

Port Coogee Revised Local Structure Plan

September 2018

Prepared for
Fraser's Property Australia



IT IS CERTIFIED THAT THE AMENDMENT TO THE PORT COOGEE
LOCAL STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF
THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:
26 SEPTEMBER 2018

Signed for and on behalf of the Western Australian Planning Commission



an officer of the Commission duly authorised by the Commission pursuant
to Section 16 of *the Planning and Development Act 2005* for that purpose.



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Taylor Burrell Barnett
Town Planning & Design

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TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Location	1
1.2	Study Team	3
1.3	Project and local structure Plan history	3
1.3.1	Project Background	3
1.3.2	Local Structure Plan	5
1.3.3	Metropolitan Region Scheme Amendment	7
1.3.4	Environmental Assessment	7
1.4	Public Consultation	8
1.4.1	Public Workshops	8
1.4.2	Consultation with City of Cockburn	9
1.4.3	Councillor Briefings	9
1.4.4	Stakeholder Consultations	9
1.4.5	Public Displays	9
1.4.6	Newsletters	10
1.4.7	Ongoing consultation	10
1.5	Statutory Consultation Processes	10
1.5.2	Community Issues	10
2	PLANNING CONTEXT	11
2.1	Statutory Planning Context	11
2.1.1	Metropolitan Region Scheme	11
2.1.2	City of Cockburn Town Planning Scheme No. 3	11
2.1.3	Municipal Boundary	14
2.2	Strategic Planning Context	15
2.2.1	State Government Context	15
2.2.2	Local Government Context	24
3	CONTEXT ANALYSIS	25
3.1	Sustainability Strategy	25
4	EXISTING SERVICE INFRASTRUCTURE – PRE DEVELOPMENT	29
4.1	Sewer	29
4.2	Water Supply	29
4.3	Power Supply	29
4.4	Gas Supply	29
4.5	Telephone Services	31
4.6	Movement Network	31
4.6.1	Roads	31
4.6.2	Pedestrian and Dual Use Paths	31
4.6.3	Public Transport	31
5	EXISTING ENVIRONMENT	32
5.1	Land Capability	32
5.2	Topography	32
5.3	Landform and Soils	32

5.4	Groundwater/Hydrology	33
5.5	Flora and Fauna	33
5.6	Marine Habitats	35
5.7	Heritage and Culture	35
5.7.1	Aboriginal Heritage Sites	35
5.7.2	European Heritage	37
6	LOCAL STRUCTURE PLAN	38
6.1	Proposed Modifications to Approved Local Structure Plan	38
6.2	Design Philosophy	40
6.3	Land Use	41
6.4	Development Proposal	43
6.4.1	Marina Village Precinct	43
6.4.2	Other Water Based Residential	56
6.4.3	Dry Land Residential	59
6.5	Public Amenity	60
6.6	Housing Choice and Lot Yield	65
6.7	Regional Open Space to East of Cockburn Road	65
6.8	retail and Commercial Floorspace	66
6.9	Marina Developments – DC1.8	66
6.10	Relationship to Liveable Neighbourhoods Community Design Codes	66
6.11	Key Issues	67
6.11.1	Omeo Wreck	67
6.11.2	Protection of Seagrass	67
6.11.3	Protection of Beach	68
6.11.4	Groyne Access	68
6.11.5	Pedestrian Access	68
6.11.6	Visual Impact	68
6.11.7	Public Equity and Community Need	69
6.11.8	Community Need	69
6.11.9	Marina	69
6.11.10	Public Open Space and Facilities	70
6.11.11	Protection of Natural Parkland and Vegetation	70
6.11.12	Cockburn Road Realignment	70
7	ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS	72
7.1	Terrestrial Flora	72
7.1.1	Description	72
7.1.2	Assessment	73
7.1.3	Summary	73
7.2	Marine Flora (Seagrass)	73
7.2.1	Assessment	74
7.2.2	Summary	74
7.3	Coastal Processes – Foreshore (Beach) and Seabed	75
7.3.1	Description	75
7.3.2	Assessment	75
7.3.3	Summary	76
7.4	Marine Water and Sediment Quality	76
7.4.1	Description	76

7.4.2	Assessment	76
7.4.3	Summary	78
7.5	Soil and Groundwater Contamination	78
7.5.1	Description	78
7.5.2	Assessment	78
7.5.3	Summary	80
7.6	Construction Impacts – Dust, Noise and Vibration	80
7.6.1	Description	80
7.6.2	Assessment	80
7.6.3	Summary	81
7.7	Railway Noise	81
7.7.1	Description	81
7.7.2	Assessment	81
7.7.3	Summary	82
7.8	Visual Amenity	83
7.8.1	Description	83
7.8.2	Assessment	83
7.8.3	Summary	84
7.9	Long-term management	84
7.9.1	Description	84
7.9.2	Assessment	85
7.9.3	Summary	85
8	PROPOSED INFRASTRUCTURE SERVICING	86
8.1	Marine Structures	86
8.1.1	Marina Works	86
8.1.2	Coastal Processes	87
8.2	Roads	87
8.2.1	Road System	87
8.2.2	Pedestrian and Dual Use Paths	89
8.2.3	Public Transport	90
8.2.4	universal Access Arrangements	92
8.3	Water Supply	92
8.4	Wastewater Disposal	92
8.5	Power Supply	94
8.6	Telecommunications	94
8.7	Gas	94
8.8	Earthworks/Siteworks	94
8.9	Stormwater Management	97
8.10	Servicing Relocations	97
8.11	Metropolitan Region Scheme	97
8.12	Municipal Boundary	97
8.13	Local Structure Plan	97
8.14	Subdivision	98
8.15	Relationship to Liveable Neighbourhoods Community Design Code	98
8.16	Road Closures	98

FIGURES

Figure 1	Location Plan and Metropolitan Region Scheme Zoning
Figure 2	Local Authority Zoning
Figure 3	Improvement Plan 26
Figure 4	Aerial Photograph and Landuse History
Figure 5	Context Analysis, Walkable Catchments and Movement System
Figure 6	Existing Services
Figure 7	Vegetation
Figure 8	Port Coogee Marine Habitats
Figure 9	Local Structure Plan
Figure 10	Land Use Precincts
Figure 11	Building Height Guide Plan
Figure 12	Marina Village
Figure 13	Proposed Services
Figure 14	Proposed Earthworks

APPENDICES

APPENDIX 1	Comparison Plan - Existing and Proposed Local Structure Plans
APPENDIX 2	Project History
APPENDIX 3	Section 18 Clearance
APPENDIX 4	Pracsys Report - Port Coogee revised retail and commercial analysis
APPENDIX 5	POS Provision

1 INTRODUCTION

In 1992 the State Government accepted in-principle a proposal from Consolidated Marine Developments (Australia) Pty Ltd (CMD) to develop a residential marina development in the Coogee locality. Since that time, the project has been the subject of substantial and protracted negotiation, consultation, research and design.

On 26 October 2004 the Metropolitan Region Scheme (MRS) was amended to rezone the land to 'Urban', 'Public Purpose', 'Parks & Recreation' and 'Primary Regional Road', and on 28 June 2005 Amendment No. 3 to the City of Cockburn's Town Planning Scheme No. 3 was gazetted, rezoning the land to 'Development Zone'. In March 2004 Council adopted a Local Structure Plan (LSP) for Port Coogee.

The LSP represented the culmination of work by various consultants on all aspects of the proposal; feedback from the community received in various forums; outcomes of environmental assessment and Metropolitan Region Scheme (MRS) processes; and design revisions to incorporate the then Minister for Planning and Infrastructure's requests for additional boat pens within the marina, and inclusion of a public beach area within the development, approximately 200 m in length. Subsequent modifications to reflect design reviews and changes to the Marina Village resulted in structure plan revisions being approved by Council in August 2005 and April 2007. Further review of the Marina Village following the next level of detailed design consideration resulted in further modifications to the LSP in 2010.

The purpose of this report is to present a revision to the Port Coogee LSP resulting primarily from review of the northern dry residential precinct (Stage 6) and the southernmost 'island' (Stage 5) following further detailed design consideration. An addendum to the Transport Report has been prepared to address traffic and parking associated with Stage 6. A Noise and Vibration Assessment has also been prepared for Stage 6 to address potential noise impacts associated with the adjacent railway freight line. **Appendix 1** provides a reference plan, outlining the proposed modifications to the current approved Structure Plan. A summary of changes is provided in section 6.1.

The LSP guides the development of the Port Coogee marina, marina residential, other water based residential, dry land residential, retail, and public amenity uses.

The LSP has been prepared in accordance with Liveable Neighbourhoods and is again submitted for consideration under this Code.

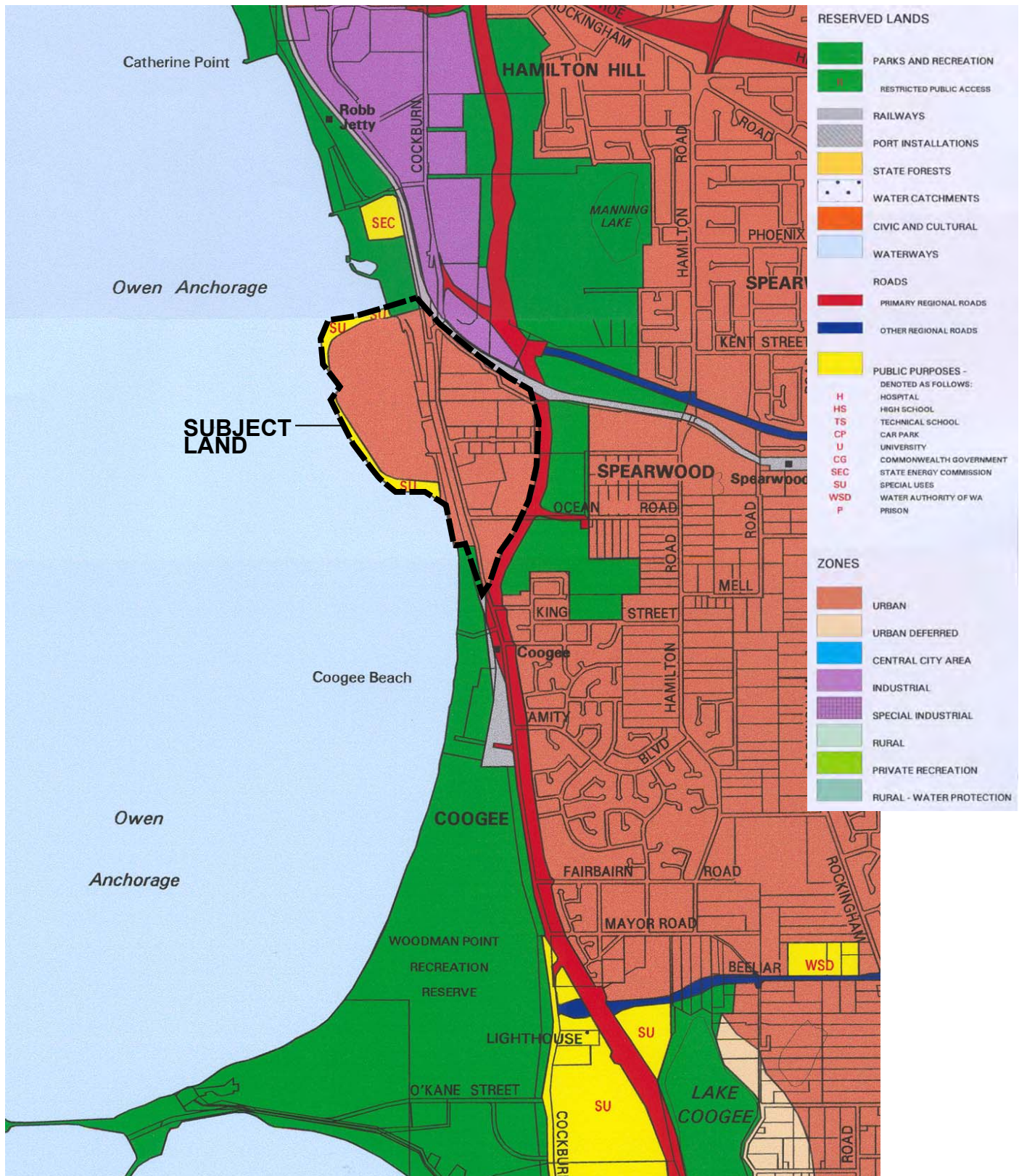
1.1 LOCATION

Port Coogee is located approximately 19 kilometres south-west of the Perth CBD, and is situated on the coast of Cockburn Sound, 4.5 kilometres south of Fremantle (refer **Figure 1**).

The land is located within the South Coogee locality, bounded by the power station site and railway line to the north, Cockburn Road to the east, the westerly extension of Tanunda Road to the south and the Ocean to the west.

The total area subject to the proposed development is 85.99 hectares, which is comprised as follows:

Dry land area:	57.24 hectares
Water area:	28.75 hectares
Total:	85.99 hectares



Location Plan and Metropolitan Region Scheme Zoning



Figure No.1

November 2008

1.2 STUDY TEAM

The Port Coogee Study Team comprises:

 Taylor Burrell Barnett	Town Planning and Design
 RPS Environmental	Environmental
 Sinclair Knight Merz	Engineering
 M P Rogers & Associates	Coastal Processes and Engineering
 Creating Communities	Community Consultation
 Jones Coulter Young	Architects (Masterplan Review No. 1)
 Hassell	Landscape Architects
 Woods Bagot	Architects
 Pracsys	Retail Consultants
 NH Architecture	Architects
 Taylor Robinson	Architects
 Mel Consultants Pty Ltd	Wind Engineering

1.3 PROJECT AND LOCAL STRUCTURE PLAN HISTORY

1.3.1 PROJECT BACKGROUND

The notion of creating a residential marina development in the South Coogee locality has been in existence for over fifteen years, and gained official recognition when the State Government, in 1992, accepted in-principle a proposal from CMD for such a proposal, contingent upon CMD obtaining environmental and planning approval.

Since that time, a number of planning studies were undertaken and key government decisions made in respect of the Coogee area and the regional transportation system. These served to progressively embrace the development concept as a means of transforming the locality and remediating the substantial environmental problems resulting from its past industrial history. They also altered and refined the extent of the project in terms of physical project area and land use content.





The Port Coogee Development was incorporated in the Coogee Master Plan which was released in February 1993, however, a subsequent addendum recommended that the proposal not be formally endorsed at that stage, primarily in recognition of likely significant design changes resulting from factors such as the realignment to the Primary Regional Roads (PRR) (Cockburn Road) route, the need to preserve adequate Regional Open Space and improve public access to Coogee foreshore areas. This was not perceived as withdrawal of support for the project, merely a recognition that further work was required before the project could be formally supported by Government.

In March 1996, the Western Australian Planning Commission (WAPC) entered into a Heads of Agreement (HOA) with CMD and Australand Holdings Limited (AHL). The HOA outlined the key principles and commitments between the Government and Developer necessary to facilitate the remediation of contaminated land through the development of Port Coogee. This represented the first formal step in the extensive process of achieving the necessary formal Government agreements and approvals.



Before, and since that time, the project has been the subject of extensive consultation and negotiation between the project visionary, CMD, AHL and the State Government in order to resolve the many and complex issues necessary to enable the development to proceed as a single entity project.





A multi-disciplinary project team, comprising experts from all of the relevant development and environmental disciplines was convened to undertake the following steps:

-  To review the conceptual design and progress to more detailed design and assessment;
-  Provide a more comprehensive environmental assessment of current site conditions and required remedial actions;
-  Co-ordinate a thorough consultation programme, throughout the design process, involving local community representatives, local government and various relevant State Government agencies; and
-  Achieve all necessary statutory approvals to facilitate the development within timeframes specifically defined within the Project Agreement.





At this stage, a totally revised design concept emerged based on a project area which differed substantially from the development area originally identified in the Coogee Master Plan. This concept reflected the modified alignment of Cockburn Road, which effectively contracted the eastern extremity of the site. The concept was subsequently included in a formal request to initiate an amendment to the MRS, and the City of Cockburn District Zoning Scheme No. 2 (DZS No. 2) (no longer operational).

Since the signing of the HOA, the project gathered momentum, and the signing of the comprehensive Project Agreement between the State Government and AHL in May 1997 signified a key milestone. This agreement was revised and endorsed again by Cabinet in February 2000.

The project team was then engaged in a programme of consultation and negotiation with the key Government agencies to progress both the statutory approvals and the project design. These consultations primarily involved the following agencies:

-  The City of Cockburn;
-  Department for Planning and Infrastructure (DPI) (including (then) Department of Transport and MRWA);
-  Department of Environmental Protection; and
-  Health Department of WA.

A new development concept was produced as a result of this consultative process. Whilst the principles of this concept were broadly consistent with the intent of the Project Agreement, and were generally supported by the local and State Government planning authorities, it became increasingly apparent that there were a number of issues of public concern which could not be fully resolved in the concept at that time. Among the key issues were:

-  The loss of the northern section of Coogee beach and associated dune system;
-  Impact on an area of seagrass meadows in the south-western corner of the development site;
-  Public accessibility to the waterfront; and
-  The removal of the Omeo wreck.

In essence, the authorities expressed concern that there was a public perception that the project would not result in a net gain in public equity and recommended that the proponent review some of the fundamental principles of the design brief in recognition of the identified community concerns and the importance, notwithstanding the State Government agreement, of attaining community endorsement of the proposal.

The proponent acknowledged the recommendations of the government technical officers, and directed the design team to review the concept with the primary objective to resolve, as far as possible, the identified community concerns and demonstrate a net gain in public equity.






1.3.2 LOCAL STRUCTURE PLAN

In December 2002, Taylor Burrell Barnett, on behalf of AHL submitted the Port Coogee LSP to the City of Cockburn for consideration. At its meeting of January 2003, the Council resolved, inter alia, that the LSP and an associated Scheme Amendment be advertised concurrently, pending the outcome of the MRS process (as mentioned previously).

In July 2003, the then Minister for Planning and Infrastructure requested that AHL review the design to provide additional boat pens within the marina (an increase from 150 pens provided by the previous proposal, to 263). The proposal was modified accordingly and a total of 337 pens were shown (subject to detailed design) in both the Marina and canals. This modification resulted in the loss of one row of lots to the north of the marina, and a redistribution of canal widths and lot sizes in the north of the development area, to provide for additional room within the marina.

In October 2003, the Minister for Planning requested the deletion of a row of lots in the southern portion of the plan area to increase the setback to the foreshore. Further, the western boundary of the development in the south of the development area was modified to correspond with the western boundary of the current Cockburn Road alignment providing an approximate 60-111 m setback from the foreshore.


The City of Cockburn, at its meeting of 16 March 2004, resolved to adopt the LSP subject to various modifications, including a revised plan which had been prepared by Taylor Burrell Barnett to address several issues raised by the then Minister. The revised plan included:

-  The creation of a public beach area within the marina;
-  A causeway connected residential island;
-  Additional boat pens in the marina (303 pens);
-  The inclusion of additional R80 coded residential areas; and
-  The substitution of a portion of the R80 coded residential areas within and adjoining the marina village with R160.




The widths of the two northern canals were also subsequently adjusted to provide for a greater range of boat sizes adjacent to residential lots.

Notwithstanding these changes, the integrity of the initial LSP submitted to the Council did not alter and the LSP was approved in August 2005.

A revised LSP was approved in April 2007 reflecting design review and changes to the Marina Village, as follows:


-  Deletion of the public road between the marina and site to the south of the main east-west road to improve the relationship between the marina, boardwalks, public realm and retail activities;




-  Refined site boundaries separated by public roads rather than the larger lots with common access and parking areas;
-  Concentration of retail activities on the site to the south of the main east-west road, rather than extending commercial through the ground floors of all buildings – this modification has been necessary to ensure viability of commercial activities. Ground floors of all buildings will, however, be designed to accommodate commercial activities including home based business uses, over time to ensure compliance with Scheme provisions (refer **Appendix 4**);
-  Expansion of Marina Village precinct to include a new Marina Services building which will comprise the Marina Manager’s office and chandlery; the new hotel site and apartment site;

A minor LSP Amendment was lodged with Council in September 2008 proposing the following amendments:



STAGES 3A AND 3B

-  Minor modifications to relocate a road and change the density coding of certain lots from R30 to R35.

STAGES 4B, 6A AND 6B

-  Modification to road layouts and lot orientation and change in the density coding of lots designated R25 and R30 to R35.

STAGE 5

-  Relocation of the access road on the eastern boundary with the waterway bringing the adjoining east-west orientated lots toward the waterway.
-  On 11 September 2008 the Council resolved to approve the amended Port Coogee Structure Plan pursuant to the provisions contained under Clause 6.2.14.1 of the City of Cockburn Town Planning Scheme No.3 (TPS No. 3), subject to a number of items being addressed at or before subdivision stage.

Further LSP Amendments were lodged with Council in June 2010 and July 2011 which included design refinements to the Marina Village and Stage 5. The modifications included the introduction of a Building Heights Plan, increased public open space, the introduction of the requirement for built form codes within the Marina Village Precinct, relocation of the southern neighbourhood centre to the Marina Village and amendment to the northern portion of Orsino Boulevard. A minor LSP Amendment was lodged with Council in October 2014 and approved by Council in February 2015 to recode Lot 346 and Stage 3C to R80. The project has undergone a number of substantial design revisions in reaching its current point of design evolution. In the course of these events, the criteria necessary to make the project viable from commercial, planning and environmental perspectives has been progressively refined.

A summary outline of the previous design concepts is included in **Appendix 2**.

1.3.3 METROPOLITAN REGION SCHEME AMENDMENT

A previous proposal to amend the MRS zoning to facilitate the Port Coogee development was contained in MRS Amendment No. 991/33 - South West Districts Omnibus No. 3. The Port Coogee proposal, along with others, was removed from the amendment, primarily as a result of the requirement by the Environmental Protection Authority (EPA) for a formal environmental assessment which would have caused unreasonable delays to the less substantial proposals contained within the same amendment. Subsequent to the initial amendment proposal being drafted, the development concept was reviewed with the result that the extent of the Urban zoning required was significantly reduced.

Port Coogee was subsequently the subject of MRS Amendment 1010/33 – Port Catherine (the previous name for the development), which rezoned the area ‘Urban’, ‘Public Purposes’, ‘Parks & Recreation’ and ‘Primary Regional Road’ for the purpose of accommodating the proposed Port Coogee development. The Amendment was finalised in October 2004.










Figure 1 shows the current MRS zoning.

1.3.4 ENVIRONMENTAL ASSESSMENT

MRS Amendment No. 1010/33 – Port Catherine was referred to the EPA in accordance with Section 33E of the *Metropolitan Region Town Planning Scheme Act 1959*. After considering the number of significant environmental issues raised by the proposal, including existing soil contamination, coastal impacts, remnant vegetation and seagrass meadows, the EPA set a level of assessment on the proposal of ‘Scheme Assessed – Environmental Review Required’, in March 1999.

An Environmental Review document was prepared by the WAPC (*Port Catherine Environmental Review*, Western Australian Planning Commission, 2001) and released for public comment from 20th November 2001 to 1st March 2002. The environmental assessment was completed and Bulletin No 1060 issued (August 2002).

The key environmental factors were identified as follows:

-  Terrestrial flora;
-  Marine flora (seagrass);
-  Coastal Processes – foreshore (beach) and seabed;
-  Marine water and sediment quality;
-  Soil and groundwater contamination;
-  Construction impacts – dust, noise and vibration;
-  Railway noise;
-  Visual amenity; and
-  Long-term management.

The EPA submitted the following recommendations to the Minister for the Environment and Heritage:

1. *‘That the Minister notes that the scheme amendment being assessed is the rezoning of the former South Coogee industrial area, together with a portion of the Owen Anchorage ‘Waterways Reservation’, to ‘Urban’ under the Metropolitan Region Scheme (together with a number of minor supporting amendments) to facilitate the remediation of the land and its redevelopment into the Port Catherine marina and residential estate;*



2. *That the Minister considers the report on the relevant environmental factors as set out in Section 3 of the Bulletin;*
3. *That the Minister notes that the EPA has concluded that implementation of the proposed Port Catherine MRS Amendment would be unlikely to compromise EPA objectives, provided that there is satisfactory implementation of the recommended environmental conditions as set out in Appendix 4 and summarised in Section 4 of the Bulletin;*
4. *That the Minister imposes the conditions recommended in Appendix 4 of this report.'*

Having considered the amendment provisions proposed by the WAPC, and after assessment of the relevant environmental factors, the EPA considered that the proposal could be implemented subject to the following conditions:

- a) *"Preparation and implementation of the following Management Programs and Plans:*
 - *Remedial Works Management Program;*
 - *Construction Management Program;*
 - *Waterways Environmental Management Program; and*
 - *Noise and Vibration Management Plan;*
- b) *Resolution of the responsibilities for the on-going environmental management of the proposed marina."*

The then Minister for Planning and Infrastructure and the then Minister for Environment and Heritage subsequently agreed to the environmental conditions, allowing the proposal to be implemented.

