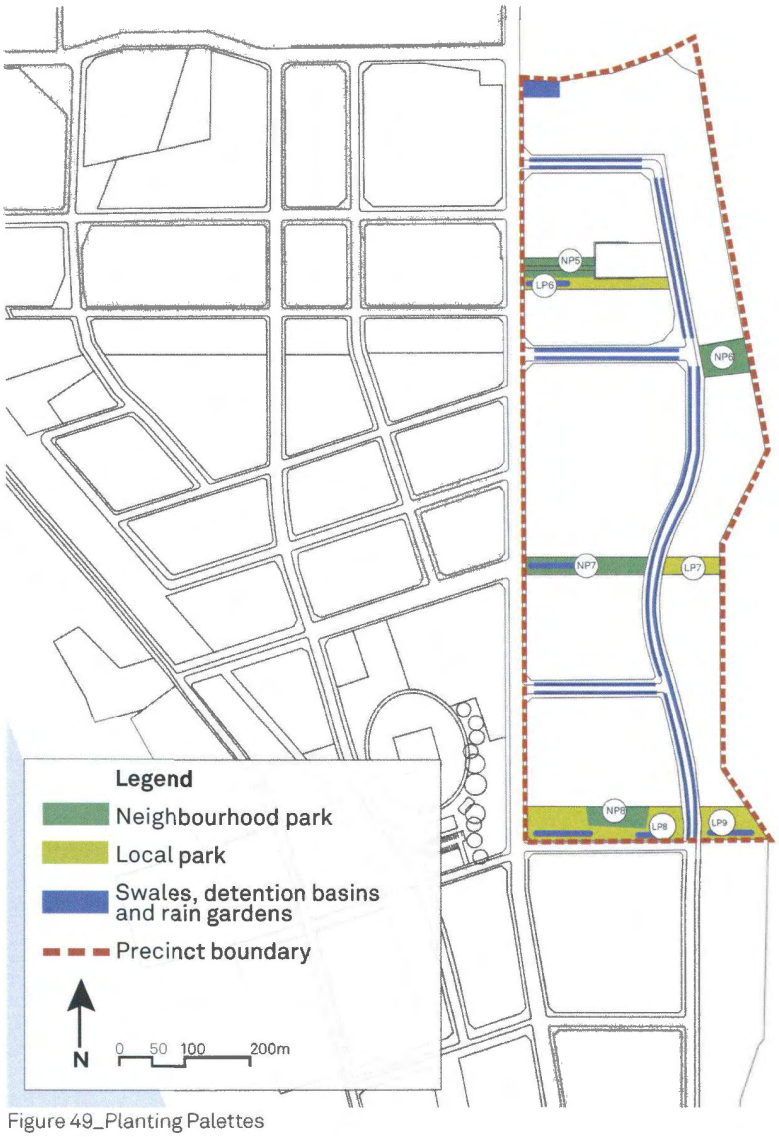
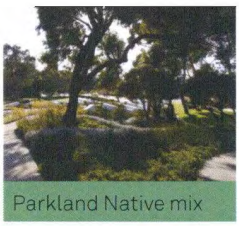
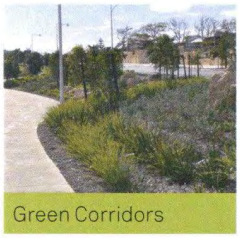


Figure 49_Planting Palettes



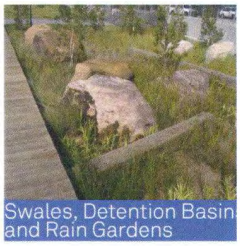
Parkland Native mix

Decorative planting selection with detailed planting patterns. Predominantly drought tolerant native species and selected drought tolerant exotic species.



Green Corridors

Predominantly drought tolerant native species which are bird attracting. Combination of low to medium sized shrubs and groundcovers.



Swales, Detention Basins and Rain Gardens

Predominantly native species adapted to both wet and dry conditions. Simple, bold planting patterns

5.7.2 Streetscape Tree Palette

In order to create variety and assist legibility and way finding within the development a street tree scheme has been developed utilizing a mixture of local native species and robust exotics. Figure 50 indicates the species selection for each road or road type.

Figure 50_Open Space themes

5.8 Public Art Strategy

The public art strategy is an integrated part of the Place Making Strategy and has been developed principally through adoption of the four Place Drivers, Intensity, Honesty, Legacy and Duality as well as the Cultural Place Making Principle and the described Future Place Character of Cockburn Coast. Artworks within the Emplacement Local Structure Plan Area can enhance both the journey and destination experience and help to build a sense of connectivity between and within places. They can express local stories of place, utilising local materials and a design vernacular.