Further detail on the environmental assessment is contained in section 7.0 of this report.

1.4 PUBLIC CONSULTATION

Throughout the process of preparing the Port Coogee development plans, and through the various statutory processes, there has been substantial consultation undertaken with authorities and the local community. The following is a summary of the consultation actions undertaken.

1.4.1 PUBLIC WORKSHOPS

The proponent issued an invitation to local community members (and representatives from the City of Cockburn) to be involved in the planning and design process for Port Coogee through a series of public workshops which were held in July 1997, leading up to the preparation of Design Concept 3 (refer **Appendix 2**). The workshop structure was such that the first workshop was designed to inform the participants of the nature of the project, the government agreements etc. and to gain some broad indication of community expectations, concerns and desires in terms of the project design.




On the basis of the outcomes of the first workshop, a range of alternative development scenarios were formulated reflecting both the diversity of community views and the parameters of the Project Agreement. The participants at the second workshop were presented with these scenarios. Participants were invited to choose a preferred scenario and participate in design groups to develop design solutions to achieve the chosen result.

The significance of the community workshop exercise was that it enabled the proponent, the project team and Council representatives to gain a first hand appreciation of the concerns and expectations of the community in relation to the Port Coogee development.

1.4.2 CONSULTATION WITH CITY OF COCKBURN

Following on from the workshops, a new design concept was formulated (refer Design Concept 3 in **Appendix 2**) and discussions were held over a period of several months with technical officers and elected members of the Council, as well as officers of the then Ministry for Planning.

Whilst the plan was designed within the technical parameters and the spirit of the Project Agreement, it became increasingly apparent that the impact of the proposal on certain locally significant features would make it difficult to gain community acceptance. In particular, the key concerns were:

-  The loss of the northern end of Coogee Beach and the adjacent primary dune system;
-  The loss of a remnant seagrass meadow in the southern part of the project area; and
-  The loss of the Omeo wreck.

The project team ultimately decided that a significant design review was needed to respond to these concerns. That review considered a range of alternative design options which were discussed by the project team, with the involvement of technical officers from Council and the DPI.

The review ultimately led to the first iteration of the current design concept (refer Design Concept 4 of **Appendix 2**).

1.4.3 COUNCILLOR BRIEFINGS

The revised concept was informally presented to Councillors and Officers of the City of Cockburn at a briefing session held in December 1998. The purpose of this session was to update Council on the progress of the design phase and to gauge its reaction (reflecting the views of its community) to the proposed design solution.






A further briefing session was held in March 2001 to advise Council of progress, particularly in view of the substantial environmental assessment work which had been undertaken over the preceding months.

1.4.4 STAKEHOLDER CONSULTATIONS

Whilst AHL has endeavoured to maintain contact with local interest groups throughout this project, a concerted consultation programme was undertaken in late 2001 to inform and engage local interest groups and Councillors in the knowledge that the MRS Amendment would shortly be released for public comment.

1.4.5 PUBLIC DISPLAYS

AHL has, wherever possible, taken the opportunity to inform and engage the local community by providing manned information displays in prominent locations and at major local events, including:

-  Coogee Beach Party;
-  Information displays at Gateways Shopping Centre;
-  Information displays at Phoenix Park Shopping Centre;
-  Rotary picnic at Manning Park; and
-  Public information display at the City of Cockburn Lesser Hall on 7th December 2002.







At each of the occasions, personnel have been available to answer questions and written or verbal comment has been encouraged.

1.4.6 NEWSLETTERS

AHL has circulated a series of newsletters via the local community newspaper and to people on its mailing list. Each newsletter has included a 'tear-out' comment slip to encourage readers to express their opinions.

1.4.7 ONGOING CONSULTATION

AHL continues regular consultation with the City of Cockburn through various mechanisms as listed below.

-  Port Coogee Liaison Meeting;
-  Various workshops which have included City representatives;
-  Various meetings on the preparation of the Draft Masterplan; and
-  Councillor update in 2008.

1.5 STATUTORY CONSULTATION PROCESSES

1.5.1.1 MRS AMENDMENT AND ENVIRONMENTAL REVIEW

In early 2002, the MRS Amendment and associated Environmental Review were advertised for public comment. The amendment attracted considerable interest and many submissions were received (505 submissions and 25 late submissions). From that process a number of issues were identified which needed to be addressed. The key issues, together with responses, are included in discussion in section 6.11 of this report.

1.5.1.2 LOCAL STRUCTURE PLAN AND LOCAL SCHEME AMENDMENT

Both the LSP and Local Scheme Amendment required a formal advertising process. Given the close relationship between these two processes, they were advertised concurrently, so that the community was provided with the complete context of the proposal. This approach was supported by the Council and DPI Officers.

1.5.2 COMMUNITY ISSUES

Throughout the various informal and formal consultation processes, the community and other stakeholders have raised various issues throughout the design process for Port Coogee. The key issues are explained and discussed in section 6.11, including how the issues have been addressed and resolved during the design process and during the preparation of the LSP.

Early knowledge and understanding of those issues has enabled the design team to initially substantially change the design concept, and then progressively refine the structure to respond to the community feedback.

2 PLANNING CONTEXT

2.1 STATUTORY PLANNING CONTEXT

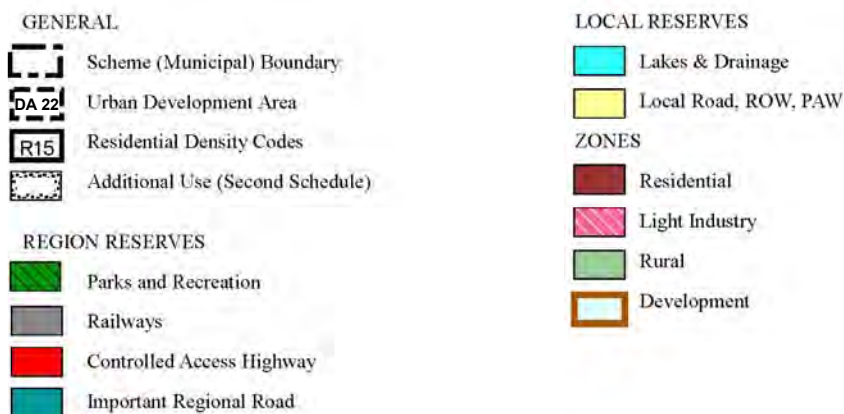
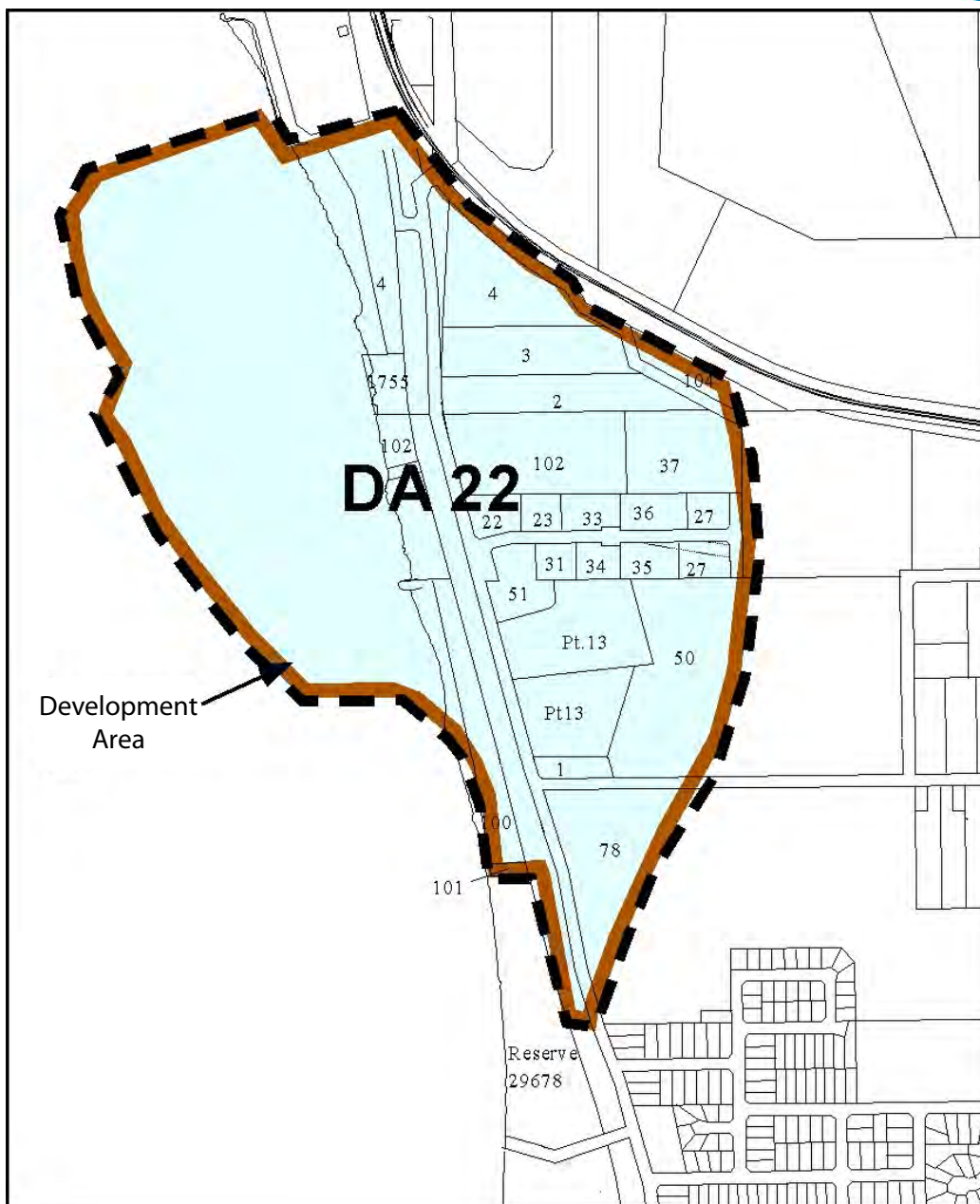
2.1.1 METROPOLITAN REGION SCHEME

As detailed in section 1.3.3 of this report, the land the subject of this LSP is zoned Urban under the Metropolitan Region Scheme (refer **Figure 1**).

2.1.2 CITY OF COCKBURN TOWN PLANNING SCHEME NO. 3

Amendment No. 3 to Town Planning Scheme No. 3 to rezone the subject land to 'Development Zone DA22' was gazetted on 28 June 2005, consistent with the Metropolitan Region Scheme (refer **Figure 2**). DA22 is included in Schedule 7 of the Scheme within which the following requirements are listed:

1. An adopted Structure Plan together with all approved amendments shall apply to the land in order to guide subdivision and development.
2. The provisions of the Scheme shall apply to the land use areas created under the Structure Plan.
3. The local government may adopt Design Guidelines for any development precincts as defined on the Structure Plan. All development in such precincts is to be in accordance with the adopted guidelines in addition to any other requirements of the Scheme, and where there is any inconsistency between the design guidelines and the Scheme, the Scheme shall prevail.
4. No subdivision or development will be supported within the Development Area until the Structure Plan has been approved by both the WAPC and the local government.
5. Development of Shops (retail uses), Commercial Uses and Tourist Facilities within the Development Area shall be in accordance with the approved Structure Plan.
6. The Structure Plan is to provide for public access to the coast and waterways and provide for a continuous dual use path along the foreshore connecting into the existing pathway system.
7. The Structure Plan should retain existing remnant vegetation within the Development Area, where possible, particularly on the primary coastal dunes adjoining Coogee Beach.
8. Provision shall be made for accessing a possible future commuter railway station on the railway reserve on the north boundary of the Development Area.
9. The design, construction and development within the Development Area shall have due regard for the principles, objectives and criteria contained in the Sustainability Strategy prepared by the developer for the Port Coogee Marina.
10. The Neighbourhood Centre shown on the Structure Plan located on Cockburn Road at the southern end of the Development Area is restricted to the following uses:





Port Coogee Revised Local Structure Plan

	Fast Food Outlet	(P) (subject to 11)
	Health Studio	(D)
	Medical Centre	(D)
	Convenience Store	(A)
	Lunch Bar	(P)
	Shop	(P)
	Restaurant	(P)

Where the permissibility (P), (D) and (A) is in accordance with clause 4.3.3 of the Scheme.

11. Fast food outlets are restricted to only those premises that do not include a vehicle drive-through service.
12. No commercial fishing boats are permitted to enter or use the marina, or carry out commercial fishing operations in or from the waterways.
13. Local Development Plans (LDPs) prepared under clause 6.2.15 of the Scheme to guide development for a particular lot or lots within the adopted Structure Plan shall be referred to the Council for its consideration and determination.
14. Local Development Plans (LDPs) may be required for any particular lot or lots within the adopted Structure Plan, however, LDPs shall be prepared for the land designated Marina Village, Neighbourhood Centre and possible future local centre and for land coded R80 and higher density coding.
15. Despite the provisions of the Scheme, the Council may, when considering a Local Development Plan (LDP), impose development requirements including but not limited to vehicle parking greater than the standards prescribed under the Scheme, if in the opinion of the Council, it would result in a more desirable outcome for the use and development of the land the subject of the LDPs.
16. The proposed future local centre adjacent to the railway line, which is approximately 4000 m² in area, is to be developed for off-street public car parking with the location, design and landscaping being to the Council's satisfaction and the car parking area is to be maintained by the developer or landowner for this purpose, until the Council agrees that all or part of the area is no longer required and may be considered for a railway station or other alternative use.
17.
 - (a) The ground floor of all proposed development within the Marina Village shall be set aside for commercial, retail or mixed business uses and may not be used for any other purpose unless the Council decides otherwise; and
 - (b) In areas immediately adjacent to the Marina Village which are coded R80 or higher density, and shown as such on the Structure Plan, where development is proposed to be two storeys or higher, the ground floor shall be set aside for commercial, retail or mixed business uses where such uses can, in the opinion of the Council, complement uses in the Marina Village, and may not be used for any other purpose unless the Council decides otherwise.
18. Development within the R20, R25, R30 and R40 coded residential areas is restricted to two storeys in height plus a loft.



19. The Marina Village is to be developed as a social and tourist focal point with the commercial uses centred around alfresco dining and entertainment, marine based retail and other complementary specialty facilities, with a minimum retail floorspace of 1500 m² net lettable area, unless the Council decides otherwise.
20. The Marina Village shall include a site of not less than 3500 m² for the development of a hotel, located and designed to the satisfaction of the Council.
21. Within the Marina Village, and local centre areas coded R80, development is restricted to a maximum of eight stories. The height of buildings in residential R60 and R80 areas should be limited to a maximum of five storeys (and not exceeding 21 metres) in height. Higher structures up to a maximum of eight storeys (and not exceeding 32 metres) in height may be permitted where:
 - (a) there is broad community support for the higher buildings following a process of full consultation;
 - (b) the proposed development(s) is suitable for the location taking into account the built form, topography and landscape character of the surrounding area;
 - (c) the location is part of a major tourist or activity node;
 - (d) the amenity of the coastal foreshore is not detrimentally affected by any significant overshadowing of the foreshore; and
 - (e) there is visual permeability of the foreshore and ocean from nearby residential areas, roads and public spaces.

Clause 6.2.4 of TPS No. 3 requires that a Structure Plan be prepared and adopted for a Development Area before any development can be approved or supported. The Scheme defines a clear and comprehensive process which explains the requirements for preparing a Structure Plan, public consultation and final adoption of the Structure Plan by both Council and the WAPC.

For the purposes of DA 22 of TPS No. 3, Built Form Codes constitute Design Guidelines.

2.1.3 MUNICIPAL BOUNDARY

The municipal boundary of the City of Cockburn was adjusted to incorporate that part of the Development Area located west of the existing shoreline. This modification was necessary to ensure that Council has control over the complete development area.

2.2 STRATEGIC PLANNING CONTEXT

2.2.1 STATE GOVERNMENT CONTEXT

2.2.1.1 COCKBURN COAST










The Port Coogee estate adjoins the southern boundary of the Cockburn Coast District Structure Plan (DSP) area. The Cockburn Coast DSP was prepared to guide the future complete regeneration of the existing industrial land along the coast between North Coogee and South Fremantle. Cockburn Coast is identified as a high density, urban centre containing a mix of commercial, residential, public purpose, cultural and tourism related uses. The development is anticipated to yield approximately 4,850 dwellings and 12,000 residents and generate approximately 3,000 jobs (refer **Figure 3**).

The DSP provides guidance on desired character and architectural outcomes on a precinct basis – Robb Jetty precinct, Emplacement Crescent precinct and Power Station precinct. Local Structure Plans have been adopted by Council for the Robb Jetty and Emplacement Crescent precincts, with the first stage of development (located within the Robb Jetty Precinct) proposed to commence in 2015.







2.2.1.2 LIVEABLE NEIGHBOURHOODS COMMUNITY CODE

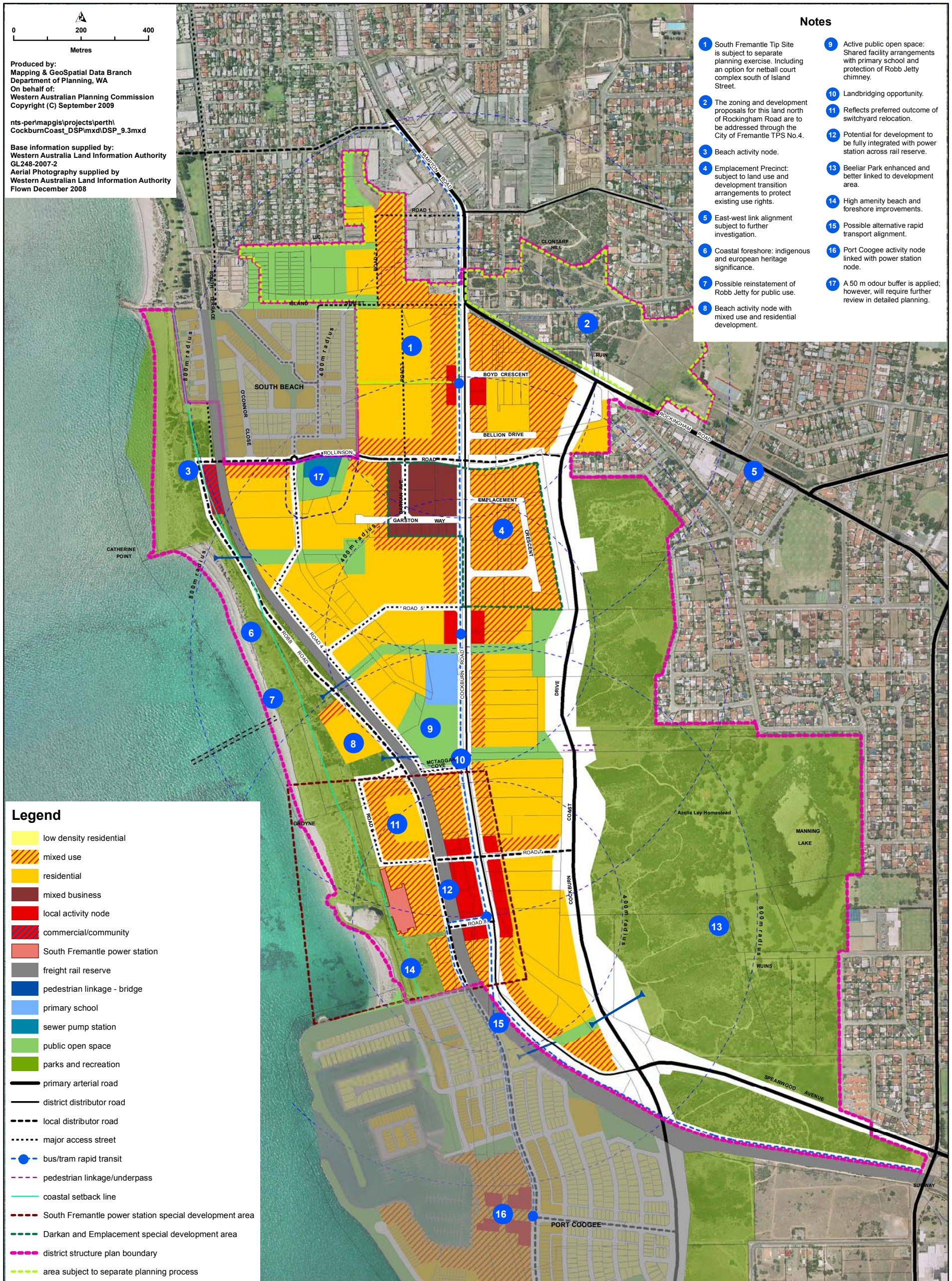
Liveable Neighbourhoods Edition 4 sets out policies and practices that encourage a sustainable urban structure of walkable neighbourhoods clustering to support town centres with compactness of form, compatibility of mixed uses, reduced car dependence and ease of access to employment, retail and community facilities.







The principal aims of the Liveable Neighbourhoods Community Code are listed as follows:

-  To foster a sense of community and strong local identity in neighbourhoods and towns;
-  To provided access generally by way of an interconnected network of streets;
-  To ensure an active street-land use interface;
-  To facilitate new development that supports efficiency of public transport systems and safe direct access to the system for residents;
-  To facilitate mixed use development which is robust and can change over time;
-  To provide a variety of lot sizes and housing types;
-  Protecting environmental areas and the inclusion of significant cultural and physical features into designs;
-  To provide a comprehensive open space and urban water management network; and
-  To facilitate cost effective and resource efficient development.

The vital ingredients of neighbourhood design include:

-  Compactness so most people can walk to local centres in five minutes;
-  Build streets where people are encouraged to walk, cycle or take public transport rather than drive;
-  Connect the streets in a simple pattern so people can choose different routes and make short trips to local facilities;
-  Locate windows and verandas overlooking streets to deter crime;
-  Provide opportunities for local employment in shops and businesses close to people's homes;
-  Create a neighbourhood heart with shops, businesses and community facilities;



-  Make town centres more sustainable by developing clusters of about six neighbourhoods with a wide range of services, facilities and jobs;
-  Place public transport stops at town centres and neighbourhood centres;
-  Offer a wide choice of housing and lot sizes and use a flexible layout so the area can be changed to meet future needs;
-  Respond to physical characteristics of the site to reinforce local character and protect natural features;
-  Provide neighbourhood parks of different sizes and types for a variety of uses and within a five-minute walk for most people; and
-  Streets are laid out on a modified grid or connected network, so that there are alternate routes to every destination. This permits most streets to be of human scale, with slower traffic in a permeable and legible network. Streets become equitable for both vehicle and pedestrians.

Liveable Neighbourhoods requires detailed context and site analysis and compliance with Code requirements to enable proposals to be considered under the Code. The Port Coogee LSP is submitted for consideration under Liveable Neighbourhoods.

2.2.1.3 STATE COASTAL PLANNING POLICY – STATEMENT OF PLANNING POLICY (SPP NO. 2.6)



Government Policy on coastal setbacks, landuse and development is guided by Statement of Planning Policy No. 2.6: State Coastal Planning Policy, prepared under section 5AA of the Town Planning and Development Act. The Policy is intended to control development along the coast, taking into account coastal processes including erosion, accretion, wave conditions etc, as well as the protection, conservation and enhancement of areas of landscape, conservation, indigenous and cultural significance.


Whilst the policy aims to determine appropriate setbacks and coastal foreshore reserves for development, it recognises that, in some circumstances, it is appropriate to consider development beyond the current shoreline and in nodes along the coast.

The provisions of the Statement of Planning Policy (SPP) are generally consistent with the previous Coastal Planning Policy (Policy DC6.1), which was in existence when the State Government entered into the Project Agreement with Australand Holdings Limited, which has been the cornerstone of the Port Catherine (Port Coogee) project. The Government, in considering the Project Agreement, and more recently, in initiating a Metropolitan Region Scheme Amendment, considered Port Coogee in the light of important environmental and physical issues associated with coastal development, and agreed that the project offers the important net public benefit, tourism and recreational opportunities which the policy seeks to encourage in water based development.

MARINA DEVELOPMENT

The main considerations when assessing the suitability of a water-based development such as Port Coogee lie in the Policy Objectives, which include the following:

-  Ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities; and
-  Ensure that the location of coastal facilities and development takes into account coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria.



The more specific Policy Measures of the policy also include several provisions, which recognise that there is a place for coastal development such as Port Coogee. Particularly relevant provisions include:

- i) *'Maintain and enhance public enjoyment of the coast where this is consistent with the objectives of this Policy;*
- ii) *Require the provision of public access to the coast that is consistent with the values and management objectives of the area, including the interests of security, safety and protection of coastal resources, as well as the recreational opportunities, both on and offshore of that section of coast;*
- iii) *Ensure that use of the coast, including the marine environment, for recreation, conservation, tourism, commerce, industry, housing, ocean access and other appropriate activities, is sustainable and located in suitable areas.*
- iv) *Ensure that, when identifying areas suitable for development, consideration is given to strategic sites for coastal access and commercial development that is demonstrably dependent on a foreshore location including ports, boat harbours and regional boat ramps;*
- v) *Require that proponents demonstrate why their development should be located within the policy area. Valid proposals will generate a demonstrable net public benefit in both the short and long term;*
- vi) *Ensure that land use and development, including roads, adjacent to the coast is sited and designed to complement and enhance the coastal environment in terms of its visual, amenity, social and ecological values; and*
- vii) *Ensure that new buildings and foreshore infrastructure on the coast are positioned to avoid risk of damage from coastal processes and, where possible, avoid the need for physical structures to protect development from potential damage caused by physical processes on the coast...'*

COASTAL SETBACKS

The Policy states that the required coastal setback will vary according to the circumstances of any particular proposal. Whilst it identifies a general guide of 100 m, it states that each proposal must be assessed having regard to the Policy and Schedule 1 of the Policy. Section G(e) of the policy provides for coastal development nodes to be developed within the setback.

In considering the issue of coastal setbacks in the context of Schedule 1 of the SPP (Coastal Development Setback Guidelines for Physical Processes) the Project should perhaps be discussed in terms of three discrete areas of waterfront interface:

- i) Southern-most section – that part of the development at the southern end of the Project Area, located behind the primary dunes of Coogee Beach;
- ii) Waterfront residential development – that part of the development situated south of the breakwater, utilising the existing rock revetment constructed as part of the past waterfront industrial development; and
- iii) Marina/water-based development – that part of the project created through the construction of new breakwaters within the Project Area.

SOUTHERN-MOST DEVELOPMENT

The southern-most section of the Project Area does not form part of the historical coastal industrial development that caused substantial modification and degradation of the natural coastal environment. It is therefore acknowledged that this area needs to properly recognise reasonable coastal setback requirements based on the criteria as defined in the SPP.

This portion of the development respects the boundaries of both the existing MRS Parks & Recreation Reserve (Coogee Beach foreshore) and Bush Forever Site 341.

In addition, Australand Holdings Limited commissioned M P Rogers & Associates to undertake an assessment of the appropriate setback distance to provide an adequate buffer for possible future coastal erosion. M P Rogers & Associates adopted a set of assessment criteria, based on the general guidelines provided in *“Coastal Planning and Development in Western Australia – Towards a Policy Framework”* (WAPC) and the *“Leighton Regional Planning Guidelines”* (Ministry for Planning 2000). The criteria was generally consistent with the guidelines contained in the SPP. The M P Rogers & Associates report recommended a setback distance of 73 m from the present-day coastal vegetation line.

The LSP complies with the recommended setback line, and in fact does not propose to develop any further west than the old Cockburn Road alignment.

WATERFRONT RESIDENTIAL

The subject land has historically been used for waterfront industrial uses, and the shoreline has been stabilised by the placement of a rock revetment. In terms of its historical use, this land has traditionally been used for private commercial purposes, and has not been part of the public domain.

Clause F2 of Schedule 1 provides for setback variations for *“Development Adjacent to Coastal Protective Structures or Systems”* and states *“Development that benefits from the protection of existing formal coastal protection systems will be determined on a case-by-case basis with any coastal processes setback distance taking into account the nature of the structure in question...Revetments that have been designed for wavelength and sea levels that will exist at the end of the planning term can compensate for both S1 and S3 provided that a sandy beach is not required or expected at the site”*.

The development concept shows a linear open space and public road interface along the existing revetment separating the nearest residential lots from the revetment by approximately 48 m. Subject to more detailed analysis at subsequent detailed design stages, this is anticipated to be a sufficient setback to provide adequate protection for the nearest private properties. In addition, it is significant to note that the concept returns this coastal structure, and the adjoining waterfront land, to the public domain providing full public access, and recreational amenity, where none currently exists.

It is therefore considered that the development meets the exemption criteria defined in F2 and, more importantly, meets the general objectives of the SPP with regard to creation of public foreshore areas, sustainable use of the coast for housing, tourism, recreation, access, etc., and the location of coastal facilities and development that takes into account coastal processes.








MARINA/WATER BASED DEVELOPMENT

This is the most substantial of the coastal elements, and is most appropriately discussed in terms of the relevant policy measures.

Item (xv) of the General Policy Measures of the SPP requires that development should *“Ensure that use of the coast, including the marine environment, for recreation, conservation, tourism, commerce, industry, housing, ocean access and other appropriate activities, is sustainable and located in suitable areas”*.

The Port Coogee development meets sustainability criteria at a number of levels:

-  The extensive environmental review undertaken as part of the MRS Amendment process, demonstrates the environmental sustainability of the development, in terms of managing any impacts upon the existing natural and human environments.
-  The development will be instrumental in achieving significant broader environmental improvements through:
 - Funding the remediation of soil contamination resulting from past industrial uses; and
 - The capturing of nutrient-rich groundwater prior to its reaching Cockburn Sound, resulting in a net improvement in water quality within the near-shore waters of the Sound.
-  Social equity is enhanced by utilising a section of the coastal waterfront that has historically been largely inaccessible or inhospitable to the public, and replacing the industrial uses with a multi-faceted development that offers extensive public accessibility to a diverse range of waterfront uses.
-  Social equity is also enhanced in terms of providing a facility with a wide range of waterfront recreational experiences to the broader population of the southern Metropolitan Region. Whilst the northern Metropolitan Region presently enjoys access to a number of different facilities along the coast, including Mindarie Keys, Hillarys Boat Harbour, and a number of waterfront cafes and restaurants, no such facilities are available to the southern Metropolitan Region between Fremantle and Rockingham.
-  Suitability of the location is strongly supported by the following factors:
 - The Port Coogee Project has been recognised in formal strategic planning documentation for almost fifteen years, since it was originally embodied in the Coogee Master Plan, released in February 1993. The Coogee Master Plan was subsequently reinforced in a statutory context with the gazettal IP26 in June 1994. IP26, whilst describing some of the general intentions for the area, does not include an actual plan of development, but simply depicts a plan outlining the area subject to the improvement plan. Although IP26 does not include a development plan, the intent presumes that the general principles of the Coogee Master Plan should form the basis for development, with various issues still requiring resolution and refinement.
 - This section of the coastline has historically been privately developed and used for industrial purposes, and its natural environmental characteristics have been substantially altered as a result. Utilisation of this land will provide facilities for the use and enjoyment of the general community, in an environmentally sustainable way, and in a location that will not cause any adverse impact on areas of high environmental value.

- The development in fact offers substantial positive environmental spin-offs, firstly by making the expensive remediation of the contaminated industrial land economically viable, and secondly by introducing measures to capture nutrient-rich groundwater, which will improve the water quality within Cockburn Sound, and recycling the captured water to irrigate public parklands, including the Regional Open Space reserve to the east of the Project Area.

Item (ii) of the General Policy Measures requires that development should *“maintain and enhance public enjoyment of the coast where this is consistent with the objectives of this policy.”* The Port Coogee development concept is a strongly community-focused plan offering significant returns in public benefit. Port Coogee offers a substantial range of waterfront recreational experiences, a marina for approximately 300 boats, the Marina Village acting as a social and tourist focal point, a community-purpose facility to be provided to the City of Cockburn, public open space and waterfront access for the disabled.

Item (xix) requires that proponents be required to *“demonstrate why their development should be located within the policy area. Valid proposals will generate a demonstrable net public benefit in both the short and long term.”* Previous comments have already shown the clear public benefit, in terms of environmental remediation, improved public access to the waterfront, and new public recreation and entertainment facilities.

Item (xx) requires the proponent to *“ensure that land use and development, including roads, adjacent to the coast is sited and designed to complement and enhance the coastal environment in terms of its visual, amenity, social and ecological values.”* Again, the previous comments demonstrate net benefits in these terms.

Items (xii) to (xiv) require development to avoid negative environmental impacts, and assure that best management practice is used to manage discharges of waste and stormwater from development. The impacts and management measures are extensively detailed in the environmental review documentation.

CONCLUSION

In conclusion, the SPP has clearly been structured to ensure that a development such as Port Coogee can be facilitated provided that it meets appropriate criteria relating to environmental protection, sustainability, public benefit and physical protection from coastal processes.

Section G(e) of the policy states *“the need for the provision of development nodes on the coast is recognised and should provide for a range of facilities to benefit the broader public. Such nodes may be developed within the setback, but should only be located where ancillary coastal protection structures would not result in erosion or destabilisation of adjacent coast. Nodes should be located on stable areas and should avoid, where possible, areas of high natural landscape or resource value.”*

The Port Coogee development clearly satisfies the requirements of a coastal development node.

The Port Coogee site represents a unique opportunity to provide a water-based facility, which is substantially focussed on providing public access and benefit, which will not impinge on areas of high natural landscape or environmental value, and which in turn facilitate the expensive remediation of contaminated coastal industrial land.

The development meets the general objectives of the Policy with regard to creation of public foreshore areas, maintaining and enhancing public enjoyment of the coast, sustainable use of the coast for housing, tourism, recreation, access etc., and the location of coastal facilities and development that takes into account coastal processes.











2.2.1.4 METROPOLITAN CENTRES POLICY – STATEMENT OF PLANNING POLICY (SPP NO. 9)

The principal purpose of the Policy is to provide a broad regional planning framework to coordinate the location and development of retail and commercial activities in the metropolitan region. It is mainly concerned with the location, distribution and broad design criteria for the development of commercial activities at the regional and district level.

SPP No. 9 also deals with criteria for local and neighbourhood centres, although doesn't specifically identify such centres.

The objectives of the Policy include:









-  Promote Neighbourhood Centres, Local Centres and corner shops as performing a vital role in providing the day-to-day convenience shopping for the neighbourhood as well as an important focus for neighbourhood services and community facilities, including small offices, supermarkets, convenience stores and local shops (maximum floorspace is generally 4,500 m², although main street centres can be increased by 1000 m² NLA);
-  Encourage centres to be developed as the focus of the community and employment activities comprising a range of appropriate commercial and community uses;
-  Ensure that centres are highly accessible, of a high standard of urban design and developed with due regard to the residential amenity of the locality;
-  Centres should be developed with a wide range of uses comprising a mix of appropriate retail, office, entertainment and commercial uses as well as appropriate office uses;
-  Centres should be accessible by a range of transport modes including walking, cycling, public transport, cars and commercial and service vehicles as well as by people with disabilities;
-  The 'main street' form of commercial development with street frontages and containing a mix of uses should be encouraged in both new and established centres;
-  Implementation includes the requirement for the preparation of a centres plan for main street centres by the local government for the endorsement of the Commission;
-  The Metropolitan Centres Policy provides a guideline of 0.53 m² NLA per capita for Neighbourhood/ Local Centres.

Note: The LSP was prepared and approved based on the then operational Metropolitan Centres Policy. SPP 4.2 Activity Centres for Perth and Peel was gazetted in August 2010 replacing the former Metropolitan Centres Policy. SPP 4.2 has no impact on the provisions of the LSP.

2.2.1.5 CANAL ESTATES AND OTHER ARTIFICIAL WATERWAY DEVELOPMENTS – WAPC DC1.8

This Policy provides guidelines for canal estate developments which propose to incorporate artificial waterways. It also applies to harbours and marinas and developments incorporating artificial waterways or lakes for navigation, ornamental or recreational purposes. The main objective of the Policy is to ensure that these developments satisfactorily address the environment, public health and safety, and financial costs to the community.

In summary, the Policy requires the following:






-  Evidence that the proponent has full control over the land involved or affected by the proposal.
-  Appropriate consultation is to be undertaken with the relevant government agencies.
-  Land is to be zoned appropriately in the local authority scheme – marinas and harbours should be zoned special use, or as otherwise agreed with the local authority. Rezoning amendments will normally require environmental assessment.
-  Requires public open space (POS) to be provided in accordance with Policy DC2.3 – Public Open Space in Residential Areas and recommends the location of some POS away from the waterway; small multipurpose reserves (min 1000 m²) to perform a variety of functions; provision of access at the end of waterways; provide for maximum public recreational access; and to provide foreshore reserves as appropriate.
-  Ensure that normal statutory procedures are followed for subdivision and development and that necessary licenses are issued.
-  The Policy provides an outline of information required to be submitted to the local authority as part of a rezoning proposal.
-  Provides guidelines on the design of such facilities.
-  Provides guidance for management of the facility, including water quality guidelines.







2.2.1.6 COOGEE MASTER PLAN

The Coogee Master Plan (CMP) was completed in January 1993 and incorporated a preliminary Concept Plan for a Residential Marina development at Port Coogee. The objective of the Master Plan was to establish a comprehensive and detailed guide for the future development and land use of the whole of the area that was the subject of the Coogee Redevelopment Agreement.

The Master Plan proposed, amongst other things, the relocation of industrial uses to the north of the railway line to facilitate the remediation of the South Coogee area, and associated residential/marina development.

The primary features of the plan included the following:

-  Industrial redevelopment north of the railway. Allowances made for Light Industry and Special Industry zones in accordance with Council's Town Planning Scheme.
-  Residential/Marina development south of the railway based on the proposal, at the time, by CMD.
-  Relocation of industries south of the railway, allowing for these industries to relocate to the north of the railway line, and for existing sites to be cleaned up and rehabilitated as necessary prior to incorporation into the proposed Port Coogee development.
-  Subdivision and development guidelines for the future industrial areas north of the railway line; and accommodation for approximately 100 industrial lots ranging in size from 20 ha down to 2-4,000 m².
-  An integrated transport plan for both private and public transport.

- 
-  Modification of the proposed Cockburn Road alignment and downgrading to a four-lane, 70 kph speed limit primary distributor road.
 -  A centralised waste processing facility to accommodate industrial and domestic waste water.
 -  Establishment of environmental guidelines to ensure satisfactory integration of the redevelopment with surrounding land use, including buffer requirements and requirements for odour and noise controls.
 -  Provision of suitable servicing infrastructure to accommodate the requirements of the Master Plan.
 -  The preparation of a comprehensive landscaping plan.

Whilst the Coogee Master Plan was adopted by Government, an addendum recommended that the Port Coogee proposal not be formally endorsed at that time, primarily in recognition of the likely significant design changes resulting from factors such as the realignment of the proposed PRR route, the need to preserve adjacent Regional Open Space (ROS), and improve public access to the Coogee foreshore areas.

With the promulgation of IP26, which embodied the key objectives of the CMP, the Port Coogee project was formally recognised and the need for a revised Scheme was identified. Since the preparation of the Coogee Master Plan, and promulgation of IP26, the alignment of Cockburn Road has been clearly defined and is now situated in a more westerly position, thereby reducing the easterly extent of the Port Coogee development area.

2.2.1.7 COCKBURN ROAD REALIGNMENT

The position of the proposed Cockburn Road realignment has been primarily dictated by the future Primary Regional Road alignment proposal as determined by MRWA. Council is continuing to consult with MRWA with a view to reducing the hierarchical level of the road to one of a more localised scale.

2.2.2 LOCAL GOVERNMENT CONTEXT

2.2.2.1 CITY OF COCKBURN LOCAL COMMERCIAL STRATEGY

The City of Cockburn Local Commercial Strategy identifies Port Coogee as a 'current proposal' and a 'potential/proposed new centre'. There is no particular floorspace allocated to the centre. The Strategy identifies Phoenix Park as the closest District Centre, Gateways as the closest Regional Centre and the closest Neighbourhood and Local Centre as Hamilton Road and Favazzo Place, located approximately 1.2 km from the proposed Port Coogee Marina Village.

Note: The LSP was prepared based on the then City of Cockburn Local Commercial Strategy. In December 2012 the City adopted a Local Commercial and Activity Centres Strategy (LCACS). The LCACS has no impact on the provisions of the LSP.

3 CONTEXT ANALYSIS

The site was previously occupied by a range of industries, predominantly associated with Robb Jetty, including tanneries and fellmongers. With the closure of Robb Jetty and the relocation of many of these industries, the site includes, and is surrounded by, large areas of undeveloped or vacated industrial land. **Figure 4** shows an aerial photograph of the site taken prior to the removal of many of the industrial buildings, overlaid with the area's landuse history.

Immediately north of the site is the old South Fremantle Power Station, which has been decommissioned, although the switch yard associated with the power station remains operational. The future of the power station site is yet to be determined, including whether or not the power station building will be demolished.

One of the unique features of the historical land use configuration is the existence of freehold lots and Crown leases along the foreshore, many of which extend to the high water mark. Partly as a consequence of the industrial use of this foreshore area, much of the shoreline has been subject to artificial containments in varying forms, ranging from high standard limestone retaining, through to less formalised placement of building rubble.

Significantly, the private control of sections of the foreshore area has had the effect of legally restricting public accessibility to these foreshore areas. This is an important factor in assessing the public equity benefits of any development of this area, which will substantially reinstate the waterfront to the public domain.

The land to the north-east of the railway line (i.e. north of the site), owned by LandCorp, is presently vacant and undeveloped. The CMP and DZS No. 3 make provision for future light industrial development in this area; however, it is understood that the Council is seeking to assess the appropriateness of such land use, in light of recent trends showing less demand for industrial land than previously projected. On this basis, it is possible that this area may, in the future, be considered for urban development.

The eastern boundary of the subject site is defined by the proposed Cockburn Road realignment. This abuts vacant, undeveloped land to the east of the realignment, which is reserved for Parks & Recreation under the MRS.

Immediately to the south of the project area, is Coogee Beach Reserve and the Coogee Beach Caravan Park. To the south-east of the site is existing residential development, including the Cockburn Waters Residential Estate.

The Context Analysis is depicted in **Figure 5**.

3.1 SUSTAINABILITY STRATEGY

Sustainability has played an increasing profile in the business of AHL in the past, culminating in late 2002 with a decision to develop a National Sustainability Strategy. The purpose of this approach is to consolidate AHL as an industry leader in the delivery of environmental, social and economic outcomes in each of its land development projects. A first step in this strategy was to identify 'signature' projects in each state. Port Coogee is the Western Australian 'signature' project.



INDUSTRIAL USES
ON FREEHOLD LAND
OR CROWN LEASES
EXTENDING TO HIGH
WATER MARK

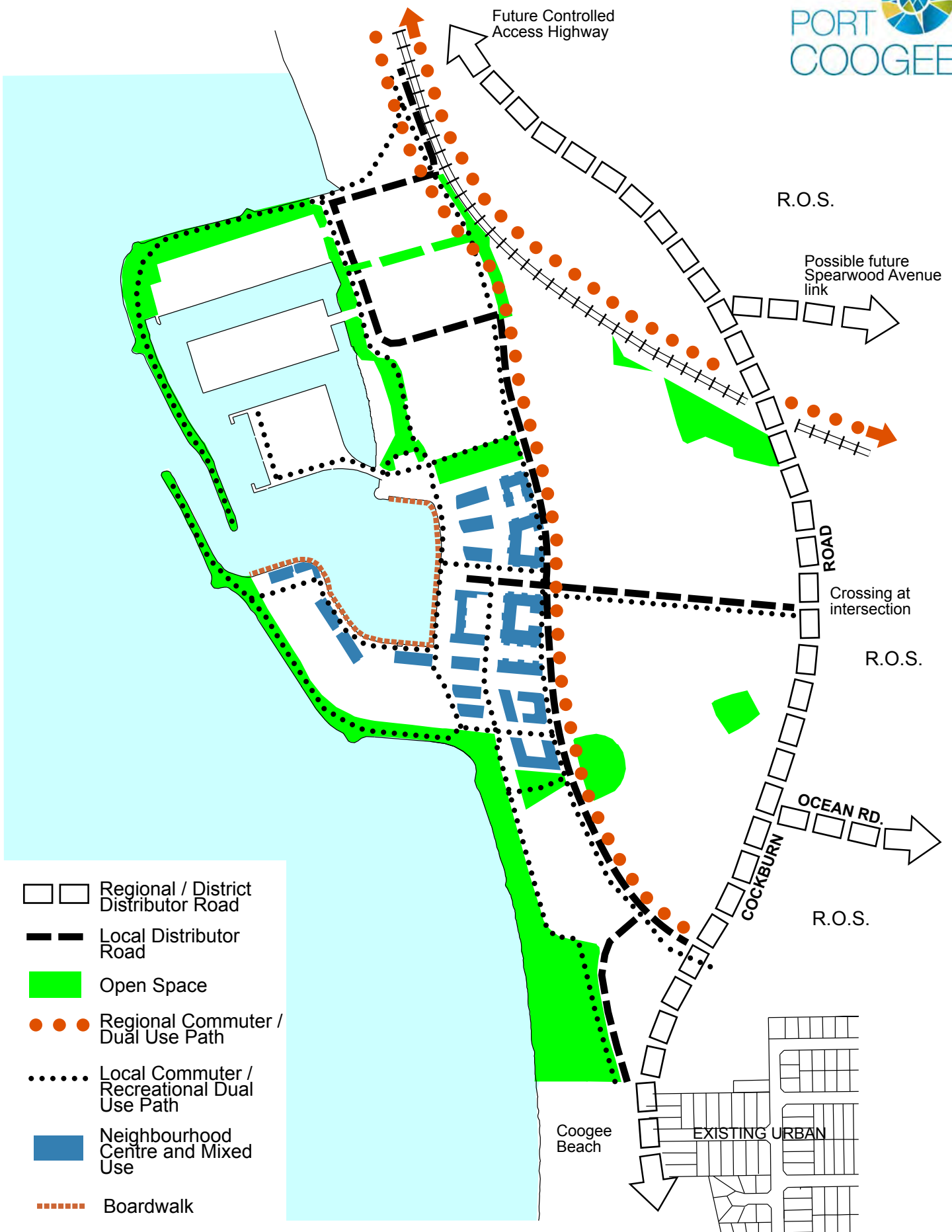
OMEOWRECK








COOGEE BEACH

— Subject Land

Aerial Photograph & Land Use History






-  Regional / District Distributor Road
-  Local Distributor Road
-  Open Space
-  Regional Commuter / Dual Use Path
-  Local Commuter / Recreational Dual Use Path
-  Neighbourhood Centre and Mixed Use
-  Boardwalk

Context Analysis, Walkable Catchments and Movement System



Figure No.5



The purpose of the Port Coogee Sustainability Strategy is:

-  To commit to and report on set benchmarks across the triple bottom line outcomes of environment, social and economics;
-  To reflect the broad objectives of the WA Sustainability Strategy (and the State Agency Strategies) and the City of Cockburn’s draft Sustainability Strategy; and
-  To be a ‘signature’ project nationally for Australand thereby playing an integral role in achieving sustainability outcomes that lead the land development industry.

The Port Coogee Sustainability Strategy is not a statutory document required by the approvals process. It is the intention of AHL, however, to use this document in the design, construction and operation phases of Port Coogee as a key control document where the achievement of all commitments are reported to the public.

In this regard, and in accordance with TPS Amendment No. 3, the Scheme specifies that *“the design, construction and development within the Development Area shall have due regard for the principles, objectives and criteria contained in the Sustainability Strategy prepared by the developer for the Port Coogee Marina”*.

The Strategy is currently being reviewed in order to identify new innovations in sustainability and bring the strategy in to line with requirements which have become statutory since the first draft of the Strategy was issued.

4 EXISTING SERVICE INFRASTRUCTURE – PRE DEVELOPMENT

Existing services pre development, are shown on **Figure 6**.

4.1 SEWER

A 450 diameter and 500 diameter pressure main from the sewerage pump stations further north in Fremantle and Applecross, traverse the site. The pressure main follows Cockburn Road then Ahoy Road. At the top end of Ahoy Road the pressure main tunnels through the ridge, emerging at Entrance Road.