Within this precinct emphasis will be placed on human endeavour as a force of change. Iconic artworks can capture long range views from many directions, creating landmark and gateway experiences. Artworks which create symbolic significance are sophisticated and singular forms which utilise abstraction and metaphor to generate layers of meaning and wide interpretation. These works, situated strategically, will have a large scale form and iconic presence. Greater than human scale, they will point to a bigger picture and a higher scheme of relations. As points of intensity on a new horizon, these iconic artworks will express duality as a tension between site and scale, form and space, looking at and looking through, the material and the symbolic.

This strategy recommends two key opportunities for artworks in the Emplacement Local Structure Plan area:
1. Divining: a gateway icon
2. Seeing the Sea: an artwork lookout

Figure 51_Public art opportunity locations

5.8.1 Opportunity 1: Divining

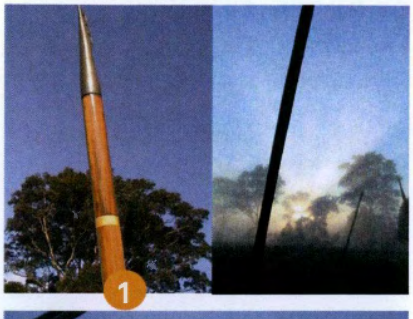
There is opportunity to locate an artwork of iconic significance at one of the high points of the ridge line close to Emplacement Park. Such an artwork will act as a northern gateway and landmark for the precinct along Cockburn Road. It will also landmark the horizon, capturing views from the coastline, foreshore and Robb Jetty Precinct. There is further opportunity to incorporate wind activation within this artwork, expressing the dynamic flow of natural energies and seasonal change. In this way the work will take on local significance, indicating the strength of the Fremantle Doctor or south westerly wind which is strongest during afternoons of the summer months, achieving broad appeal and potentially becoming a part of everyday life. The concept of Divining is intended as a loose metaphor for the seeking of guidance and inspiration – be it in the pursuit of spiritual enlightenment, the effort to predict future events, or the sourcing of fresh underground water and other natural resources.

This artwork may creatively express the notion of sustainability, the balance of nature, and our duty of care to the natural environment.

5.8.2 Opportunity 2: Seeing the Sea

Within Cockburn Coast, there are three main linear parklands which run east west, creating environmental and habitat corridors. These green spines lead up to the Emplacement Local Structure Plan area, providing common open spaces for residential neighbourhoods. There is opportunity for artwork to be integrated within the central ridge park as part of a gathering space and viewing look out. The artwork can explore integration with both built and natural form and materials, working to contain space and creating a sense of intimacy while also framing the expansive and dramatic views.

The artwork will thus function as an attractor and as a reward for reaching the top of the ridge, exploring a creative dynamic between experiences of looking at and looking through. The concept of 'Seeing the Sea' is intended to evoke the experience of children visiting the beach, evoking excitement and wonder. Its simplicity is also intended as a meditation for reflection on the beauty of the natural world and our profound connection to a living planet.



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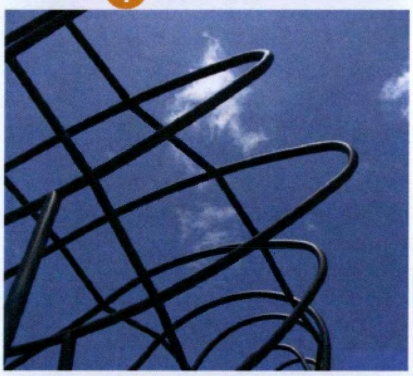

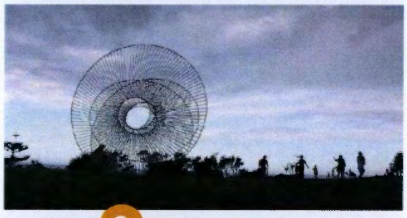

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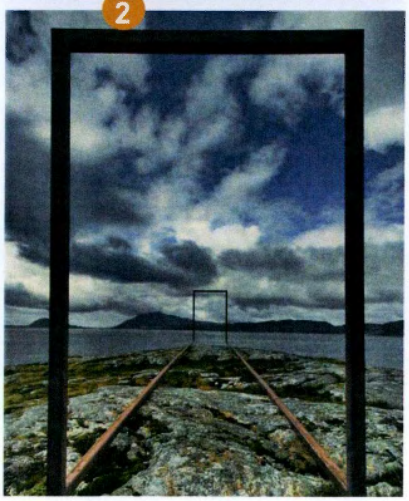