A 500 diameter pressure main also continues along Cockburn Road from the Ahoy Road intersection. This is a secondary pressure main and has been used only in an emergency to discharge at Woodman Point and is no longer required.

Currently the area is not served by a reticulated sewer disposal system.

4.2 WATER SUPPLY

An existing 225 mm diameter water main traverses the site along Cockburn Road. This main has capacity to provide service to approximately 450 lots and is the northern end of a supply system. It is not proposed to be used for supply except in an early stage temporary capacity. The 225 mm diameter main along Cockburn Road will need to be replaced by an equivalent buried main in the road reserves/public open space of the proposed development.

4.3 POWER SUPPLY

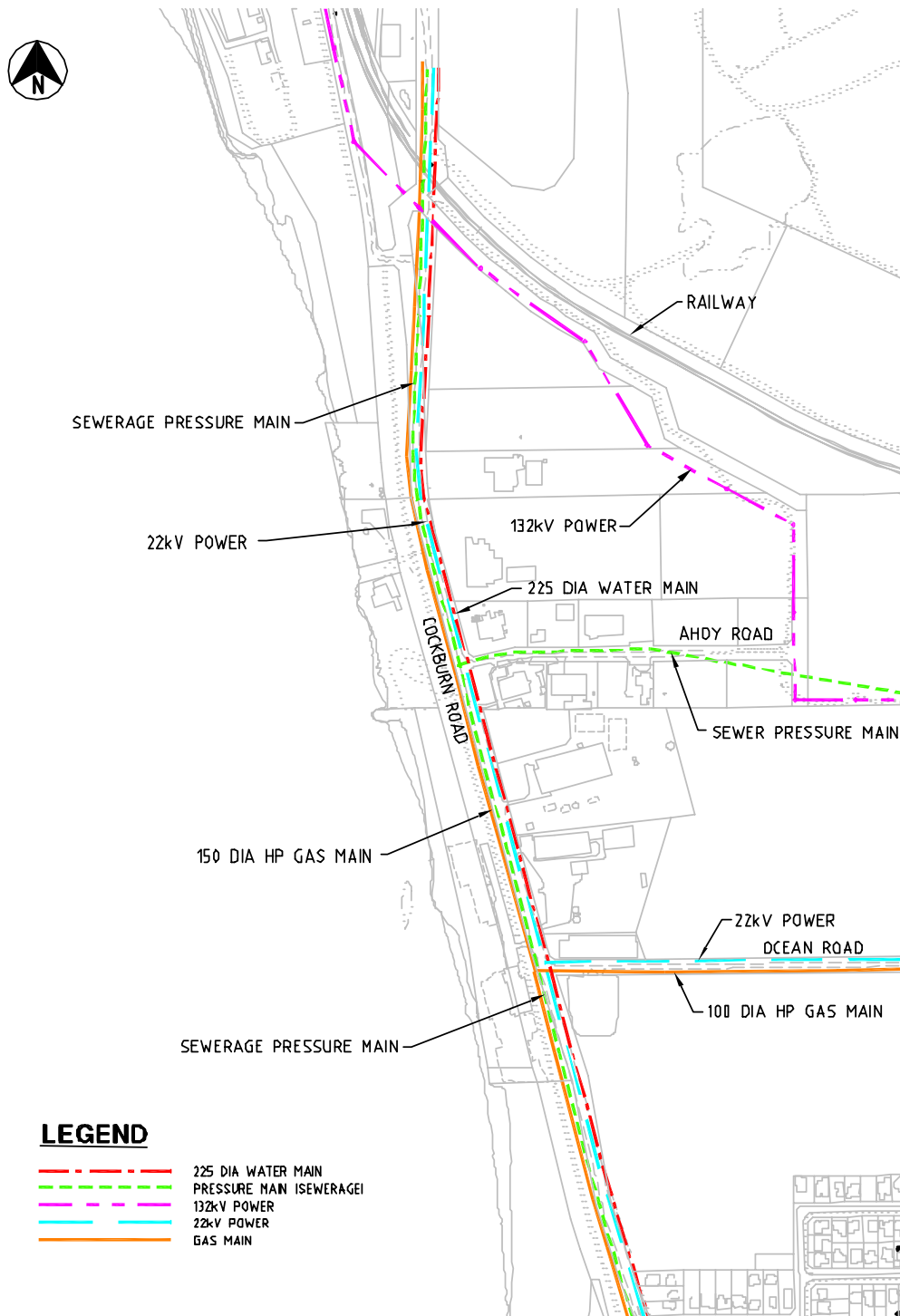
A 132 kV high voltage overhead transmission line is located in the north-east corner of the development area. This transmission line forms an important part of the State's grid system. Western Power has indicated that relocation will have to be timed to reduce disruption that would be caused to several suburbs including the Fremantle Business District. Preliminary discussions with Western Power have reached agreement for relocation of the line.

In addition to the above, there are also 22 kV overhead power lines in Cockburn Road and Ocean Road, which will be removed and replaced with an underground system.

4.4 GAS SUPPLY

Existing gas services are located in both Cockburn Road and Ocean Road. The main 150 mm diameter High Pressure (HP) main occurs in Cockburn Road and Ocean Road serves the Coogee industrial area and residential areas. A 100 mm diameter Low Pressure (LP) line occurs in Cockburn Road south of Ocean Road.

Both of these services would require relocation in the proposed development with a 150 mm diameter HP main relocated along the main internal north-south road/public open space and the 100 mm diameter LP service along the southern section of the re-aligned Cockburn Road/Fremantle-Rockingham Highway.



Source : SINCLAIR KNIGHT MERZ

Existing Services Pre-Development







4.5 TELEPHONE SERVICES

There are several minor telephone cables within the development area servicing existing premises. Discussions with Telstra have indicated that a new cable would be required to be installed off-site to connect the development to the telephone exchange in Mell Road.

4.6 MOVEMENT NETWORK

4.6.1 ROADS

The site is in close proximity to a number of existing and planned regional roads. Key roads include:

-  The existing Cockburn Road;
-  Stock Road;
-  Ocean Road east-west link; and
-  Spearwood Avenue east-west link.

4.6.2 PEDESTRIAN AND DUAL USE PATHS

There is currently a Dual Use Path along the western side of the development area on the former rail alignment.

4.6.3 PUBLIC TRANSPORT

4.6.3.1 RAIL

There is currently a freight rail system traversing the north of the site. Freight rail noise is addressed in section 7.7 of this report.

4.6.3.2 BUS NETWORK

Cockburn Road, in the vicinity of the development site, is serviced by a single bus route. Bus route 825 travels between Fremantle and Rockingham, along Hampton Road, Cockburn Road, and Rockingham Road. This route operates from Fremantle every hour in the AM peak and every 30 minutes in the PM peaks with 10 to 30 minute frequencies between peaks.

5 EXISTING ENVIRONMENT

5.1 LAND CAPABILITY

The subject site is located within the relic Holocene foredune sequence and degraded surface of the Spearwood Dunes.

Two land capability units occur over the site – the S₁₃ unit (Safety Bay Sand) which consists of white medium-grained calcareous sands associated with the foredune sequence, and the LS₁ unit more inland (Tamala Limestone).

The land capability of these units for specified land uses is presented in **Table 1**.

TABLE 1: LAND CAPABILITY FOR SPECIFIED USES (AFTER GOZZARD, 1983)

Land Unit	LAND USE					
	Solid Waste Disposal	Liquid Waste Disposal	Septic Tanks	Road Construction	Urbanisation	Excavation
S ₁₃	X	X	C	C	C	P
LS ₁	X	X	P	C	C	C

Where X = activity undesirable for the environment
C = activity compatible with the unit
P = possible problems for the environment

Urbanisation and road construction are considered compatible land uses for these identified units.

5.2 TOPOGRAPHY

The dry land section of the site rises from the primary dune system and the existing Cockburn Road alignment to a ridge which runs north-south, just to the east of the development area. Levels across the site range from 0 m AHD along the coastline to a maximum level of approximately 37 metres along the ridge line. The extent of the gradient through the site generally ranges between 6 and 12 percent down to Cockburn Road, with localised fluctuations in level marked by the remains of the original dunal system between Cockburn Road and the shoreline.

The sea bed formation features a gradual gradient from the shoreline to a depth of approximately 8.0 m AHD at the western extent of the zoning boundary.

5.3 LANDFORM AND SOILS

Ground conditions are typical of this section of coast, comprising sand overlaying limestone to varying depths. The limestone is commonly exposed at the surface in the higher areas east of Cockburn Road and along the ridge.

5.4 GROUNDWATER/HYDROLOGY

Groundwater is present beneath the site in an unconfined aquifer, in a superficial formation known as the Tamala Limestone. The base of the superficial formations lies about 30 metres below ground level adjacent to the coast, yielding a saturated thickness of about 25 metres.

The depth to the water table within the Port Coogee development area varies with the topography. In most cases, the water table varies from 4 to 6 metres below ground level west of Cockburn Road, from 6 to 10 metres below ground level in the industrial land east of Cockburn Road and, much deeper below the ridge.

The groundwater moves in a westerly direction and discharges to the ocean between the shoreline and about 80 metres offshore, but mostly within the first few metres (Bowman Bishaw Gorham, 2001). The discharge of fresh groundwater to the ocean results in the formation of a saltwater interface within the aquifer (Bowman Bishaw Gorham, 2001), which is a narrow mixing zone of saline ocean water and fresh groundwater caused by tidal and water table fluctuations and dispersion (Davidson, 1995).

A notable feature of the groundwater in this locality is the presence of nitrogen, mostly in the form of dissolved inorganic nitrogen (DIN), at elevated concentrations. Land to the east of the site has traditionally been used for market gardening, particularly during the 1940s, 50s and 60s. This activity has declined during the past 30 years and is now mostly replaced by residential development. A recent survey of the remaining areas of market gardens has determined that little is currently under production (Bowman Bishaw Gorham, 2001). Other than nitrogen, the regional groundwater is generally of good quality (Bowman Bishaw Gorham, 2001).

The early residential development, which replaced market gardens, was predominantly unsewered. However, all recent residential development is sewerred and the Government's backlog sewerage program is converting unsewered areas to sewerred.

As described in Bowman Bishaw Gorham (2001), there are small areas within the development area where soil contamination, due to past industrial activities, has caused, or has the potential to cause, groundwater contamination by metals, pesticides and hydrocarbons. Groundwater contamination by these persistent contaminants will be limited to immediately below and down gradient of the previous industrial activity and would move towards the coast at a very slow rate (in the order of decades to hundreds of years). It is proposed to clean up the source of this contamination to ensure that contamination of the proposed marina waterway and Owen Anchorage will not occur.

5.5 FLORA AND FAUNA

The terrestrial environment at Port Coogee has been severely degraded following almost 40 years of continuous use by noxious industries and other land disturbing activities.

As is evident from **Figure 7**, little native vegetation remained within the study area. To the south of the railway, the small patches of vegetation were mostly regrowth following previous clearing. This remnant vegetation was assessed by the EPA as having low conservation value and low potential fauna habitat.

The environmental assessment process identified approximately 9 hectares of native vegetation within the project area. Most of this vegetation occurred in fragmented patches and ranged in condition from 'Very Good' to 'Completely Degraded'. Implementation of the development will necessitate clearing of the majority of this vegetation, primarily through the construction of the Primary Regional Road (PRR).



Vegetation Map

RPS BOWMAN BISHAW GORHAM
ENVIRONMENTAL MANAGEMENT CONSULTANTS

MRS055 02.05.06

Source : Dr. Arthur S. Weston, April 2002



The only notable area of native vegetation is a small patch (approximately 0.4 hectares) of Acacia scrub, in good condition, which has been identified as Floristic community 29b. The majority of this area of vegetation lies within the proposed new alignment of the PRR reserve. The EPA recommended retention of the maximum area of Floristic community 29b within parkland areas as possible, recognising the PRR reservation alignment.

The other main areas of native vegetation that would be cleared through the development consist of patches of coastal dune vegetation or Acacia scrub or heath ranging in condition from 'Good' to 'Completely Degraded'.

5.6 MARINE HABITATS

The marine habitats within and near the area are mapped in **Figure 8**. Small remnant meadows of *Posidonia sinuosa* seagrass occur in the northern central parts of the amendment area. These meadows cover a total area of 0.3 ha and have low plant diversity, low biomass and large epiphyte loads (i.e. the leaves are covered by algae).

South of the amendment area, a larger seagrass meadow of dense *P. sinuosa* occurs as a narrow (50 metres wide) band approximately 200 metres off the beach. Recent investigations have shown that Owen Anchorage has not generally suffered the significant historical decline in seagrass habitat that befell Cockburn Sound.

Most of the shallow offshore seafloor within the amendment area is covered by extensive mats of dead *P. sinuosa* seagrass roots and rhizomes, probably killed due to historical wastewater discharges. These mats have no potential to regrow and will erode and eventually disappear. They have low habitat value.

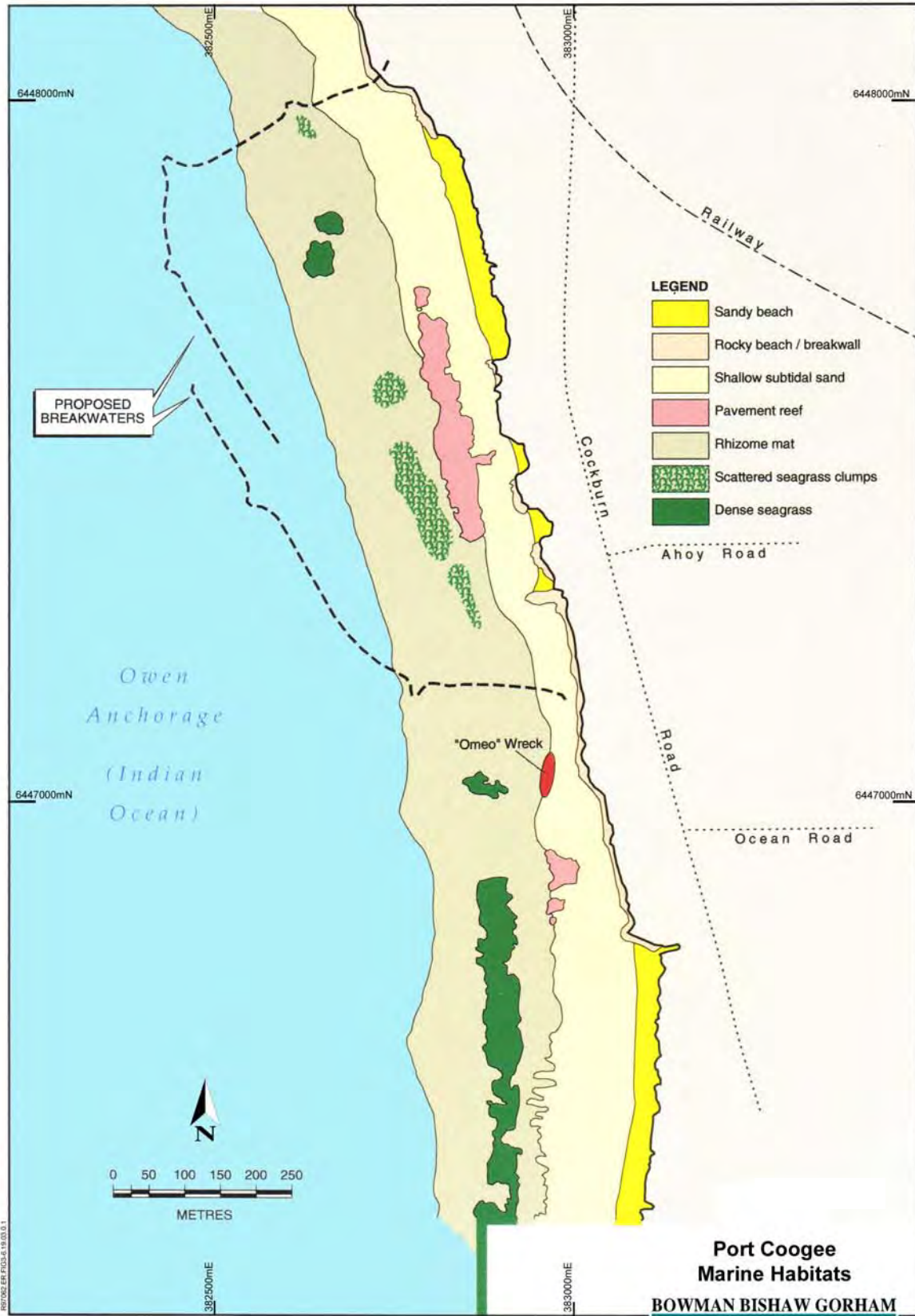
The other marine habitats within and near the development area comprise bare sand and exposed limestone pavement. The limestone pavement has a variable cover of algae but appears to be periodically inundated by sand and does not support a well-developed animal or plant assemblage.

5.7 HERITAGE AND CULTURE

5.7.1 ABORIGINAL HERITAGE SITES

Aboriginal heritage was not raised by the EPA as a factor to be considered in the environmental review, however, it is relevant to note that surveys by specialist Aboriginal heritage consultants found no archaeological material within the site, but did identify two ethnographic sites associated with creation myths for the offshore islands, the limestone ridge and the western chain of the Cockburn wetlands. Consultation with Aboriginal groups did not identify any concerns associated with the proposed changes to the biological and physical environments as a result of the proposed rezonings and development.

A Section 18 clearance was obtained on 27 June 2001 (refer **Appendix 3**) and a Section 16 clearance has since been issued.



Marine Habitats



Figure No.8
November 2008

5.7.2 EUROPEAN HERITAGE

The Omeo shipwreck exists a short distance from the coast at the south west of the development site. The Omeo was an iron barque built in 1858, which was washed ashore, having broken her moorings, in September 1905. The hull is gradually disintegrating through the natural processes of corrosion and weather; however, the Omeo remains a popular wreck for visitors, primarily because of its close proximity to the shoreline.

The other wrecks recorded in this location were the 'James' and 'Diana'. The WA Museum has advised that these wrecks exist immediately west of the site and will not be affected by the proposal.

The WA Museum has advised that the wreck could be buried in its place, however, there has been a clear perception that the community would prefer the wreck to remain available in some form, either *insitu* or in an alternative location. The LSP provides for the Omeo Wreck to be retained in its current position.









There are two sites of local heritage significance to the south of the project area – the Coogee Hotel and Post Office. These sites are currently in the path of the existing PRR Reserve in the MRS. Whilst not directly affected by the Port Coogee project, the associated realignment of the PRR Reserve is likely to avoid the loss of these two buildings.

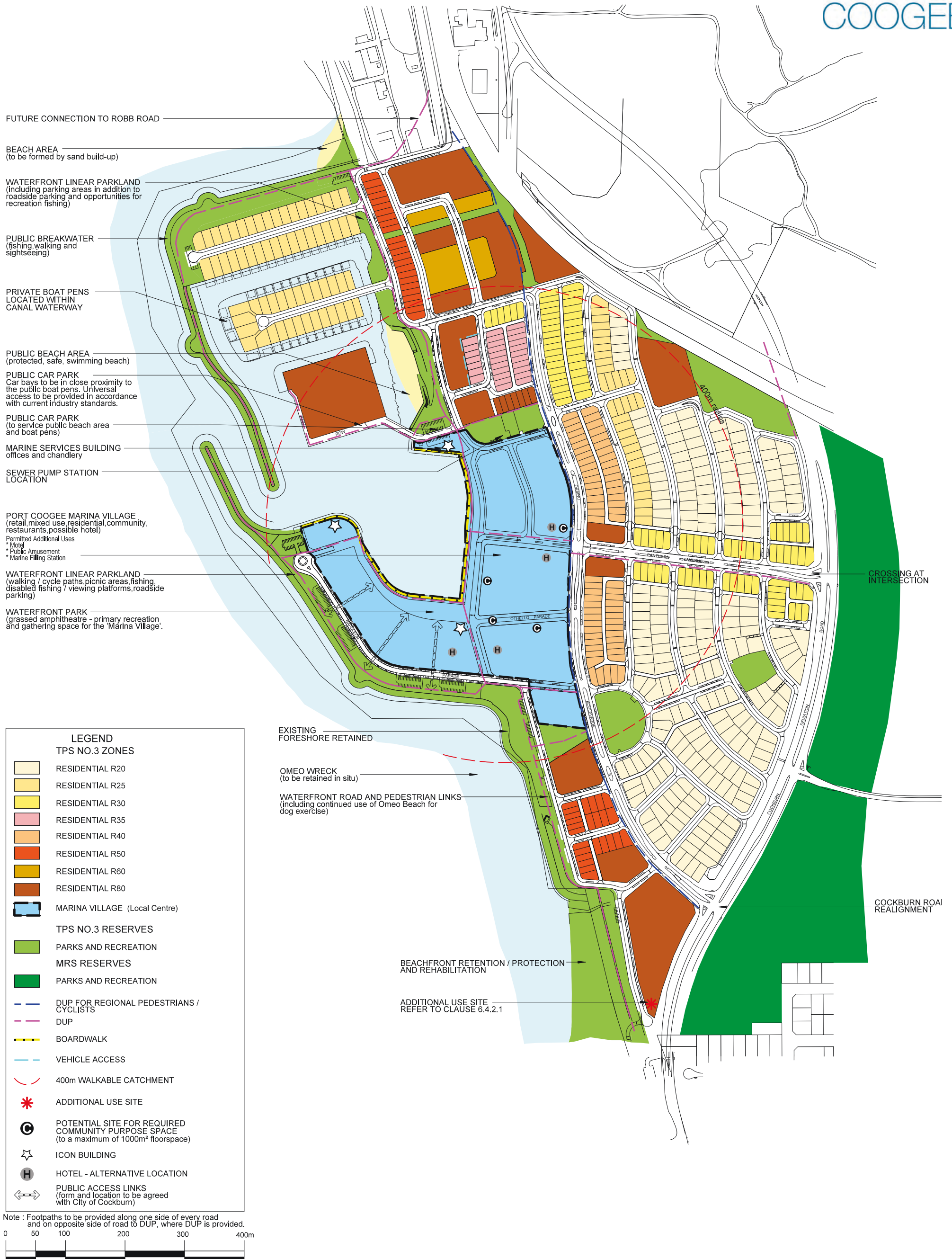
6 LOCAL STRUCTURE PLAN

This Revised LSP has been prepared utilising the diverse skills and experience of the project team and generally within the parameters established by the existing Revised LSP. This revision to the Revised Port Coogee LSP (**Figure 9**) is associated with the northern dry land residential precinct (Stages 6 and 3A) and the southernmost 'island' (Stage 5) and has been formulated following detailed analysis and consultation with relevant key stakeholders.

6.1 PROPOSED MODIFICATIONS TO APPROVED LOCAL STRUCTURE PLAN

The revised Local Structure Plan proposes a number of changes from the previously approved Local Structure Plan (February 2015). These are outlined in **Appendix 1** and detailed below.

-  Increased density in the northern dry land residential precinct (Stage 6 and Stage 3A) from 'Residential – R25' and 'Residential – R35' to 'Residential – R60' and 'Residential – R80' to allow for smaller, more diverse lot product. The higher density is also consistent with the densities proposed directly to the south and east of Stage 6 and will better frame this section of the development.
-  Widening of central road reserve within Stage 6 from 15.0m to 17.9m.
-  Higher density on the southernmost 'island' (Stage 5) from 'Residential – R60' to 'Residential – R80' and an increase in permitted height from 13.6m to 17.3m to allow for a potential multiple dwelling development.
-  Deletion of the northern portion of Orsino Boulevard road reserve and replacement with Public Open Space to enhance local amenity. The north-south road connection to and from Robb Road via Orsino Boulevard and Caledonia Loop which frames the southern, eastern and northern edges of Stage 6 will remain as per the existing Local Structure Plan.
-  Removal of Stage 3A, Stage 5 and Stage 6 indicative lot design to allow these details to be determined as a component of the detailed subdivision design to increase dwelling diversity in Port Coogee.
-  Include notations to the LSP regarding location/proximity, and universal accessibility, of marina car parking to the marina pens attached to Stage 5, in accordance with current industry standards.
-  Include pedestrian access way (PAW) in the south-eastern corner of Stage 5 connecting with the public road network.
-  Include provisions to inform, guide and co-ordinate the intended development of Stages 3A, 5 and 6 through the preparation of Local Development Plans for each precinct.

















6.2 DESIGN PHILOSOPHY










Given the protracted history of the Port Coogee development proposal, the broader planning and environmental issues associated with the past land uses within the locality, and the more recent community input into the project, it is clear that the philosophy behind the design of the Port Coogee development must recognise broader social and strategic planning issues, as well as internal development objectives.

The LSP has been designed on the following development philosophies:

-  The Port Coogee development should endeavour to the highest possible degree to return net gains to the community both in the social value and the diversity of public amenities.
-  The Plan must reflect the principles and performance criteria defined within the State Government Project Agreement.
-  The design and staging of the Port Coogee development must ensure that appropriate remediation measures are facilitated at the earliest appropriate stage.
-  The Plan should reflect a strong appreciation for the environmental sensitivities of its locality, and demonstrate its long term environmental sustainability.
-  The Plan should demonstrate a strong emphasis on the creation of robust community infrastructure, recognising the importance of setting high standards of amenity from the earliest stages of development.

Whilst the broad philosophies are a reflection of the most significant and influential issues and constraints, the following objectives were established to provide more specific and comprehensive design guidance. These seek firstly to achieve the stated philosophies, and secondly, to address other more localised issues and constraints. The objectives are as follows:

-  To reflect the broad planning and land use criteria as defined in the Project Agreement and, where appropriate, Coogee Master Plan and IP26.
-  To recognise the objectives and expectations of the community and government stakeholders.
-  To seek to achieve improvement in the standard and diversity of public amenity.
-  To recognise the design and transportation opportunities afforded the site by the regional transport network, including Cockburn Road, future east-west links, and the possibility of a future passenger rail system.
-  To provide for a diverse range of uses including tourism, commercial, residential, short stay, recreation, marina and water-based activities.
-  To maximise pedestrian permeability throughout the project, both for local and regional pedestrians, to provide an appropriate interface with surrounding uses, in particular public recreation areas.
-  To create a high quality water-based residential community with a diversity of uses and facilities that will provide a major local destination.

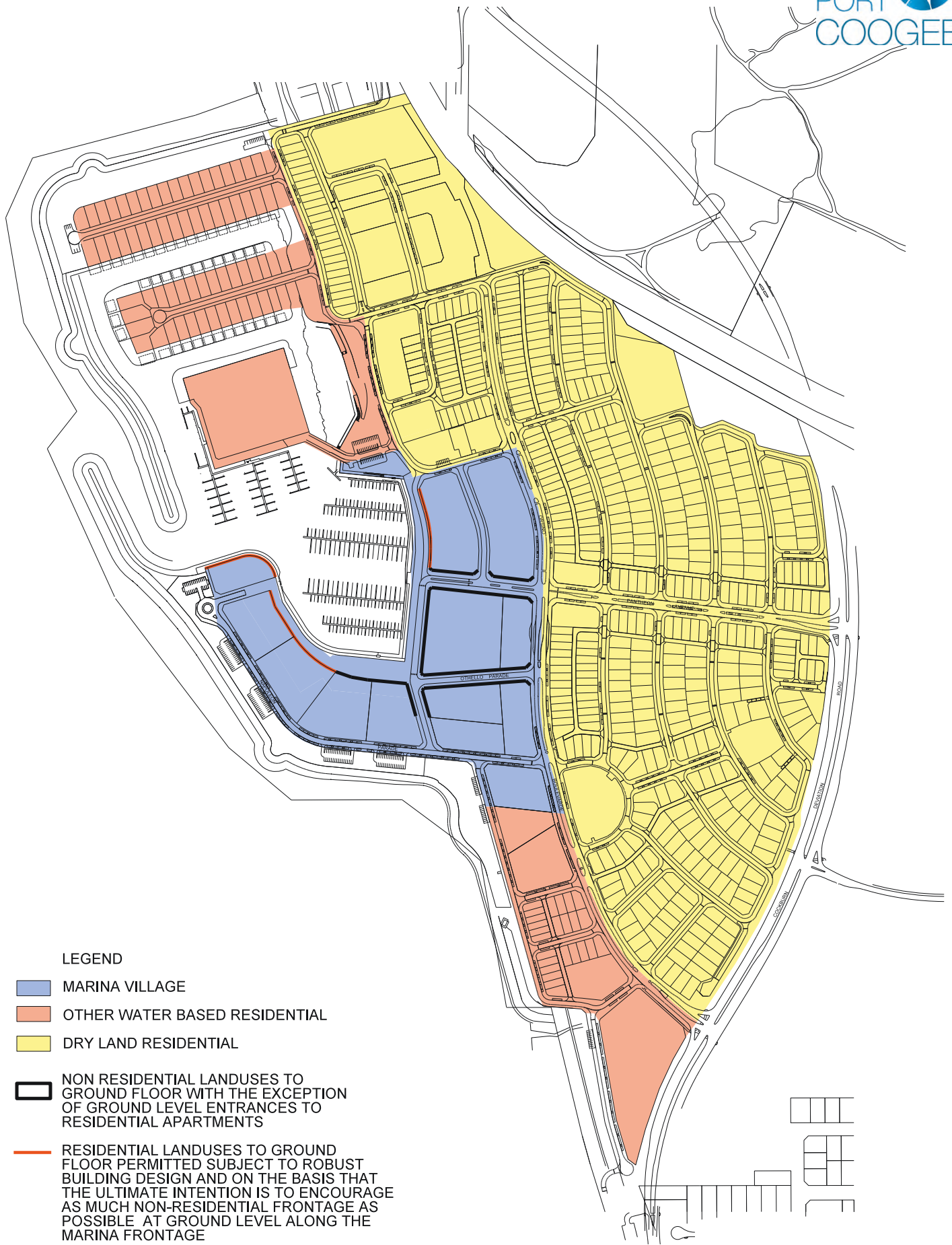
-  To provide for a range of residential living opportunities at various densities, which maximise the recreational potential of the location.
-  To achieve a cost effective design with balanced cut to fill for construction.
-  To maximise accessibility to the spectacular views of the ocean from both within and external to the site.
-  All groynes associated with the development should be publicly accessible, and contained within the limits of the project area.
-  To incorporate a strong north south dual use path system which is highly legible, safe and convenient for the various user groups to replace the existing coastal dual use path, which is part of a network established by Council in consultation with BikeWest, and should interact with the marina and commercial areas.
-  To become a social focal point, which is not only accessible, but highly attractive to the broader community.
-  To include at least 5% of the gross development area for public open space with the balance of the standard requirement being provided in public equity.
-  To formulate, where appropriate, design guidelines to ensure that the quality and integrity of special precincts, such as the Marina Village and higher density residential areas are protected.
-  To create density and a diverse residential population that will help to bring vibrancy and activity to the Marina Village.

6.3 LAND USE

The LSP contains a number of precincts that encapsulate different characteristics of land use, density and built form. For the purpose of defining appropriate land use, each precinct has been allocated a classification commensurate with zones contained in the Zoning Table (Table 1) of TPS No. 3; and the permissibility of uses will be in accordance with the Scheme, unless otherwise stated within the precinct provisions. The precincts, and their respective Scheme zonings, are as follows:

Land Use Precinct	TPS No. 3 Zoning
Marina Village	Local Centre
Other Water Based Residential	Residential
Dry Land Residential	Residential
Public Amenity	Local or Regional Parks and Recreation Reserves

The land use precincts are shown on **Figure 10**.



LEGEND

- MARINA VILLAGE
- OTHER WATER BASED RESIDENTIAL
- DRY LAND RESIDENTIAL
- NON RESIDENTIAL LANDUSES TO GROUND FLOOR WITH THE EXCEPTION OF GROUND LEVEL ENTRANCES TO RESIDENTIAL APARTMENTS
- RESIDENTIAL LANDUSES TO GROUND FLOOR PERMITTED SUBJECT TO ROBUST BUILDING DESIGN AND ON THE BASIS THAT THE ULTIMATE INTENTION IS TO ENCOURAGE AS MUCH NON-RESIDENTIAL FRONTAGE AS POSSIBLE AT GROUND LEVEL ALONG THE MARINA FRONTAGE

Land Use Precincts



Figure No.10






Port Coogee Revised Local Structure Plan

As a general overview, the design features a strong relationship in terms of land use configuration and road and pedestrian links, between the various residential elements and the central focal point, being the Marina Village. There has also been an emphasis on extending that relationship to the broader community through strong pedestrian and vehicular links and high levels of waterside interface, along with recognising the possibility, albeit remote, of a future passenger rail station adjacent to the project.

Figure 10 identifies those ground floor frontages within the Marina Village where commercial, retail and mixed business (i.e. non-residential) land uses are required. Residential land uses are acceptable for all other ground floor frontages within the Marina Village.

6.4 DEVELOPMENT PROPOSAL

The Port Coogee LSP includes the following land use precincts which are shown in **Figure 10**:

-  Marina Village Precinct;
-  Other Water Based Residential; and
-  Dry Land Residential

The following section provides further details on the nature and location of the above land use precincts.

6.4.1 MARINA VILLAGE PRECINCT

The Marina Village at Port Coogee will be the community centrepiece of the Port Coogee residential community. Located on the waterfront, it is intended that the Marina Village will provide a vibrant, safe and welcoming place to live, visit and work. A mixed land use strategy will encourage a diverse and sustainable mix of uses and activities including; residential, retail, commercial, recreational, entertainment, community and specialist marina activities, extending the daily activation of the place. The primary use will be residential with the majority of the mixed use activities to be focused on the Marina and associated significant waterfront public domain and key retail / commercial streets.

Shop fronts will be built to the street boundaries of buildings within the core centre of the Marina Village to activate the street, with street parking being mixed with a strong pedestrian emphasis. Waterfront development is proposed to include a significant waterfront park on the southern edge of the Marina. The Waterfront Park has been strategically positioned to form an integral part of the village hub; protected, north-facing and interfacing with a variety of community and mixed use activities around the village core. The park will be a key location for community events, open-air movies, theatre, children's activities, performances, festivals and other entertainment activities, and will provide a pleasant outlook for alfresco food and beverage establishments and its own kiosk nearby.

The proponent is keen to develop the centre in a manner which reflects the importance of the Marina Village from the community viewpoint in terms of adding to the public asset base, and create a vibrant facility which will be broadly attractive to the community as a whole.

Sales brochures will make prospective purchasers aware of the scale and form of development within the Marina Village. The Port Coogee Marina Village Masterplan report (July 2009) has been prepared to provide illustrative information on the Marina Village component of the development, and to present a concept plan that describes how the LSP might be implemented.

6.4.1.1 MARINA VILLAGE SUB-PRECINCTS

The Marina Village has three sub-precincts and it is envisaged that each will have its own individual character, as outlined below.

MARINA VILLAGE CENTRE

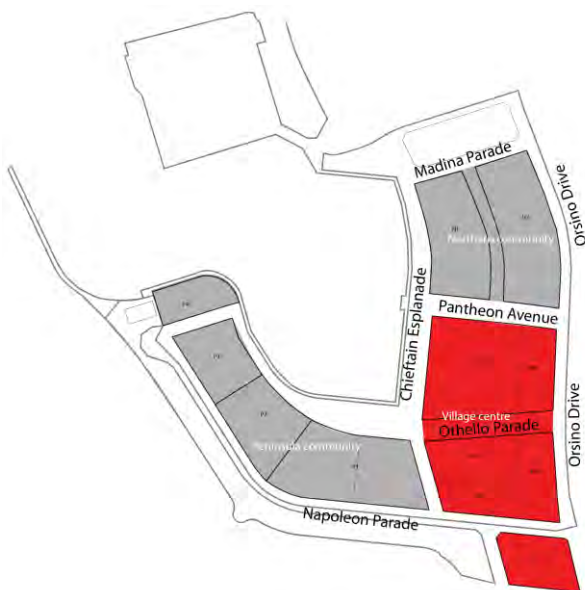
Othello Parade is at the heart of the Marina Village Centre and will be lined with retail and mixed use to create a high level of activation. The regular passage of pedestrians, cars, and bicycles is needed to sustain businesses at ground level.

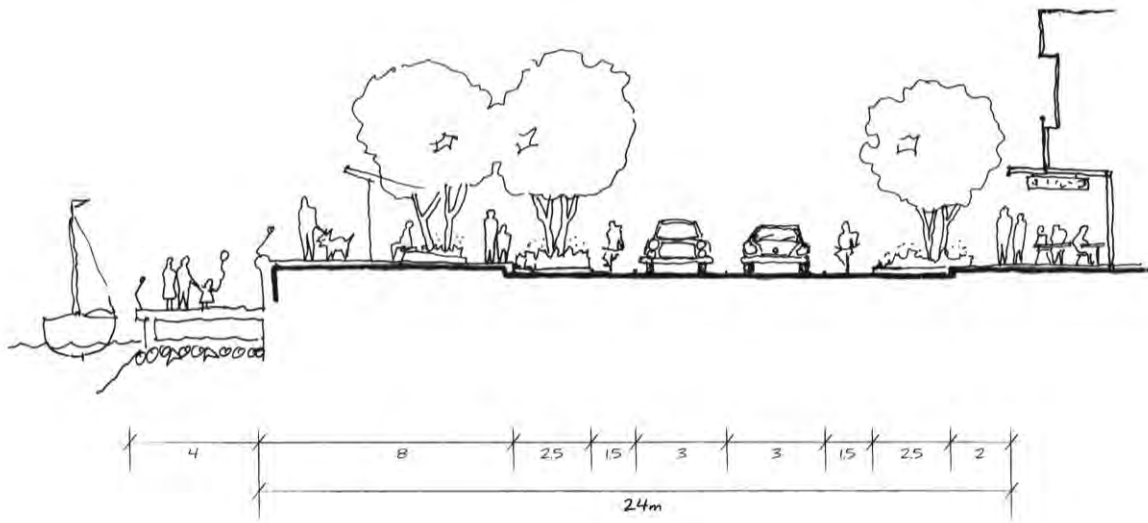
Diverse activities located at ground level, from retail to commercial space and residential foyers, will contribute to the activation of the streets throughout the day. Access to residential buildings should be provided from the street level for legibility. It is important that all buildings touch ground to provide comprehensive access for pedestrians.

There will be a concentration of activity in the marina village centre and adjacent waterfront park area ranging from daily activities to special events which may include markets, street fairs and concerts. Temporary road closures in the marina village centre may facilitate the potential for street markets on the waterfront.

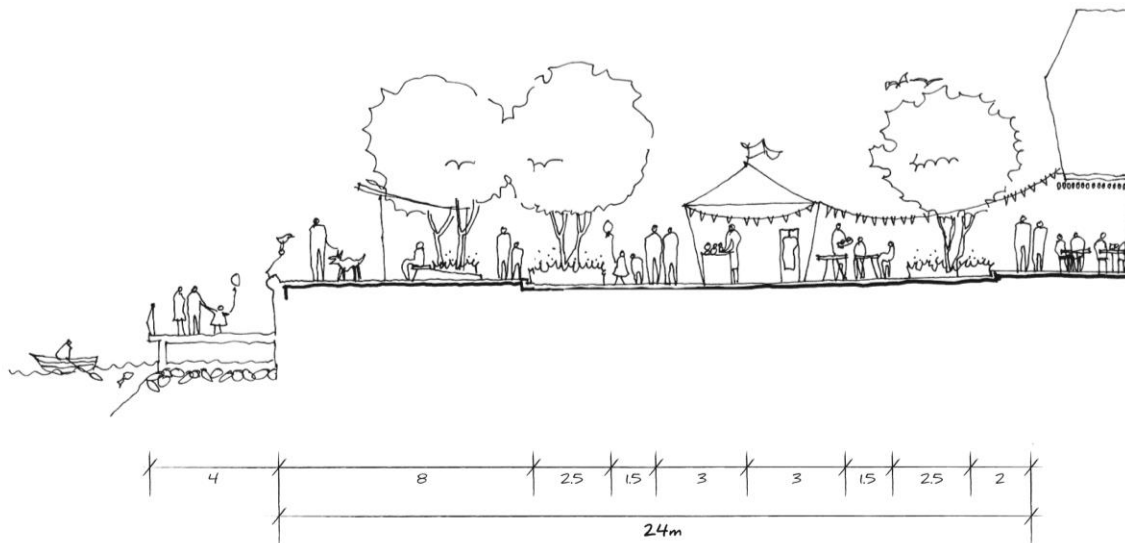
In particular, it is intended that Chieftain Esplanade between of the retail core and the marina waterfront will be designed to enable the transformation of the space from street to public open space, as indicatively illustrated below. (Access to the main underground car parks would be maintained and traffic management of the centre village area will not be compromised).

A community space will be provided as part of the built form to provide community identity within the village. This use may include a Council 'shopfront', meeting rooms, history interpretation centre, art gallery and/or café. Figure 9 designates four alternative locations for the community purposes site (it is not intended that the community purpose symbols shown on Figure 9 'pin point' the exact location, but designate the general location, with the specific location determined via detailed design in consultation with the City).





Chieftan Esplanade – as a multi-use street open to vehicle traffic



Chieftan Esplanade – as a market/events space closed to vehicle traffic

PENINSULA

The precinct is focused on the marina and significant public domain at Waterfront Park. This north-facing space forms the primary recreation and gathering space for the Marina Village. The park connects to a continuous walkway and cycle route around the entire peninsula and waterfront.

The northern side of the peninsula is designated mixed use on the ground floor. It is intended that (predominantly) food and beverage uses will be provided at ground floor addressing the Waterfront Park. Further along the peninsula there will be opportunity for mixed use (probably low scale, low impact uses) extending along the rest of the northern edge of the peninsula.

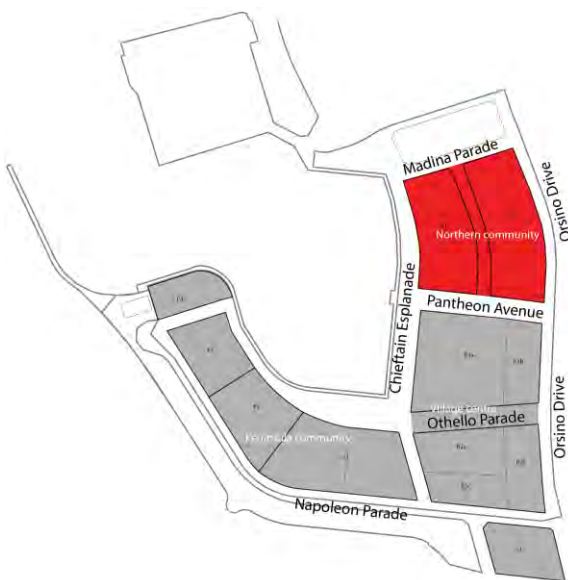
It is envisaged that the southern side of the peninsula will be residential. Corsos will provide public access links between buildings to allow pedestrian movement between the marina and ocean waterfronts.



NORTHERN

Primarily envisaged as a residential precinct, the building height will step down from the Marina Village core to integrate with the residential communities to the east of Orsino Drive and north of the linear park. It is envisaged that the built form residential typologies of the precinct may also reduce in scale in response to their decrease in height and in doing so would enable improved integration with the surrounding residential communities.

The icon building within the precinct is the Marina Services Building. This building will be a maximum of 13.6m in height to provide reasonable scope to create a landmark building that identifies its prominent position within the Marina Village, particularly when viewed from the Marina waterway and the southern peninsula. It is intended this building will be designed with signature architecture to reinforce its icon status.



6.4.1.2 OBJECTIVE FOR HOUSING IN THE MARINA VILLAGE




The following overarching objective applies to residential development within the Marina Village to encourage diversity in dwelling size and design:

A densified and diverse residential population will help to bring vibrancy and activity to the Marina Village

To this end it is a key aim to encourage a diverse residential population in the Marina Village, in terms of household size, composition and age groups, through the provision of a range of living options.

Diversity of housing product will be provided. This may be achieved in a number of ways, for example, designation of a particular precinct area, development site or a building within a site for a particular residential typology, or mixing different products within buildings.













Built form control mechanism(s) will be formulated with due regard to the following objectives:


-  Achieving diversity in dwelling size and design, to accommodate different household types.
-  The juxtaposition of dwelling types throughout the Marina Village will be considered further through the Built Form Codes / LDPs and subsequent development applications.
-  Regardless of dwelling types, residential design shall strive to create high quality developments, particularly on landmark sites, through high quality design and architecture.


6.4.1.3 DEVELOPMENT CONTROL WITHIN THE MARINA VILLAGE

In considering the removal of the R160 residential density coding within the Marina Village it was acknowledged that an alternative means of development control would be required to provide the City of Cockburn and the community with certainty and confidence that the built form outcomes enunciated by the Structure Plan will be delivered in the most effective manner. In this regard, a detailed set of built form codes is proposed.

The role of the built form codes will be to guide development within the Marina Village Precinct and to provide sufficient detail to ensure adequate control over development to achieve quality and desirable built form outcomes. The codes will address the relationship between building facades and the public realm and the form and mass of buildings in relation to one another. The following matters will be considered in the preparation of the built form codes:

-  Land use;
-  Building form and typology;
-  Setbacks;
-  Activation;
-  Landmark and gateway buildings;
-  Crime Prevention Through Environmental Design (CPTED);
-  Servicing and waste management;
-  Setbacks from street boundaries and 'The Corsos' to upper levels of development;
-  Consideration of the objectives and requirements outlined in the Draft Multi Unit Housing Code;
-  Consideration of climate and wind;
-  Consideration of overshadowing, overlooking and privacy;
-  Accommodation of non residential uses at ground floor level, in accordance with Figure 10 of the LSP; and








 Provision of housing diversity in accordance with 6.4.1.2 of the LSP.

Defining requirements based on these elements will provide more comprehensive direction and control of development than would application of standard coding controls, and will ensure more effective delivery of the project vision and objectives.

DA 22 of TPS No. 3 requires Local Development Plans for the Marina Village, Neighbourhood Centre and possible future local centre and for land zoned R80 or higher. This is required by clause 14 of DA 22 which states:

14. *Local Development Plans (LDPs) may be required for any particular lot or lots within the adopted Structure Plan, however, LDPs shall be prepared for the land designated Marina Village, Neighbourhood Centre and possible future local centre and for land coded R80 and higher density coding*

In accordance with the provisions of DA 22, it is intended that Local Development Plans will be prepared to complement the built form codes to address design elements at a more detailed development level. The Local Development Plans may include the following:





-  Building envelopes;
-  Distribution of land use within a lot;
-  Private open space;
-  Vehicular access, parking, loading and unloading areas, storage yards and rubbish collection closures; and
-  The location and orientation and design of buildings and the space between buildings.

The Built Form Codes / Local Development Plans will be required to address the matter of solar access for development on the southern frontage of Othello Parade by inclusion of principles / criteria relating to the form of development on the northern frontage of Othello Parade.


It is intended that built form codes and local development plans will be prepared prior to subdivision (clearance of conditions) and development of relevant lots within the Marina Village (unless otherwise agreed with Council), and will be formulated in consultation with the City of Cockburn.

6.4.1.4 LAND USE



Land use in the Marina Village Precinct is to accord with the Local Centre zone of the Scheme. In addition to the uses permitted in the Zoning Table of the Scheme, the following uses are also permitted 'P':

-  Motel
-  Public Amusement
-  Restaurant
-  Marine Filling Station

The following uses are discretionary 'D' uses:









-  Market
-  Cinema/Theatre

In addition to the uses prohibited in the Scheme, the following uses are also prohibited:

-  Garden Centre
-  Nursery








Port Coogee Revised Local Structure Plan

-  Commercial Vehicle Parking
-  Petrol Filling Station
-  Service Station
-  Restricted Premises
-  Veterinary Centre
-  Veterinary consulting rooms
-  Vehicle –Disused
-  Motor Vehicle Repair

Height will be controlled by the Building Height Plan in **Figure 11**. The indicative detailed design of the Marina Precinct is included in **Figure 12**.