5.9 Water Management

Local water management is a key component to water cycle management and should consider the integration of water supply, sewerage and stormwater while considering water-sensitive urban design principles. A local water management strategy has been prepared for this Local Structure Plan, and is included as appendix J, in accordance with the responsibilities for State Planning Policy 2.9: Water Resources (WAPC, 2004). The strategies presented in the local water management strategy are consistent with the following documents:

_Town Planning Scheme No. 3;
_City of Cockburn Local Planning Strategy;
_City of Cockburn guideline and standards for the design, construction and handover of subdivision within the municipality.

5.9.1 Water Use

To reduce the annual water consumption in the development, in particular potable scheme water consumption, it will be necessary to be efficient in the use of water, and to use water that is fit-for purpose and appropriately sourced. Efficient water use will be encouraged following recommendations outlined in the water sustainability principle and Cockburn Sound Green Infrastructure recommendations. Fit-for-purpose water sources to be adopted will be scheme water, groundwater, and wastewater reuse.

5.9.2 Stormwater Management

In accordance with the principals and objectives of this LWMS, the proposed development will need to maintain the pre-development stormwater discharge rates, and be protected from flooding in the 100-year ARI event. To this extent, the following stormwater management strategy is proposed:

1 year ARI event

_Runoff will be retained as close to source as possible within rain gardens and bioretention areas;
_Runoff will be capture within rainwater tanks where possible, excess will be disposed of onsite via soakwells or other infiltration facilities;
_The use of permeable paving will be maximised to provide opportunities for infiltration at source.

5 year ARI event

_Runoff will be conveyed in underground pipe system designed to maximise infiltration
_Utilizing bottomless pits and permeable joints to low point infiltration areas.

100 year ARI event

_ Public open space will be designed to cater for surface overflow with habitable floors at least 300 millimetres above 100 year ARI flood levels.

5.9.3 Groundwater Management

Groundwater quality and quantity will be at least maintained at a minimum and improved where possible for the entire Emplacement Local Structure Plan area, in accordance with the principals and objectives of this LWMS. To meet these requirements the following groundwater strategy will is proposed:

_Soil amendment (where the tested phosphorous retention index is less than 10) within all stormwater infiltration areas and public open space;
_Infiltration will not be promoted in areas of known soil contamination;
_Xeriscaping to avoid the use of fertilisers; and
_Recommending a maintenance plan for the upkeep of the stormwater management system.

5.9.4 Next Stage

The next phase of planning is the development of the Local Water Management Strategy that will address the following at the subdivision stage of development.

_Additional information about irrigation, landscaping and POS, including water requirements, water sources, soil amendments;
_ Additional information about geotechnical aspects of the site;
_Flow rates and water levels at critical locations for the 100-year ARI event;
_Location, level and dimensions of drainage structures such as underground pipe system, low points for infiltration and soakwells ;
_Imported wastewater program and necessary infrastructure upgrades;
_Management of subdivision works;
_Post-development monitoring program and a contingency action plan;
_Implementation plan, including roles and responsibilities;
_Guidelines for the irrigation and soil improvement for public open space are to be included within the urban water management plan

The local water management strategy is included as an appendix to this report.

5.10 Activity Centres and Employment

5.10.1 Land Use

The Emplacement Local Structure Plan does not contain any Activity Centre zones as does the Robb Jetty and Power Station precinct. As a result, majority of the population driven demand for retail and commercial floorspace will be concentrated outside of the Emplacement Local Structure Plan area. Alternatively, employment in the Local Structure Plan area is driven by a network of local activity centres. The Local Structure Plan envisages a network of 4 to 5 centres of between 600 square metres and 1,200 square metres. This equates to up to 6,000m2 of total retail and commercial floorspace across Emplacement. In addition some demand for commercial floorspace will exist within the Emplacement Local Structure Plan area, being a knowledge intensive consumer service (e.g. home based business such as accountant).

5.10.2 Employment

The Cockburn Coast District Structure Plan (DSP) established an employment target 4,080 jobs, with DSP2 having a target of 2,750 jobs. The Cockburn Coast Economic Development Strategy recognises the ranges in these targets, with the DSP being considered an optimal employment outcome, and the DSP2 target being considered a minimal achievement. As such the employment analysis for the three LSP areas of Robb Jetty, Emplacement and Powerstation is seeking to achieve total employment outcomes of at least 2,750 jobs in Cockburn Coast.