6.4.1.5 LOCATION

The location of the Marina Village has been specifically chosen for the following reasons:

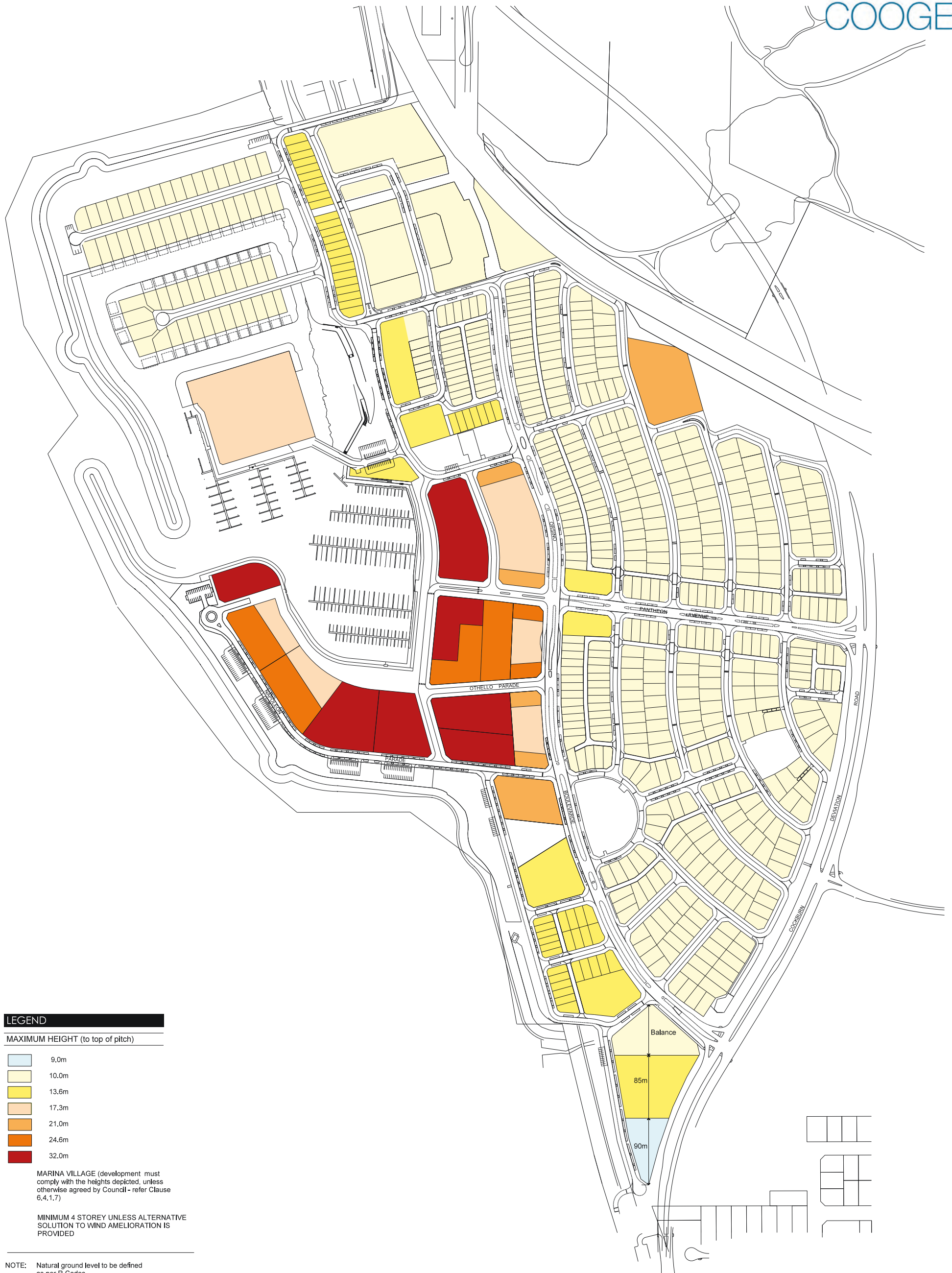
-  It is relatively central to its primary catchment i.e. the Port Coogee residential development.
-  It is adjacent to the junction between the main north-south and east-west local distributor spines.
-  It provides the central commercial focal point around which other commercial, mixed use and tourist development can radiate in a co-ordinated and complementary manner.
-  It is directly accessible by the primary pedestrian routes – both the commuter route which runs along the local distributor road, and the recreational route which diverts around the public boardwalk surrounding the marina.
-  It is relatively central to the main areas of medium to high density residential development with strong pedestrian linkages to those areas.

Bearing in mind the exposure of the locality to the prevailing coastal winds, the village location is relatively protected by strong built form, the medium/high density waterfront residential and commercial development, from the strong south-westerly winds. Furthermore, the boardwalk frontage is orientated in a north-westerly direction, again protected from the south-westerly winds, providing ideal conditions for outdoor waterfront use.

6.4.1.6 FUNCTION

The original Port Coogee LSP proposed that the Marina Village would be designed primarily to function as a social and tourist focal point with the commercial fabric centred around alfresco dining and entertainment, marine based retail (i.e., surf and dive shop, swimwear, etc), and with other complementary specialty facilities. The normal local/neighbourhood retail facilities (i.e. supermarket, fruit and vegetables, butcher, etc) were proposed to be separately located at the periphery of the development.

Through subsequent visioning and urban design reviews, however, it became apparent that combining the waterfront tourist and entertainment functions with the local shopping and services functions would result in a far more cohesive, interesting and vibrant centre. In place making terms, it would give people more reasons to gather together, create a stronger community fabric, and strengthen commercial sustainability of uses.



LEGEND

MAXIMUM HEIGHT (to top of pitch)

- 9.0m
- 10.0m
- 13.6m
- 17.3m
- 21.0m
- 24.6m
- 32.0m

MARINA VILLAGE (development must comply with the heights depicted, unless otherwise agreed by Council - refer Clause 6.4.1.7)


MINIMUM 4 STOREY UNLESS ALTERNATIVE SOLUTION TO WIND AMELIORATION IS PROVIDED

NOTE: Natural ground level to be defined as per R Codes.





- 1- Waterfront Park
- 2- Chieftan Esplanade
- 3- Chieftan Esplanade Lookout
- 4- The Village Lookout
- 5- The Corsos
- 6- Othello Parade
- 7- The Southern Breakwater
- 8- The Beach
- 9- The East West Linear Parks
- 10- The Waterfront Icon Building
- 11- The Lighthouse Building
- 12- The Marina Services Building

 Boundary of Marina Village

Marina Village Illustration





The Structure Plan now promotes the Marina Village as a multi-faceted community hub, offering a vibrant mixed use waterfront village environment with local shopping, recreation and entertainment, serving the needs of the local resident community as well as the casual regional visitor.

The Marina Village is intended to provide a consolidated hub of retail and commercial activity to serve the shopping and entertainment needs of the local community, with some provision for tourism and entertainment uses (accommodation, commercial and alfresco dining), to recognise the obvious tourist attractions of the locality. In this regard, the retail floorspace is expected to be approximately 9,000 m² to 10,000m². In addition, it is expected the Marina Village Precinct will support approximately 2,000 m² of office floorspace.

6.4.1.7 HEIGHT

The Building Height Plan (**Figure 11**) controls maximum heights for development within the estate, including the Marina Village, and imposes additional limitations on height to those specified within DA22 of the City of Cockburn TPS No. 3, and SPP 2.6. The maximum height allowable in accordance with DA22 and SPP 2.6 is 32 m, limited to a maximum of eight storeys.

Development within the Marina Village must be in accordance with the Building Height Plan unless otherwise approved by Council, subject to compliance with relevant Scheme/Structure Plan provisions.

Whilst Figure 11 designates a single maximum height within certain street blocks, it is generally envisaged that building height will vary within street blocks to produce variation in built form, provide visual interest and to punctuate certain street corners with higher buildings (not exceeding the maximum height allowed). Figure 11 is not to be interpreted as a scale drawing for defining the point at which a building height changes. The specific boundary delineating a building height change may need to be determined at the development application stage.

For the purposes of calculating height within the marina village, basement parking to a maximum height of 1.5 m above ground level does not constitute a storey. In such cases, the building height must still comply with the relevant designated height maximum in 'metres'. Services such as lift overruns and balustrades and non habitable architectural elements are excluded from the height calculation.

BUILDING HEIGHT AND WIND





It is intended that a combination of building height and bulk will be used to provide opportunities for amelioration of the dominant winds in the Marina Village and along the marina-side waterfront areas. Built form requirements for appropriate building design for wind amelioration will be developed where relevant as a component of the built form codes /local development plans.

The objective is to provide sheltered areas, conducive to alfresco entertaining, along the marina side of the southern peninsula and marina waterfront area, and to provide a protected environment in the waterfront park. Requirements for optimum wind amelioration must, of course, be balanced with other requirements relating to urban design, permeability and connectivity. Acknowledging that the necessary requirement for roads and corsos along the southern peninsula means that the level of wind protection may be compromised in some areas, design will seek to take advantage of opportunities to reduce wind impacts to the greatest extent possible.

Generally, where buildings front the marina along the southern peninsula, they should be designed to a minimum of four storeys in height (excluding corsos). Where building design proposals seek to offer alternate solutions to wind amelioration to those allowed under the built form codes or local development plans, the proponents will be required to support their design with sufficient engineering advice to satisfy council that the proposed design meets the intention of the codes (this may or may not include a full wind design assessment, depending upon the proposal).

6.4.1.8 OPTIMISING RETAIL AND COMMERCIAL DEVELOPMENT

One of the key LSP changes has been to refocus and consolidate the majority of the retail/commercial activities within the Marina Village, for the following reasons:

-  Successful places usually emanate from a single point, the Marina Village will establish a core precinct and focus for the community;
-  The concentration of uses will provide greater activity, vitality and activation of the public realm within the Marina Village;
-  The provision of a separate Neighbourhood centre would detract focus from the Marina Village; and
-  The consolidation of uses will improve economic viability and accordingly the success of the centre as a vibrant place.

An expert retail analysis by Pracsys raised concerns about the distributed nature of the retail and commercial uses within the previous LSP, and recommended the consolidation of these activities to give the centre the best chance of success, for the benefit of business owners and the immediate and wider community.

Pracsys identified that a high concentration of uses is likely to be more economically successful than lower concentrations, i.e. commercial uses focussed on particular areas of the Marina Village will be more economically viable than commercial uses spread through the Centre (refer **Appendix 4**). Pracsys states that ‘the logic is that by focusing car parking and foot traffic around a few contained nodes, all businesses will have a greater chance of surviving seasonal trading fluctuations and therefore will provide a higher standard of amenity for residents and visitors all year round. This is particularly true for seasonal waterfront locations such as the Marina Village, where foot traffic tends to dissipate very quickly as it moves further from activity nodes.’

The ultimate intent is to encourage as much active (non-residential) frontage as possible at ground floor level along the marina frontage. However, it is also acknowledged that beyond the portion of the waterfront that is subject to the mandatory requirement for non-residential landuses at ground floor, commercial/retail uses may not establish when the land is first developed.

As with any mixed use place, the Marina Village will develop and mature over time and commercial/retail use will establish as demand requires. In the interim, other uses including residential will be acceptable at ground floor on the waterfront in those areas outside the mandatory non residential landuse areas as designated on Figure 10, on the basis that the marina frontage of buildings is designed robustly at ground floor to accommodate change to commercial/retail use when demand requires.



Robust building design will be subject to further consideration via built form codes, however, it will be required that buildings are designed to avoid physical limitations that would prevent conversion for retail/commercial use and to incorporate features that facilitate conversion (eg, ceiling heights, allowance for services, preparation of strata management plans engineered to allow conversion as a right and informing purchasers of the nature of the development).

In order to ensure the desired activation of the community purpose facility at street level, the floorspace transfer to the City is to include a ground floor (of not less than 120m² and a frontage of not less than 8m) and first floor level in accordance with section 6.12.10.

6.4.1.9 ACCESS LINKS (CORSOS)

In order to enable physical connection from water to water for pedestrians, linking the Marina Edge with the Southern Breakwater, a number of access links (corsos) are intended between or through the buildings on the Marina Village peninsula.

The access links will provide public pedestrian access via land in private ownership. It is anticipated that this will provide scope for unique and interesting designs, which will be required to be inviting and easily and clearly interpreted as being for use by the public.




The access links will generally be designed to minimise wind conditions. Accordingly, access links may not necessarily be in a straight line between the waterfronts, but may be kinked or aligned to manage or soften wind effects.


The form of these links will be subject to agreement between the City and the developer and will be required to be designed and developed with due regard to the following objectives:

- (a) To provide safe and attractive physical and visual links in accordance with CPTED principles across the peninsula.
- (b) To 'break-up' the building bulk and frontage across the southern peninsula (where not otherwise provided via building design).
- (c) To provide sufficient wind protection to the leeward side of the peninsula and general wind amelioration in the corsos.

6.4.1.10 COMMUNITY CENTRE FACILITY

The Village will make provision for a local community centre within a main retail/commercial building. It is intended that Australand will provide a facility for the City of Cockburn, rather than providing a site for a future facility to be constructed. This will:

-  Provide the benefit of having a facility immediately available for residents of the development and the wider Cockburn area;
-  Achieve an objective of the community development strategy in providing a central meeting point for the community;
-  Ensure the provision of a facility which is consistent with the urban design principles of the Marina Village; and

-  Reduce pressure on Council to provide a facility in the short to medium term development of the Marina Village.

The proponent will design and construct a building within the Marina Village Precinct within which an area of up to 1,000 m² floorspace (final size to be determined by the City) will be allocated to the City for Community Use. This floor space will be transferred to the City in fee simple (as a strata/survey strata lot) free of initial cost and without the provision of any fit out. The design of the building and the transfer document will make provision for parking facilities to be made available for the community centre in accordance with the Transport Report.

6.4.1.11 KEY LANDMARK SITES

It is proposed to develop three buildings of significant architecture, at the western-most point of the southern peninsula, the south-eastern corner of the Marina and at the northern end of the Marina. The building at the southern point of the peninsula is aligned to terminate the visual extension of Pantheon Drive. The lower levels of the building may contain restaurant and café uses, whilst the upper levels would be residential.

The site will obtain views across the marina to the Marina Village, to the main entry to the development and across to the ridge - a view to the east not normally afforded to development on the west coast. The site has a northerly aspect to provide good opportunity for passive solar access to future development. The site will be visible from the main entry road into the Estate and will be constructed a minimum height of 30m, to emphasise the landmark status of this site.

The architectural treatment of the area will be controlled so that this development will form a natural visual extension of the Marina Village boardwalk area.

The eastern side of the peninsula will contain another landmark building located in front of the Waterfront Park, which may accommodate a hotel. Its ground level will interface with the Waterfront Park, the marina, the esplanade and the main shopping street.

At the northern end of the Marina Village there will be a Marina Services Building. The building marks a gateway from the Marina to the Marina Village and is intended to be designed with signature architecture (see section 6.4.1.13 for further detail).

6.4.1.12 SHORT STAY ACCOMMODATION

The LSP makes provision for a site of minimum 3500 m² to accommodate a hotel development as required by DA 22 of the Scheme. The LSP designates four alternative locations for the hotel (it is not intended that the hotel symbols shown on the LSP (Figure 9) 'pin point' the exact location, but designate the general location, with the specific location determined via detailed design). The ultimate location, design and scale of the hotel will be dependent on market response; however, it is envisaged that the site will accommodate a "landmark" multi-storey structure which will provide a strong visual focus to the project.

The final form of development of the hotel will be generally at the discretion of the Proponent, however, will be guided by the Marina Village Built Form Codes and/or a Local Development Plan.



6.4.1.13 MARINA

The configuration of the marina has been specifically designed to create a sheltered harbour environment for approximately 300 boats (an additional 53 private boat pens will be provided within the canals). An indicative layout is shown on the LSP.

The physical position of the southern peninsula, containing the Marina Village, mixed use and medium/high density residential, is intended to be developed with strong urban architectural forms, to create not only a busy and vibrant “marine urban” environment, but also to form a protective weather barrier for the boat harbour, against the strong prevailing south-westerly summer winds. The northern peninsula creates a similar protective effect against the less frequent, but more intense, north-westerly storms.

The marina will not be used for commercial fishing activities or the docking of commercial fishing boats.

The entrance to the boat harbour is situated directly adjacent to the main sea wall entrance, ensuring that boat traffic associated with the harbour does not interfere with the more secluded waterways to the north.

A Marine Services Building comprising the Marina Managers Office, chandlery and other related uses, will be located to the immediate north of the marina, opposite the carpark servicing the public beach and adjacent to the causeway to the central island. An area of floorspace within the Marina Services Building will be transferred to the City of Cockburn and is to be adequate for waterway management purposes, but not less than 300m². The transfer of floorspace (built strata) to the City shall be free of initial cost and without payment of any compensation and shall include additional facilities for refuelling and sillage disposal (which shall exclude boat pens, but may include part of the waterway), if there are any such facilities at the time of transfer.

6.4.2 OTHER WATER BASED RESIDENTIAL

The Other Water Based Residential Precinct is designated Residential R25, R50, R60 and R80 in the LSP.

The canal development to the north comprises two ‘fingers’ of development. These will offer R25 canal lots and provide a contrasting interface with the northern extremity of the Marina Residential precinct, which will be developed to a higher density.

The southernmost residential ‘island’ (Stage 5) is designated Residential R80 in the LSP which will allow for higher density, potentially multiple dwelling, development to make best use of this particularly high amenity and unique location. Pedestrian access ways accessible from the main access road (Maraboo Wharf) are proposed to the southern and western edges of the ‘island’ providing a high level of public accessibility. Dedicated public road access will be provided into Stage 5 via Maraboo Wharf. A public carparking area, dedicated for marina users, showing a minimum of 23 car bays including a drop off/pick up area with appropriate turn around facilities, will be located within Stage 5 in close proximity to the public boat pens. Universal access between car bays and the marina should also be provided in accordance with current industry standards.

Moorings for about 90 recreational boats will be provided as part of the water based residential area of Stage 5 (The ‘Island’).

South of the Marina, a unique "waterfront" precinct is proposed. This precinct is located between the northern end of the existing Coogee Beach, and the southern extremity of the Marina precinct. The Structure Plan shows residential land coded R50 and R80 separated from the shoreline by a local road and POS. Three sites subject to R80 coding are located within this southern portion of the precinct, which may be developed for multiple dwellings. It is envisaged that parking for multiple dwelling developments will include on site parking and some visitor parking on street.







The development of a waterfront road, and the preservation of the beach-line in front of the retaining wall, will ensure improved public access to this area whilst providing an alternative waterfront residential experience, adding to the diversity of the residential land product available within the estate.

Importantly, the contraction of the canal-style development and associated seawalls since earlier concepts has resulted in the complete retention of Coogee Beach - effectively the development no longer affects any part of Coogee Beach and the adjacent primary dune system. The southward commencement of waterfront residential development coincides with the existing areas of retained land associated with the industrial uses. Therefore, there has been no diminution of public accessibility to this area; in fact, public access and the quality of public amenity in this area will be substantially enhanced.

6.4.2.1 ZONING

The Other Water Based Residential Precinct is variously designated Residential R25, R50, R60 and R80 in the LSP.

The southernmost land (proposed Lot 749) within this precinct is subject to an additional use to contain a minimum of 200m² and a maximum of 500m² GLA non-residential floorspace. The permissibility of uses is as follows:

-  Fast Food (P) (subject to Part 11 of DA22)
-  Convenience Store (P)
-  Restaurant (P)
-  Exhibition Centre (AA)
-  Shop (AA) (subject to Note 1 below)
-  All other uses are 'X' (not permitted)

Note 1 The City will only permit a 'Shop' use if, in its opinion, the use is directly compatible with the site's location opposite Coogee Beach. In this regard, occupancy of any shop shall contribute to the amenity and convenience of persons visiting Coogee Beach. The City will consider appropriate retail outlets, including, but not limited to: sale of such items as beachwear, beach related goods, water sport items, and recreational goods such as surfboards, skateboards & kayaks, and other marine related items.

The location of the additional use shall be at the southern end of this site (it is not intended that the symbol shown on the LSP (Figure 9) 'pin point' the exact location, but designate the general location, with the specific location determined via detailed design). A LDP will be required at the detailed design stage to guide development of the additional use site.












6.4.2.2 LOCAL DEVELOPMENT PLAN

In addition to the requirements of DA22, a Local Development Plan (LDP) is to be prepared for the Stage 5 precinct in accordance with the provisions and requirements of Schedule 2 Part 6 – Local Development Plans of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

The LDP is to identify and address the development principles and details that will provide the preferred development outcome for Stage 5.

As a minimum the LDP is to respond to the following intended outcomes:

-  Dwelling density (is to be the maximum of the prescribed density for each of the density codes);
-  Built form in respect of bulk, scale, height, visual permeability and architectural expression;
-  The maximum building height is to be 17.3 metres; the achievement of this maximum to be determined by built form outcomes that provide articulation and adequate setbacks (including at the upper level) to mitigate any adverse visual impacts from the view-sheds to the north, east and south and will not detract from the intended prominence of development of the Marina Village, as this is the focal point of Port Coogee in regard to built form and activity;
-  Building setbacks;
-  Private and public car parking (the plan is to show the appropriate number, location and configuration of parking bays to service the public marina pens);
-  The private and public realms (this is to include the public pedestrian movement network to and from the island, including the universal access to and from marina car parking to public access ways, marina pens and the public road system);
-  Adequate provision being made for the (Council) rubbish collection vehicles to manoeuvre in all circumstances;
-  Site landscaping, including the water edge treatment; and
-  Noise attenuation (if required) for those buildings affected by any adverse noise generated from within the locality.

Where appropriate, elements of the Port Coogee Marina Village Built Form Codes are to form part of the LDP.

6.4.2.3 LOCATION

The Other Water Based Residential lots are located along the coast and on 'fingers' of development within the canal.

6.4.2.4 FUNCTION

The Other Water Based Residential lots provide premium housing locations on or in very close proximity to the waterfront. The canal development to the north comprises two "fingers" of development. These will offer canal lots between 250-1000 m² in area.

In addition to the public boat pens on Stage 5 (The 'Island'), moorings for about 53 recreational boats will be provided as part of the water based residential canal development to the north.

6.4.2.5 HEIGHT

Development within the R25 coding will be a maximum of 10m in height. The R50, R60 and R80 areas will be a maximum of 13.6m in height, with the exception of the southernmost 'island' (Stage 5), which will have a maximum building height of 17.3m and the southernmost R80 site, which will have a mix of maximum building heights. The maximum building height is 9m metres from the southern tip of the lot northward for a distance of 90m, 10m in the northern portion of the site and 13.6m on the balance of the site (as shown on the Building Height Plan – **Figure 11**). Services such as lift overruns and balustrades and non habitable architectural elements are excluded from the height calculation.

6.4.3 DRY LAND RESIDENTIAL

In keeping with the general objective of maintaining residential diversity, the dry land residential area has been divided into a number of special precincts offering different opportunities and features. In general terms, the areas closer to the water, Marina Village and northern precinct are proposed to be developed at medium to high density as predominantly small to medium sized single residential lots and several higher density potential multiple dwelling sites. The objective is that more residents will derive enjoyment from the physical proximity to the Marina Village and water based opportunities.

The City of Cockburn has indicated a strong desire to maintain an attractive interface with the Cockburn Road realignment, as well as the achievement of strong view corridors from Cockburn Road through to the visual features of the marina development, in recognition of the broader objective of preserving and enhancing scenic values along Cockburn Road in general. The design acknowledges these objectives through maintaining an open interface with Cockburn Road, ensuring that development levels between the road and adjoining residential do not differ substantially, and minimising the use of estate walls (unless where unavoidable to achieve compliance with required noise levels).

The principal view corridor will be achieved through the central entrance road which will be developed as a straight boulevard extending through the dry land residential precinct to the Marina Village providing views through the centre of the marina.


The residential road design emphasises permeability, with east-west links providing direct accessibility to the water and Marina Village for all residents.

6.4.3.1 ZONING

The Dry Land Residential Precinct is designated Residential R20, R25, R30, R35, R40, R50, R60 and R80 in the LSP.










6.4.3.2 LOCAL DEVELOPMENT PLAN

In addition to the requirements of DA22, a Local Development Plan (LDP) is to be prepared for the Stage 3A and 6 precincts in accordance with the provisions and requirements of Schedule 2 Part 6 – Local development plans of the *Planning and Development (Local Planning Schemes) Regulations 2015*.



The LDP is to identify and address the development principles and details that will provide the preferred development outcome for each of Stages 3A and 6.

As a minimum the LDP is to respond to the following intended outcomes:

-  Dwelling density (is to be the maximum of the prescribed density for each of the density codes);
-  Built form in respect of bulk, scale, height, visual permeability and architectural expression;
-  Building setbacks;
-  Private and public car parking;
-  The private and public realms;
-  Road network pattern/design, which is to accord with Liveable Neighbourhoods to provide for safe and convenient on-street car parking and pedestrian movement;
-  Adequate provision being made for the (Council) rubbish collection vehicles to manoeuvre in all circumstances;
-  Site landscaping; and
-  Noise attenuation (if required) for those buildings affected by any adverse noise generated from within the locality.

6.4.3.3 LOCATION

The Dry Land Residential Precinct is the largest precinct and comprises all of the land located east of the Marina Village and Other Water Based Residential Precincts.

6.4.3.4 FUNCTION

The Dry Land Residential lots provide a variety of lot sizes to accommodate for a variety of multiple and single residential dwellings.

6.4.3.5 HEIGHT

The majority of the Dry Land Residential lots will be a maximum height of 10m. The Building Heights Plan restricts heights to a maximum of 10m for all development coded R20, R25, R30, R35, R40 and R60 and 13.6m for R50 and R80 development with the exception of the easternmost R80 site, which is intended to be a maximum height of 21m (indicatively, five stories), and R80 single residential development and Lot 346 within the northern precinct which are intended to be a maximum height of 10m in accordance with the Building Height Plan (**Figure 11**). Services such as lift overruns and balustrades and non habitable architectural elements are excluded from the height calculation.

6.5 PUBLIC AMENITY

The LSP features a high level of public accessibility and amenity, comprising a wide variety of public facilities, including local open space areas, a variety of waterfront experiences (i.e. protected beachfronts, the Marina Village waterfront park, boardwalks and jetties, fishing areas, etc.) and public access to the seawalls/ breakwaters and marina. As previously mentioned, the design also includes the retention of important existing elements including the northern end of Coogee Beach (and associated dunes), and the Omeo Wreck. The majority of the waterfront interface is publicly accessible by way of both road or pedestrian movement.

One of the most important objectives identified by the City of Cockburn was that of preserving or, where possible, enhancing the level of public amenity in the area. The current design concept has emerged in recognition of the need to place a stronger emphasis on the protection of the existing public assets in addition to providing new amenities.

The LSP offers increased levels of public accessibility throughout the Estate, but more importantly, minimises the impact of the development on the key existing public assets. Many of the public amenity benefits of the LSP have been discussed elsewhere in this report, however, given the importance of this issue, it is appropriate to clearly identify the main features of this development in the context of public amenity.

6.5.1.1 PUBLIC BEACHES

Common to most of the previous design concepts was the incorporation of the northern section of Coogee Beach into the development area and its subsequent loss to the general community as a natural beach facility.

The LSP maintains Coogee Beach and the adjacent primary dune system. The southern extremity of the waterfront development will follow the line of existing retaining walls from past light industrial uses; however, public access to this area will be enhanced by the provision of a public road and dual use path interface along this beachfront strip. The dual use path continues northward via the Marina Village generally along the waterfront except where it crosses the peninsula using the westernmost road connection. Public access around the westernmost lot on the peninsula will be maintained via a public boardwalk. This is to provide a more passive and pedestrian atmosphere around the end of the peninsula.

The commencement of the seawall/breakwater marking the southern extent of the Marina development also creates opportunities to create a beach area in the vicinity of the Omeo wreck, whereas beach access at present is limited.

The LSP also includes a public beach about 200 m long and 30 m wide located immediately north of the Marina Village. This will be a sheltered children's beach located away from the effects of the sea breeze and wave activity. Boating will be kept out of this children's beach area by regulations, navigation marks and physical barriers (such as floats and ropes). There will be landscaped playing areas and picnic facilities in the POS behind this public beach.

To the north of the development a sheltered sandy beach will form in front of the existing rock seawall in front of the Power Station. This new beach will be well protected from the dominant summer sea breeze winds and seas. It is envisaged that this beach will become a popular recreation node used by the residents of Port Coogee and the City of Cockburn.

The balance of the water-based development is primarily established over areas where public access is legally restricted by virtue of freehold and leasehold titles extending to the high water mark. As a result of the development, these areas will now become legally accessible to the public, including protected beachfront areas in the northern sector of the development.

6.5.1.2 OMEO WRECK

The Omeo wreck will remain *in situ* and undisturbed. The establishment of the seawall a short distance to the north of the wreck area will provide some degree of protection from the severe north-westerly conditions which contribute to the progressive deterioration of the wreck.



6.5.1.3 BOARDWALKS AND JETTIES




The primary recreational feature of the project, for both its future residents, and the broader community, is undoubtedly the water. Whilst the water areas within a development such as this are typically not acknowledged as recreational areas in the context of the minimum public open space requirement, it is reasonable to argue that the provision of infrastructure to enable the public to derive recreational benefit from the water should be included in any audit of recreational amenity and public equity.

An important component of the LSP design is the provision of a continuous interface between the water and public areas. Central to this is the boardwalk which creates a linkage around the marina, as well as the marina residential precinct to the north. Appropriately located landings will be constructed to provide the community with areas to enjoy the water in either a passive sense (i.e. sitting on park benches), or in a more active way (i.e. fishing etc).

This provides a valuable contrast to the softer beachfront areas either preserved or developed as a result of the project. It is also significant that all of the publicly accessible waterfront areas are linked through the recreational dual use path and footpath system.

6.5.1.4 PUBLIC OPEN SPACE

In addition to the enhanced waterfront areas and creation of waterfront parklands, Port Coogee will have a network of open space areas, providing for the passive and semi-active recreational needs of the community (refer **Appendix 5**). Local parks have been strategically located to serve the following functions:

-  Provide areas for passive and semi-active recreational needs of the residents;
-  Provide added visual amenity, to contrast with the marine aspects of the marina, and broader ocean views;
-  Provide strong pedestrian linkages through the dry land subdivision precinct to the waterfront.

In total, about 10.52 ha of parkland is to be provided and developed to a high standard as useable passive and semi-active recreational areas. The parks are strategically located to become integral parts of the main pedestrian and road spines so that they also provide a visual attraction for passers-by. In addition, residences will overlook POS areas to provide casual surveillance and improved security for people using public areas.

It is proposed that all parks will be fully and progressively developed as part of the development works to ensure that the full amenity is enjoyed by the community from the outset.

The public open space provision includes an area of land in the north-eastern corner of the site which was previously used for the disposal of flyash from the power station site. This land is worthy of remediation and enhancement for passive open space purposes.

Whilst the Council has previously agreed to accept a maximum provision of 5% public open space (with the balance of the 10% requirement being provided in public equity), the current concept proposes to provide approximately 14.59% in land area POS. The provision of the community building accounts for a contribution of 1.2 ha due to its contribution to public equity and the commitment to fund the space within a building, resulting in a POS provision of 16.26%. This has been calculated in the following manner:

TABLE 2: POS PROVISION

Total Area	90.6249 ha
<u>Deductions</u>	
Primary Regional Road	5.7249 ha
Marina – Reserve for Waterway	12.8952 ha
Groyne (Breakwaters)	0.3547 ha
Subtotal	18.9748 ha
Gross Subdividable Area	71.6501 ha
10% POS	7.1650 ha
POS Provided (not inclusive of parking areas/non-developed foreshore)	
POS A	4.9681 ha
POS B	1.1212 ha
POS C	1.0172 ha
POS D	1.1575 ha
POS E	0.3371 ha
POS F	0.6461 ha
POS G	0.3189 ha
POS H	0.4701 ha
Boardwalks/Linear Parks	<u>0.4147 ha</u>
Total	10.4509 ha
Total POS Provided	14.59%
Plus Community Purpose site requirement (in land area equivalent)	<u>1.2000 ha</u>
Total POS Provided	11.6509 ha
Total POS Provided (expressed as % of Gross Subdivisible Area)	16.26%
Plus betterment by development and improvement of POS, etc	
Plus Pedestrian Access to Groynes in form of DUPs	

Individual areas of POS are described as follows:

AREA A: 4.9681 HA

Area A comprises linear parklands around the edge of the waterways and fronting the ocean. These areas will be fully developed and accessible to the community. Breakwaters are excluded from the POS calculations.

AREA B: 1.1212 HA

Area B comprises the public beach area of the development, adjacent to the central island which also provides a link to other open space areas and the Marina Village.

AREA C: 1.0172 HA

Area C is intended to provide pedestrian linkages for residents and operate as an informal active recreational area. The east west oriented sections provide pedestrian access to the Marina and a view corridor to the marina and ocean.



Some residences will directly front this open space and the southernmost portion of Area C will also include the sewer pump station. The pump station will be located below ground with a top and an electrical control cabinet visible above ground. The pump station will be well camouflaged so as not to adversely impact on the use or appearance of the open space. The Sewer Pump Station within the POS will be landscaped and will act as open space however, it is not included within the POS calculations.

AREA D: 1.1575 HA

This area mainly comprises the former quarry within the north east corner of the development area which has largely been cleared and will be fully landscaped space.

AREA E: 0.3371 HA

Area E is located to the east of the development area and will serve local residents, with residential lots directly fronting the park. It is intended that a Local Development Plan be prepared for these lots to ensure that residences address the open space and provide casual surveillance, and that an open style of fencing be installed along the boundaries of the open space.

AREA F: 0.6461 HA

Area F connects along a view corridor to Areas E and G. Area F will provide a focal point for immediate residents. The use of this park may include some informal active activities.

AREA G: 0.3189 HA

Area G completes the connections between the residential areas to the east and the foreshore and will provide a focal outlook for adjoining R80 sites, improving also the casual surveillance of the open space.

AREA H: 0.4701 HA

Area H is the Waterfront Park, it is envisaged the park will provide a grassed amphitheatre, kiosk and gathering space for the Marina Village.

BOARDWALKS/LINEAR PARKS: 0.4147 HA

The boardwalks and linear parks provide continuous interface between the water and public areas.

Note: There is no restricted open space within the LSP area. The modified LSP increases the total amount of POS within area C, and consequently within the LSP area. There are no other changes to the provision, location or configuration of POS within the existing LSP.

6.5.1.5 BOAT LAUNCHING FACILITIES

There is a recognised need to consider opportunities to expand the capacity of small craft launching facilities to accommodate continuing growth in demand. It has, however, been recognised that the Port Coogee Marina would not be an appropriate location for a new launching facility, due largely to the conflict between towing traffic and local residential and commercial areas, as well as the severe impact on the urbanism around the marina.

AHL has, however, contributed significant funds towards alternative boat launching facilities – this has involved an upgrade and expansion of the existing Woodman Point facility. Further contribution, through a Government Agreement, may include the development of a new facility in the vicinity of the South Fremantle Power Station, or the examination of other feasible options.




6.5.1.6 SEA WALL ACCESS

Whilst the construction of the sea walls/breakwaters is necessary to provide protection for the marina and canal waterways, they can be built in such a way as to maximise their recreational amenity value to the community. The sea walls will provide opportunities not currently available along the existing shoreline, for recreational fishing, diving and sightseeing in the deeper waters of Owen Anchorage.

It is also proposed to provide for universal access, including a suspended fishing stage in an appropriate location.

6.6 HOUSING CHOICE AND LOT YIELD

The LSP achieves a range of residential densities as well as housing choice, including:

-  Marina Village - mixed use, higher density residential component contained within the village centre and southern peninsula;
-  Other Water Based Residential - low to medium density dry land residential close to the beachfront; and
-  Dry Land Residential - low to medium density residential.

The following calculations provide a review of 'indicative' dwelling yields and associated population projections:

Indicative Port Coogee Residential Breakdown (Local Structure Plan)		Estimated PPD	Estimated Population
Marina Village	1280	1.6	2048
Other Water Based Residential lots	117	2.5	292
Other Water Based Residential apartments	207	1.6	331
Dry Land Residential	626	2.5	1565
Dry Land Residential apartments	116	1.6	185
TOTAL	2346 dwellings		4421 persons

6.7 REGIONAL OPEN SPACE TO EAST OF COCKBURN ROAD

The Regional Open Space (ROS) land east of the Cockburn Road realignment, which is included in the project area boundary, is owned by the WAPC, and is intended to be retained and ultimately developed in line with its regional function. The land is currently undeveloped and has little intrinsic recreational value in its present state.

It is understood that the Commission is in the process of negotiation with the City, with the intention of vesting control and responsibility of the land with Council. As part of the Port Coogee development, it is proposed to develop a linear parkland and pathway system through the ROS, creating links from Cockburn Road (and the possible future railway station to the north) through to Coogee Beach and the existing residential areas to the south.

A Management Plan will be prepared which will include requirements for the development, revegetation and ongoing management of the Beiliar Regional Parks and will include footpaths, trails and a lookout.



Development of this form of passive landscaping presents an opportunity to use nutrient rich groundwater for irrigation as part of the water quality management process for the overall project.

The proposed form and management of landscape development have been determined in consultation with the DPI and Council and are described in a Landscape Management Plan that is included within the Port Coogee Waterways Environmental Management Program.

6.8 RETAIL AND COMMERCIAL FLOORSPACE

As previously discussed, the nearest centre to Port Coogee is Phoenix Park which is a District Centre and is located approximately 2 km from Port Coogee. The closest Strategic Regional Centre is Fremantle, approximately 4.5 km from Port Coogee.

The Port Coogee Marina Village is proposed to be a culturally focussed centre; in addition to serving the local shopping requirements of the surrounding community, the Village will be targeting uses which will enhance the waterfront experience, including entertainment, retail, dining, marine based shops, tourism etc. The Marina Village is intended to accommodate approximately 9,000 m² to 10,000m² NLA of retail floorspace (including food and beverage), as well as in the order of 2,000 m² of office floorspace. In addition to the Marina Village a minimum of 200m² and maximum of 500m² GLA of non-residential floorspace will be provided within the southernmost lot, and a possible local centre will be located adjacent to the possible railway station.

The consolidation of retail and office use within the Marina Village is supported by an expert retail analysis by Pracsys undertaken for the developer, and is intended to provide a critical mass of retail and commercial activities to support and add to the use of the public spaces, together creating a vibrant and attractive place.

The Pracsys report indicates that 9,160 m² of retail floorspace would support a number of business types including a full line supermarket, fruit and veg, bakery, tavern/bar, delicatessen, café's, restaurants and specialty retail. Given the development of the Trade Coast zone (the Trade Coast includes the Kwinana Industrial Area, the Australian Marine Complex, Latitude 32, East Rockingham Industrial Area and the proposed Fremantle Outer Harbour Development) and the increasing support of commercial activity in the area, Pracsys suggests that 1,500 to 2,000 square metres of office space is likely to be viable.

6.9 MARINA DEVELOPMENTS – DC1.8

This report outlines the background to the Port Coogee Development, and demonstrates compliance with DC1.8.

6.10 RELATIONSHIP TO LIVEABLE NEIGHBOURHOODS COMMUNITY DESIGN CODES

Port Coogee has been designed in accordance with the principles of the Liveable Neighbourhood Community Design Code, even though it has many unusual constraints. Clearly, Port Coogee is a unique coastal site at the edge of an existing urban area, with potential for development which reinforces coastal maritime values and landscape.

The principles of Liveable Neighbourhoods have been employed in the modified grid layout of streets and the pedestrian/cycle network. The layout as a result, is highly permeable and connected with good legibility for both the local resident and visitor to the estate. Transport and traffic management is described in detail in the separate *Port Coogee Transport Report* and further traffic and safety management techniques will be presented at the time of detailed subdivision design. Environmental impacts have been significantly minimised in the LSP.

Parkland management has been discussed with the Council because of the proposal to develop parkland improvements and adjacent foreshores. Public amenities adjacent to, and along the sea walls and marina edges, have also been given high landscape priority.

Urban Water Management is being investigated as part of the engineering and environmental remediation management plan. Nutrient rich groundwater will be cut off by drains and the water used on landscaping in accordance with the principles of Water Sensitive Design.

The Estate will be fully serviced with scheme water, reticulated sewerage, underground power, road access and telecommunications.

6.11 KEY ISSUES

As outlined in section 1.4, the following section addresses the key issues raised by the community and other stakeholders at various stages through the design process, and details how each has been addressed in the LSP.

6.11.1 OMEO WRECK

The Omeo was an iron barque built in 1858, which was washed ashore, having broken her moorings, in September 1905. The hull is gradually disintegrating through the natural processes of corrosion and weather; however, the Omeo remains a popular wreck for visitors, primarily because of its close proximity to the shoreline.


The Western Australian Maritime Museum has previously indicated that options available to the developer for treating the Omeo in the context of the development, ranged from burial of the site under landfill behind a repositioned seawall, to it being left *insitu* to become a recreational/snorkelling feature within the proposed Marina itself.

Notwithstanding the advice from the museum that the wreck could be buried in its place, there was a clear perception that the community would prefer the wreck to still be available in some form, either *insitu* or in an alternative location. The LSP therefore provides for the Omeo Wreck to be retained *insitu*.

6.11.2 PROTECTION OF SEAGRASS

The proposal will result in the direct loss of 0.014% of the total seagrass meadows currently in Owen Anchorage and 0.05% of *Posidonia sinuosa* meadows currently in Owen Anchorage. In the context that there are net gains in seagrass meadows occurring elsewhere in Owen Anchorage, this impact is considered small enough to not compromise the EPA's objective, cumulative or otherwise.

With respect to loss of seagrass habitat, the proposed marina would remove less than 0.45% of the potential seagrass habitat within Owen Anchorage. On this basis, this impact is considered so small that it would not compromise the EPA's objective, cumulative or otherwise. The EPA recognised that the potential for seagrass to regenerate within or immediately adjacent to the location of the proposed marina is low.



With respect to impacts of the proposed marina on seagrasses outside of the amendment area, the EPA is of the opinion that these impacts can be contained to within 100 metres of the outer seawalls.

6.11.3 PROTECTION OF BEACH

The full extent of Coogee Beach and its primary dune system will be left in its natural state, and the developer has also committed to consult with the City of Cockburn to assist in remedial works to repair the existing degradation.

6.11.4 GROYNE ACCESS

All groynes associated with the development, including the northern groyne, will be publicly accessible and contained within the limits of the project area. Provision will also be made for universal access, including fishing platforms, etc.

6.11.5 PEDESTRIAN ACCESS

The design incorporates a strong north-south dual use path system and integrated pedestrian network which is highly legible, safe and convenient for the various user groups, including residents living in Port Coogee or in the vicinity of Port Coogee, and regional visitors to the area. The dual use path system will replace the existing coastal dual use path, which is part of a network established by Council in consultation with BikeWest.

6.11.6 VISUAL IMPACT

Until the former industrial uses were recently removed from the waterfront, the view of this section of the beachfront and the surrounding industrial area was dominated by industrial uses, including tanneries, tallow manufacturing, chemical manufacturing and storage, wool scouring, etc. The removal of the industrial uses and subsequent clean up of soil contamination has been made financially viable through the redevelopment of the area in line with the State Government Agreement.

The aesthetic quality of the development will ultimately be controlled through subsequent approval processes including this LSP, the Amendment to the Scheme and Built Form Codes/Local Development Plans and Centre Plans, which may involve separate public consultation processes. Given the quality of development envisaged through the LSP, and demanded by the significance of the location, it is expected that the proposed development will be of a high aesthetic quality.

The portion of the beachfront actually affected by the water-based component of the development strictly avoids any physical or visual impact on the more attractive and regularly patronised areas of the local coastline, in particular Coogee Beach and Woodman Point.

In terms of the visibility of the ocean from the future Cockburn Road realignment, there is a preference to maintain maximum visibility to the Marina and surrounding coastal facilities from the main road. As a minimum, this is achieved through creating view corridors through the interconnected road and open space systems. In addition, further visibility is likely to be achieved through the use of level variations between Cockburn Road and the adjoining development.

6.11.7 PUBLIC EQUITY AND COMMUNITY NEED

It has been made clear at both local and State Government levels that continuing support for the project is dependent on the proposal clearly demonstrating net community gain in terms of Public Equity.

Whilst some extent of existing informal public amenity, in the form of limited beachfront access, will be absorbed into the project, the community will achieve a net higher return in terms of a more diverse range of public facilities and recreational experiences; and usable recreational facilities developed to high standards.

The proposed Port Coogee development will introduce a broad range of new public amenities, not presently available in the locality. It must also be appreciated that these amenities will be available, and directly accessible to the broader community, and not just the future residents of the estate.

The community benefit also extends beyond the development area boundary with the development of a linear parkland system in the adjacent ROS reserve and the developer's commitment to making a substantial contribution to the provision of additional boat launching facilities in the region.

The important element of this LSP that distinguishes it from previous concepts is a strong shift in emphasis away from maximising water based development opportunities and towards minimising impact on the most highly valued public assets, principally the publicly accessible beachfront areas in the southern sector of the development area, the adjacent Omeo Wreck, the new Waterfront Park and provision of the new beach area within the development. Therefore, given the enhancements and significant new amenities offered through the development, compared against the minimal losses incurred in the existing asset base, the public equity ledger is now firmly and positively improved.

6.11.8 COMMUNITY NEED

The demand for additional boat pens in the Metropolitan Region was the subject of an assessment by M P Rogers & Associates. In essence, the report concluded that there was a pent-up demand for pens within the metropolitan area, with nearly all existing facilities completely full and with waiting lists. Most facilities also appear to have reached full development potential.

Based on statistics provided by the DPI, it is estimated that the number of boats greater than 8 m, and hence likely to require a wet pen, has increased by approximately 100 boats per year over the past decade. Based on the trends of the last 10 years, it is estimated that there will be a need for more than 1,000 additional wet pens in the metropolitan area of the next decade. The Port Coogee Marina will provide for approximately 300 public boat pens within the marina, along with an additional 53 private pens within the canals.

The developer has also made a considerable contribution to the facilities for launching and retrieval of small recreational boats at Jervoise Bay, Woodman Point.

6.11.9 MARINA

The Marina has been designed as a social focal point, which will be accessible and highly attractive to the broader community and will be a place where people will want to visit to enjoy a range of recreational and entertainment opportunities presented by its unique waterfront location.



According to the principles and expectations behind the State Government Project Agreement, the fabric of the Marina was of paramount consideration in terms of returning a significant new public facility to the community.

Protection from the prevailing breezes is also a primary consideration for both the waterfront commercial areas and the harbour itself, and is an imperative if the maximum potential of the facility, in terms of creating outdoor facilities on the waterfront, is to be realised.

As previously mentioned, the marina will provide pen accommodation for approximately 300 boats, as well as public jetty and docking areas. The marina edge will be completely public, in the form of parkland, promenade and roads (with roadside parking). It is intended that commercial uses around the marina – in the marina village and mixed use precinct, will feature, along with convenience retail uses, uses which will reflect and enhance the waterfront environment, including restaurants, small take-aways, boat chandlery, surf shop etc.

6.11.10 PUBLIC OPEN SPACE AND FACILITIES

The LSP includes approximately 16.26% of the net development area for public open space. The public open space has been designed and distributed in such a way as to fulfil local recreational functions. In view of the nature of the development, it was considered that such functions should not include active areas such as playing fields. Where appropriate, public open space areas have been designed to integrate with primary pedestrian routes.

Council has indicated its desire for a community purpose site within the Marina Village Centre. It has thus been agreed to provide up to 1,000 m² floorspace that will contribute to POS provision (as shown on the POS schedule) within the estate.

It is likely that portion of the community purpose site will be primarily located on the first floor of a main retail/commercial building/s located in the southern portion of the Marina Village. Irrespective of the location, it will include a portion of the site not less than 120m² and a street frontage not less than 8m, to facilitate direct street access. The ultimate location of the community purposes site is yet to be determined though potential alternative locations are depicted on the Local Structure Plan. It is not intended that the potential alternative community purpose sites shown on the LSP (Figure 9) 'pin point' the exact location, but designate the general location, with the specific location determined via detailed design in consultation with the City.

6.11.11 PROTECTION OF NATURAL PARKLAND AND VEGETATION

As part of the Port Coogee development, it is proposed to develop a linear pedestrian parkland system through the ROS, creating links from Cockburn Road to the north through to Coogee Beach and the existing residential areas to the south. The ROS development and enhancement will be focussed on retaining and enhancing the area's conservation and passive recreational purpose.

6.11.12 COCKBURN ROAD REALIGNMENT

The position of the proposed Cockburn Road realignment has been primarily dictated by the future PRR alignment proposed in the MRS Amendment. Council, through consultation with the MRWA succeeded in its negotiations to reduce the hierarchical level of the road to one of a more localised scale. The downgraded classification of the road has no adverse impact on the integrity of the design, or the commercial feasibility of the project.



Port Coogee
Revised Local Structure Plan

Council also expressed the view that the elevation of the road, and fencing and landscaping treatments of the development should ensure that Cockburn Road is a scenic route, allowing the motorist ocean views and glimpses of the Packham Valley and the Darling escarpment. This road has largely been constructed.