The analysis indicates that Emplacement will likely contribute 266 jobs (10%) toward the Cockburn Coast total. Of these jobs, around 86% will be in population-driven activities with the remaining 14% consisting of strategic jobs. All of these jobs are expected to be decentralised and, therefore, distributed throughout the LSP area. This is seen as appropriate for a centre that will serve as a predominantly residential precinct of Cockburn Coast. Additional population-driven and strategic employment within Emplacement and throughout Cockburn Coast may be driven by establishing a sustainable competitive advantage to maximise the development of urbanisation and localisation economies. In this regard, the importance of the Powerstation precinct in achieving the overall employment targets cannot be overstated as it will be required to accommodate around 62% of the total jobs for Cockburn Coast.

5.11 Infrastructure Coordination, Servicing and Staging

As part of the Local Structure Planning process an engineering servicing and infrastructure strategy has been prepared, an is included as Appendix F, to provide information on the service infrastructure for the area. It examines the existing infrastructure in the area, upgrades, relocations, changes required and likely timing of infrastructure upgrades and requirements.

5.11.1 Waste Water and Effluent Disposal

On development of the Emplacement LSP area the existing reticulated sewer system may be used with little modification to serve the area. It may be that some revised lot boundaries would require retrofitting sewer junctions by cutting into the existing lines to provide a point-of-service.
Further south in the Emplacement LSP area the existing gravity sewer system comes to an end. Development of this area would require some modifications to existing gravity sewer mains and the extension of this system to provide a service for new subdivisional lots. These works will be timed to match into construction of the particular area at the time of subdivision.

5.11.2 Water Supply

Water Supply Planning

The Water Corporation has completed a comprehensive review of water infrastructure planning for the Hamilton Hill Gravity Supply Scheme. This planning review has incorporated the anticipated dwelling/service yields from the full development of the Cockburn Coast land. The main recommendations and projects relevant to future servicing of the Cockburn Coast development include:

- Approximately 800m of DN375 water main from Bellion Drive intersection heading southwards along Cockburn Road (this could be done in stages depending on demand, spatial staging of land development). It is estimated that this main will be required around 2014. The final pipe route and sizing will be refined based on the spatial pattern of the development in Cockburn Coast. It may be possible for equivalent pipe volumes to be constructed as two separate feeds in other roads through the development area parallel to Cockburn Road.
- Approximately 1,430m of DN500 distribution main from the end of the existing Forrest Road DN610 (coming out of the Hamilton Hill Reservoir) heading westwards join with the Cockburn Road DN300-375 at Bellion Drive (see point (i) above). It is estimated that this main will be required around 2016 depending on the pattern and rate of development of the Cockburn Coast land.

The final LWMS will determine the requirements for non-potable water supply systems and whether there is a need for a reticulation system. This may entail a reticulated third pipe for development lots or a supply to POS area areas only. Regardless if require, road reserves within the development area are sufficiently wide to enable to location of a third pipe system on a standard alignment.

Water Supply Reticulation

Where possible, that is where water mains exist in future road reserves, these mains will be maintained. Where existing mains do not match future road reserves, then new mains will be reconstructed within the new reserve areas.

5.11.3 Roadworks

Major roadworks infrastructure consists of two main elements for the Cockburn Coast area, namely:

- Cockburn Coast Drive; This main road may be constructed outside of the 10 year horizon and would likely be decided by State Government and/or Main Roads WA as to the need and timing.
- Cockburn Road; This road is the current north-south artery through the development area. It will remain as an important transportation link and is likely that Cockburn Road will be upgraded as part of the development process .The exact form of the upgrading works will depend on the final configuration of the integrated transportation plan, existing road user requirements and City of Cockburn requirements and may also include the relocation of existing services within the existing and/or future reserve boundaries. Currently many services exist within the Cockburn Road verges. The road reserve will be required to accommodate service infrastructure and as such the design should ensure a minimum disruption of servicing infrastructure

The aim of Cockburn Road's design should be to ensure a minimum of existing services are disturbed or require relocation. Due to the nature of services along Cockburn Road, any servicing relocations would be relatively costly to implement.

The Public Transit Alignment route will also be subject to sufficient engineering detail to accommodate the proposed vehicles, and staged appropriately to facilitate the development.

5.11.4 Drainage

As part of the Local Water Management Plan, GHD have analysed flows within the development area and calculated the volume of storage/ infiltration areas required in the various locations. These volumes may be accommodated by a variety of means and will be incorporated as part of the engineering and POS landscaping detailed designs.

5.11.5 Power Supply

A sub-station may be required within the Cockburn Coast area as a result of the relocation of the existing sub-station near the South Fremantle Power Station. A sub-station typically requires a land area of 1 hectare and has been indicatively accommodated within the Emplacement Local Structure Plan area.

Power infrastructure is to be provided in accordance with Western Power criteria which is typically this is designed for the peak load. However, "Green " initiatives should be included particularly in the design of buildings at built form stage.

5.11.6 Transmissions Lines

Within the Emplacement Local Structure Plan Area exists a section of aerial power transmission lines running from the Terminal Sub-Station area eastward across a portion of the area and also along Cockburn Road. As part of the overall development, it is proposed to relocate the zone substation currently adjacent to the old South Fremantle Power Station to an area on the eastern side of Cockburn Road. This will therefore underground a portion of the transmission lines. The transmission lines running within Cockburn road are proposed to remain as aerial

5.11.7 Gas Supply

New mains connected to the existing supply mains would be constructed as part of the subdivision process. Existing gas mains would be kept in the existing road reserves to serve the new development.

5.11.8 Telecommunications

As part of the overall development, it is proposed to relocate the zone substation currently adjacent to the old South Fremantle Power Station to an area on the eastern side of Cockburn Road. This will therefore underground a portion of the transmission lines. The transmission lines running within Cockburn road are proposed to remain as aerial.

6.0 Development Contribution Arrangements

The LSP proposes key infrastructure for which there is associated costs. A Development Contribution Plan (DCP) is required to coordinate the delivery of key enabling infrastructure for the Cockburn Coast Project in an equitable way. This includes hard infrastructure such as delivery of key roads and development of high amenity public open spaces that will provide for the needs of the dense population planned for the area. There are two Development Contribution Plans relevant to the project:

_Cockburn Coast (Project) DCP
_City of Cockburn Community DCP - DCA 13

6.1 Cockburn Coast DCP

The DCP for the Cockburn Coast will ensure that cost contributions towards infrastructure are shared equitably amongst landowners in a manner that is commensurate to the development potential of individual land holdings. The infrastructure items which are anticipated to be incorporated within the DCP are provided below:

Transport and Infrastructure

1. Cockburn Road upgrade (including land acquisition for road widening)
2. Proportionable contribution to other key local roads (e.g. Main Street and Spine Road (BRT)
3. Public Realm and Environment Improvements
4. Pedestrian network (shared paths not provided under items 1-3), including coastal link and level crossings over rail reserve)
5. Public Open Space and all open space enhancements
6. Management treatments for foreshore reserves
7. Administration of the DCP by the City of Cockburn (including annual review)
8. DCP preparation costs and general administration costs.
9. Main Street Community Building

6.2 City of Cockburn DCA 13: Community Infrastructure (DCA 13)

Given its coastal location, mixture of uses and scale of redevelopment proposals, the Cockburn Coast project area will attract visitors from outside of the project area. The Community Development Plan prepared by Place Partners acknowledges this regional function and identifies that other additional community infrastructure is necessary to support the future Cockburn Coast population and wider community. Based on discussions to date, the following community infrastructure items will be included within the City of Cockburn's existing Development Contribution Plan 13:

1. Dual Use Sport Oval and Club Room
2. Additional Foreshore Enhancement and Coastal Protection
3. Community/Beach Parking

The DCP for Robb Jetty and Emplacement Precincts is being prepared in collaboration with the City of Cockburn and will be submitted part way through the approval process for this LSP.

7.0Next Steps

7.1 Next Steps

To deliver the Emplacement Local Structure Plan as a vibrant coastal community in an area previously known for its industrial capacity it will be necessary for a number of further actions to occur:

_The Development Contribution Plan to be submitted to and approved by the City of Cockburn
_Design Guidelines Local Planning Policy to be submitted to and approved by the City of Cockburn
_Where necessary Detailed Area Plans are to be submitted to and approved by the City of Cockburn; and
_Subdivision and Development approvals are to be issued.

To ensure the Local Structure Plan area achieves its full potential it will also be necessary for local structure planning to occur over both the Robb Jetty and Power Station Precincts. The Emplacement Local Structure Plan forms part of a larger plan and would be less successful if structure planning does not occur over these other precincts. This process has begun in both precincts.

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