7 ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

As detailed in section 1.3.2 Environmental Assessment, the EPA decided that the following environmental factors were relevant to the MRS Amendment, which required detailed evaluation:

- Terrestrial flora;
- Marine flora (seagrass);
- Coastal Processes – foreshore (beach) and seabed;
- Marine water and sediment quality;
- Soil and groundwater contamination;
- Construction impacts – dust, noise and vibration;
- Railway noise;
- Visual amenity; and
- Long-term management.

The recommended conditions of approval detailed in section 1.3.2, reflect the conditions that have been proposed in the Environmental Review. The Developer has committed to complying with the recommended conditions.

The following section provides discussion of each of the relevant environmental factors, extracted from EPA Bulletin No. 1060. Each factor is discussed with respect to the existing environment, potential impacts and recommended management requirements and details the current status of compliance with the recommendations.

7.1 TERRESTRIAL FLORA

7.1.1 DESCRIPTION

Whilst largely cleared, approximately 9 hectares of native vegetation remains within the development area. Most of this vegetation occurs in fragmented patches and ranges in condition from 'Very Good' to 'Completely Degraded'. Implementation of the proposal will lead to the clearing of the majority of this vegetation through the construction of the PRR, the proposed Port Coogee residential estate and development of the proposed new Industrial zone.

The most significant areas of native vegetation that would be cleared are associated with the proposed deviation of the PRR reserve through Beeliar Regional Park. This new road reservation would lead to the permanent loss of 3.2 hectares from the Park, of which, approximately 1.1 hectares contains native vegetation, and most of the remaining 2.1 hectares is a derelict quarry. Approximately 0.6 hectares of this vegetation to be removed from within Beeliar Regional Park is also identified for protection as part of Bush Forever Site No. 247 (WAPC, 2000). Vegetation that would be removed from Beeliar Regional Park varies in condition from 'Good' to 'Degraded'.

The other main areas of native vegetation that would be cleared through implementing the proposal consist of patches of coastal dune vegetation or Acacia scrub or heath ranging in condition from 'Good' to 'Completely Degraded'. These areas of vegetation occur in areas earmarked for part of Port Coogee.



The only other notable area of native vegetation that would be impacted is a small patch (approximately 0.4 hectares) of Acacia scrub, in good condition, that has been identified as Floristic community 29b. The majority of this area of vegetation lies within the proposed new alignment of the PRR reserve.

7.1.2 ASSESSMENT

The EPA's environmental objective for this factor is to maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities.

In general, given the fragmented and largely degraded nature of the native vegetation that would be impacted by the project, the EPA was of the view that its objective for terrestrial flora can be met through management of the proposal.



To address the loss of vegetation from Beeliar Regional Park (as a result of the proposed PRR reservation), the EPA recommended that:

-  An area greater than simply the area of vegetation to be cleared should be revegetated in a location acceptable to the Department of Conservation and Land Management, to mitigate the effect of the proposed reduction in area of Beeliar Regional Park; and
-  The proposed parkland areas along the southern boundary of the railway and along the outside of the eastern edge of the amendment area should include areas of native vegetation to mitigate the areas of coastal dune vegetation that will be cleared to make way for residential development. These areas should include the maximum area that can be retained from the patch of Floristic community 29b that lies south of the railway, partially along the proposed alignment of the PRR reservation.

The strategies for mitigating impacts on terrestrial flora communities are detailed in the Construction Management Program, Volume 3 Vegetation Management Plan (RPSBBG, 2005) that was prepared and approved by the EPA on advice from the City of Cockburn, the Department of Conservation and Land Management and the Department of Environment..

7.1.3 SUMMARY

Having particular regard to the:

-  Fragmented and degraded nature of most of the native vegetation within the proposal area; and
-  The proposed areas of remnant vegetation that would be revegetated as part of the proposal;

it was the opinion of the EPA that the proposal can be managed to meet the EPA's environmental objective for this factor, provided that the Recommended Environmental Conditions are incorporated. The preparation and approval of the Vegetation Management Plan in 2005 demonstrated that the management measures put in place will ensure the EPA's objective can be met.

7.2 MARINE FLORA (SEAGRASS)

The Port Coogee proposal includes zoning approximately 30 hectares of the Owen Anchorage 'Waterways' reservation to 'Urban' to allow for the construction of the Port Coogee Marina. Within this area, there is approximately 0.3 hectares of *Posidonia sinuosa* seagrass meadow which would be lost if the proposal is implemented. Of this 0.3 hectares, 0.27 hectares is dense seagrass (>75% cover) and 0.03 hectares is scattered seagrass (<25% cover).



The marina also has the potential to impact on seagrass outside of the area. This impact can occur through sediment plumes created at the time of construction, impacts on the seabed from altered wave action or shading from increased algal growth. Two areas of dense seagrass occur in the vicinity of the Marina, the first is a small patch of less than 0.2 hectares of dense seagrass located 130 metres south of the proposed Marina, the second is a large and dense seagrass meadow located 275 metres to the south and beyond. Approximately 200 m to the north of the marina there are areas of 'patchy seagrass' that could potentially be impacted from construction related turbidity. The proposed Marina has been modified from previous designs to avoid impacting these areas.

The proposed Marina would also remove up to 20 to 30 hectares of potential seagrass habitat from Owen Anchorage by virtue of its direct footprint and its impacts on the seabed surrounding it (for a distance of approximately 100 metres from the outer seawalls).

7.2.1 ASSESSMENT

The EPA's environmental objective for this factor is to maintain the ecological function, abundance, species diversity and geographic distribution of seagrasses.

The proposal will result in the direct loss of 0.014% of the total seagrass meadows currently in Owen Anchorage and 0.05% of *Posidonia sinuosa* meadows currently in Owen Anchorage. In the context that there are net gains in seagrass meadows occurring elsewhere in Owen Anchorage, this impact is considered small enough to not compromise the EPA's objective, cumulative or otherwise.



With respect to loss of seagrass habitat, the proposed Marina would remove less than 0.45% of the potential seagrass habitat within Owen Anchorage. On this basis, this impact is considered so small that it would not compromise the EPA's objective, cumulative or otherwise. The EPA also recognised that the potential for seagrass to regenerate within or immediately adjacent to the location of the proposed Marina is low.

With respect to impacts of the proposed marina on seagrasses outside of the amendment area, the EPA is of the opinion that these impacts can be contained within 100 metres of the outer seawalls. Given that no existing seagrass occurs in this area (the closest being 130 metres to the south) this impact is also unlikely to compromise the EPA's objective for seagrass. Despite this conclusion, the EPA acknowledges that for these impacts to be contained within 100 metres of the Marina, management during construction and on an on-going basis will need to be vigilant.

To address this issue, the EPA recommended the preparation and implementation of a Construction Management Program (CMP) and Waterways Environmental Management Program (WEMP). These programs were approved in 2005 and the monitoring component of the CMP has commenced.

7.2.2 SUMMARY

Having particular regard to the:

-  relatively small area of seagrass and seagrass habitat that will be directly impacted by the proposal; and
-  the proposed mechanisms to protect nearby seagrass and seagrass habitat from indirect impacts,

it was the opinion of the EPA that the proposal can be managed to meet the EPA's environmental objective for this factor, provided that the Recommended Environmental Conditions are incorporated. The CMP and WEMP have both been approved by the EPA and relevant monitoring components of the CMP have been implemented.

7.3 COASTAL PROCESSES – FORESHORE (BEACH) AND SEABED

7.3.1 DESCRIPTION

The proposed marina has the potential to modify the southerly movement of sand to Coogee Beach. This is expected to lead to the accumulation of sand along the northern edge of the marina, creating a new beach, and creating the potential for the flow of sand to Coogee Beach to be reduced. In addition to this, wave shadows formed adjacent to the southern seawall of the marina could cause erosion of the northern end of Coogee Beach.

It is proposed to manage the changes to beach dynamics at the northern end of Coogee Beach by piping sand from the north of the marina to the south of the marina. A sand bypassing pipeline is to be installed as part of the marina construction to facilitate any sand movement. When sand bypassing is needed, a mobile pumping unit will be brought in. A monitoring and management program has been prepared and approved in the WEMP that allows for impacts of the marina on coastal processes to be identified and managed on an on-going basis.

7.3.2 ASSESSMENT

The EPA's environmental objective for this factor is to maintain the stability of beaches and ensure that no development has a significant impact on existing coastal processes, including off-shore sediment movement.

To comply with this objective, a coastal engineering study for the proposal was used to model the impacts of the proposed marina on coastal stability. This modelling indicated that Coogee Beach is currently experiencing a small amount of net sand movement, and could therefore be slightly affected by a change to its sand supply regime. It has also been predicted that the proposed breakwater that would form the southern boundary of the proposed marina, may create a 'wave shadow' and rip currents could erode the northern end of Coogee Beach.

To account for these potential impacts, it is proposed to install a permanent sand bypassing pipeline through the Marina to pump up to 25,000 m³ of sand over the first five years from the north of the Marina to the south of the Marina. When sand bypassing is needed, a mobile pumping unit will be brought in. After the first five years it is proposed to hand over management of the Marina to a more suitable long term management authority, together with a funding program. Sand bypassing would then continue to occur on an on-going basis as required.

Although the exact extent of management that may be required as a result of the proposed marina has not been conclusively determined, DPI Coastal Facilities has advised that the proposed monitoring and adaptive management approach, using sand bypassing options, can be used to acceptably manage impacts on coastal processes. Further to this, the EPA recommended that a management program needs to be prepared in detail, prior to development, and will require on-going implementation.

It was also noted that the monitoring and management program would need to address the potential environmental and social impacts arising from proposed management measures and contingency plans. For example, procedures for sand bypassing operations need to account for impacts on source areas and potential sediment plume impacts on receiving areas. The Waterways Environmental Management Program (WEMP) was approved in 2005 that details the requirements for monitoring and triggers for implementing a sand by-passing program.



In addition to this, the EPA recommended an adequate source of funding for implementing the required monitoring and management measures would need to be assured. This would need to include funding for the contingency options that may be needed after severe storms and other unpredictable events. A Port Coogee Waterways Management Transfer Facilitation Agreement has been put in place with Australand and the City of Cockburn that provides for the long-term funding for monitoring and management.

7.3.3 SUMMARY

Having particular regard to the advice of the Coastal Facilities Section of the DPI, it was the opinion of the EPA that the proposal could be managed to meet the EPA's environmental objective for this factor, provided that the Recommended Environmental Conditions are incorporated. With the preparation and approval of the WEMP, CMP and the Port Coogee Waterways Management Transfer Facilitation Agreement the long-term management arrangements are in place to ensure coastal processes will not be significantly impacted.

7.4 MARINE WATER AND SEDIMENT QUALITY

7.4.1 DESCRIPTION

Implementation of the proposal, and construction of the marina, has the potential to reduce the quality of the marine environment both within the proposed marina and in the waters surrounding it. This could occur as a result of the actual marina construction process, or through its on-going use.

The primary risks to the marine environment from the marina construction process are the creation of suspended sediment plumes that reduce light penetration, and the release of nutrients or contaminants into the water column from disturbing marine sediments.

The primary risks to the marine environment after construction are the prolonged retention of water and nutrients within the Marina which could encourage excessive algae growth, and the potential for ongoing contamination of the Marina from boating and other marina activities.

7.4.2 ASSESSMENT

The EPA's environmental objective for this factor is to maintain or improve marine water and sediment quality consistent with the relevant Environmental Quality Objectives as defined in the Environmental Protection Authority document *Perth's Coastal Waters: Environmental Values and Objectives* (EPA, 2000).

To address the potential impacts from the marina construction process, it was proposed that procedures for monitoring and managing marine water quality be detailed in a Construction Management Program prior to the commencement of development, and implemented at the time of construction. To control risks posed by sediment plumes, it was proposed to conduct daily visual monitoring during the relevant construction phases, and to monitor water turbidity at nearby seagrass meadows. Should turbidity levels reduce light reaching seagrass meadows to below the minimum requirements defined in the *Southern Metropolitan Coastal Waters Study* (DEP, 1996) then a management response such as ceasing the causing activity until minimum light requirements return.



Port Coogee Revised Local Structure Plan

To address the potential release of nutrients or contaminants during construction, the proponent sampled sediment quality within the amendment area to determine the nature and extent of any contamination. This sampling revealed that the levels of contamination are low and can be readily managed by controlling the construction process. It is proposed to construct the outer seawalls of the marina prior to creating the internal waterways. During construction, temporary rock bunds or silt curtains will be installed across the marina entrance to ensure containment of suspended material. Following construction, and after the larger suspended particulates have settled, the marina entrance will be opened to allow adequate flushing with outside waters so that acceptable water quality can be maintained.



To determine likely water quality within the marina after construction, i.e. during its operation phase, the proponents undertook a dissolved inorganic nitrogen (DIN) modelling comparison between the proposed marina and the existing marinas of Success Harbour, Hillarys Boat Harbour and Jervoise Bay Northern Harbour. From this analysis it was predicted that the proposed marina would have comparable water quality to Hillarys and Success Harbours. Also, the modelled flushing times for the proposed marina were between those modelled for Success and Hillarys Harbours and less than half that of Jervoise Bay Northern Harbour.





The predicted water quality for the proposed marina is based on the operation of an interception drain inland of the marina to reduce the flow of groundwater entering the marina (by reducing the groundwater head). This is required because the groundwater entering the coast in this region contains relatively high levels of nitrogen, which could lead to unacceptable levels of algal growth within the marina if it is not controlled. The nitrogen in the groundwater is a legacy from previous market gardening operations that have occurred inland of the amendment area.

The interception drain will need to be able to be operated during summer months, or as needed, for at least nine to twelve years. After this time nitrogen levels reaching the coast are expected to return to background levels. Water pumped from the drain will be used to irrigate nearby areas of public open space with the surplus reinjected back into the aquifer. Proposed sites for the re-injection bores have been strategically located so that the pumped water does not return to the marina and where they will not cause unacceptable levels of nitrogen elsewhere, particularly in coastal waters adjacent to the proposed marina.

With respect to the on-going threat of contamination entering the proposed marina, or surrounding marine environment, through marina and residential activities, a number of risks have been identified. These risks are stormwater inputs, boat spillages, leaching of boat materials and contaminated groundwater. Risks from stormwater, boat spillages and leaching have been investigated and are believed to be manageable through appropriate design and operation of the marina and the inclusion of facilities such as waste disposal and sewerage pumps. Groundwater contamination from previous industrial operations has been thoroughly investigated and examined using sampling and three-dimensional groundwater flow and contaminant transport modelling. The predicted contamination met DEP contaminated site assessment criteria (Department of Environmental Protection, 2000).

A detailed Waterways Environmental Management Program has been prepared and approved. The Waterways Environmental Management Program requires that the marine water and sediment quality, within the marina waterways, achieves the following Environmental Quality Objectives as defined in the Environmental Protection Authority document *Perth's Coastal Waters: Environmental Values and Objectives* (EPA, 2000):

-  Maintenance of ecosystem integrity such that “moderate level” (E3) protection is met within the marina waterways;
-  Maintenance of aquatic life for human consumption;

- 
-  Maintenance of primary contact recreational values;
 -  Maintenance of secondary contact recreational values; and
 -  Maintenance of aesthetic values.

In meeting these objectives, it was agreed to apply the philosophy and approach suggested in the *Draft Environmental Quality Criteria Reference Document (Cockburn Sound)* (EPA, 2001). This approach involves the ongoing comparison of water quality between the proposed marina and a suitable 'pristine' reference site to ensure that acceptable water quality is maintained.

7.4.3 SUMMARY

Having particular regard to the agreement of the proponent to apply the approach and philosophy of the EPA's draft Environmental Quality Criteria for Cockburn Sound, it was the opinion of the EPA that this proposal could be managed to meet the EPA's environmental objective for this factor, provided that the Recommended Environmental Conditions, are incorporated. The WEMP was approved by the EPA in 2005 and forms the basis for on-going management of water and sediment quality within the marina.

7.5 SOIL AND GROUNDWATER CONTAMINATION

7.5.1 DESCRIPTION



Previous industrial activities over much of the project area resulted in soil contamination including metals, hydrocarbons and pesticides. This development will facilitate the clean up of this now disused industrial land, and its redevelopment for residential purposes.

The EPA has previously assessed the issue of soil and groundwater contamination over most of this site through Assessment No. 1004 – Bulletin 957, released in November 1999 (Environmental Protection Authority, 1999). That assessment involved the remediation of the government owned land in the project area, and was subsequently approved by the Minister subject to conditions in April 2000. The EPA has now considered the remediation of the non-government owned land, and how the remediation of the whole site will be integrated.

7.5.2 ASSESSMENT




The EPA's environmental objective for this factor is to ensure that soil and groundwater quality at the site is acceptable to protect human health and the marine environment.

To address potential human health and environmental risks posed by contamination within the non-government owned land, the WAPC conducted a Site Contamination Assessment and Management Program, which involved the following elements:

-  Soil and groundwater sampling to characterise contaminant concentrations in soil and groundwater;
-  A Human Health Risk Assessment to determine the potential impact of contamination on the users of the land should it be developed for residential development;








Port Coogee Revised Local Structure Plan

-  Fate and Transport modelling for all land within the amendment area, to assess the behaviour and movement of contamination, and to predict the potential impact on groundwater and its discharge into Owen Anchorage and the proposed marina;
-  A Contamination Management Plan for areas identified as requiring remediation; and
-  The integration of Port Coogee development contamination management strategy with the management of the surrounding government land within the amendment area.

The Human Health Risk Assessment and the Fate and Transport modelling identified a number of areas that would require remediation should the amendment be implemented. This remediation includes the removal of 3050 m³ of soils that exceed safe levels of contamination for human health and 227 m³ of wastes that have a negative aesthetic impact. These contaminated materials are to be disposed of off-site at approved landfill facilities.

Two small areas of sediments in the near shore area of the amendment site were also identified in the assessment to be contaminated. One area had elevated levels of arsenic, the other had elevated levels of chromium. For both these sites, the level of contamination was above the “Interim Sediment Quality Guidelines – Low” but below the “Interim Sediment Quality Guidelines – High” as defined in *Contaminated Site Assessment Criteria* (DEP, 2000). This contamination will either be buried in-situ by approximately 7 metres of fill during marina construction, or transferred to the terrestrial portion of the proposed marina and buried. Both of these mechanisms would result in this contamination posing very little risk to human health or to the marine environment.

The nature and extent of contaminated groundwater beneath the site has been investigated through the construction and monitoring of 86 groundwater monitor bores and sampling from 17 offshore locations. It has been determined that residual contaminants from previous industrial operations at the amendment site do not dissolve freely into percolating rainwater or the underlying groundwater. Despite this, the following strategies to ensure that groundwater contamination from previous industrial activities has been implemented:

-  Source removal (removal of contaminated soils and uncontrolled fill);
-  Free petroleum product floating on the groundwater will be recovered using skimmer bores;
-  Natural renovation (soils and sediments on the site have substantial sorption capacities for trace metals in the groundwater);
-  Monitoring and assessment through the Groundwater Monitoring and Management Program; and
-  Controls on future abstraction of groundwater if required.

Modelling of contaminated groundwater conducted by the WAPC has also shown that groundwater discharging into Owen Anchorage and the proposed marina will comply with water quality guidelines (even in the very long term) and will not affect the suitability of aquatic life for human consumption. To confirm this prediction, on-going marine water and sediment monitoring is to be undertaken as part of the implementation of the approved Waterways Environmental Management Program.

As mentioned previously, groundwater in the region of the proposed amendment does contain a plume with elevated levels of nitrogen. This is not a result of previous industrial operations, but is a legacy from previous market gardening operations that have occurred inland of the amendment area. Since most of these market gardening operations have now ceased, nitrogen levels are expected to return to background levels within approximately 12 years. The impact of this elevated level of nitrogen on the proposed future users of the site will be managed by the proposed controls on groundwater abstraction, and impacts on the waterways of the proposed marina will be addressed by the use of a groundwater interception program.





The Department of Health has advised that the Health Risk Assessment meets its requirements. An Asbestos Management Plan was prepared and implemented for the site as part of a Construction Management Program. This work has been undertaken and laboratory results have confirmed the asbestos remediation has been successful.

A Remedial Works Management Program was also prepared, approved and implemented. Remediation of the soil contamination of the Australand land has been successful and validation results are being assessed by the EPA.

7.5.3 SUMMARY

Having particular regard to the:

-  Extensive sampling and analysis conducted which indicates that impacts on the ecological function of Owen Anchorage is unlikely to be impacted by the contaminated material located at the site; and
-  The advice provided by the Department of Health on the suitability of the proposed remediation to meet human health criteria;

EPA was of the opinion that the proposal can be managed to meet the EPA's environmental objective for this factor, provided that the Recommended Environmental Conditions are incorporated. The remedial works has been completed and post remedial groundwater validation monitoring is being undertaken.

7.6 CONSTRUCTION IMPACTS – DUST, NOISE AND VIBRATION

7.6.1 DESCRIPTION





The extensive earthworks proposed during the clean up of the site and the construction of the marina and new urban development has the potential to generate dust, noise and vibration that could impact on adjacent land uses.





7.6.2 ASSESSMENT

The EPA's environmental objective for this factor is to ensure that dust, noise and vibration impacts resulting from activities associated with the construction of the project, do not adversely impact upon the welfare and amenity of nearby residents, by ensuring that they meet statutory requirements and acceptable standards.



Management of remediation and construction activities were detailed in the approved Remedial Works Management Program and Construction Management Program.

Management measures for noise generated during construction include:

-  Restricting the hours of operation for heavy equipment;
 -  Advising local residents of noise creating activities;
 -  Keeping a register of complaints so that additional management measures can be applied if significant impacts are generated; and
 -  Compliance with the Environmental Protection (Noise) Regulations 1997.
- Management measures for dust generated during construction include:

-  Wind fencing;
-  Site watering;
-  Surface stabilisation; and
-  Compliance with Environmental Impact Assessment Guidance No. 18: *Prevention of Air Quality Impacts from Land Development Sites* (EPA, 2000).

Management measures for vibration impacts generated during construction include:

-  Offer of a free structural inspection before the commencement of construction to owners of buildings in potentially affected properties in the Old Coogee area; and
-  In the event of blasting activities, compliance with *Environmental Management of Quarries* (Department of Minerals and Energy, 1994).

The application of these management measures where required, enable impacts on nearby residents from construction activities to be acceptably managed.

7.6.3 SUMMARY

Having particular regard to the proposed management measures for controlling the construction impacts of noise, dust and vibration, it was the opinion of the EPA that the proposal can be managed to meet the EPA's environmental objective for this factor provided that the Recommended Environmental Conditions are incorporated. The Construction management Program has been approved and implemented with monitoring of dust etc on-going.

7.7 RAILWAY NOISE

7.7.1 DESCRIPTION

The proposal will place new residential development in close proximity to an existing dual gauge freight railway that services Fremantle Port. Rail traffic is estimated to increase to a maximum of 10 movements per day in 2017 based on advice from Fremantle Port Authority. The length of railway abutting the future residential area is 750 metres, with 300 metres located within a cutting. The proposed buffer between the railway track and proposed residential area varies from 90 metres to 30 metres, but is mostly 34 metres. Sound mounds are proposed within the rail reserve to create continuous noise mitigation adjacent to the development.

7.7.2 ASSESSMENT

7.7.2.1 NOISE AND VIBRATION MANAGEMENT PLAN

The EPA's environmental objective for this factor is to protect future residents from noise impacts by ensuring compliance with acceptable standards.

Although there are no regulatory criteria in Western Australia applicable to noise received from rail traffic, guidance is provided in draft EPA Guidance for Environmental Impact Assessment No. 14 (Version 3).



To address the issue of impacts from the existing railway line on the proposed residential estate, the proponent has used file data of freight train noise emissions to model noise levels that would be received at the closest residences. Advice from the Department of Environmental Protection indicates that, in the context of EPA rating criteria (as per preliminary draft EPA Guidance for EIA No. 14 (Version 3) – Road and Rail Transportation Noise), average noise levels at the closest residences (30 metres) would be within manageable limits for up to 8 train movements per night.

To manage the potential noise impacts on future residents of the amendment area, from rail and road sources, a Noise and Vibration Management Plan was prepared and approved. This plan will use on-site monitoring data to accurately determine noise levels and will describe appropriate strategies to effectively mitigate those levels.

In assessing this factor the EPA noted that noise levels from rail traffic received at the amendment site are largely determined by the number of train movements and there is uncertainty as to how many train movements that should be anticipated in the foreseeable future. However, it noted that the subject railway is already constrained in other areas where it runs in close proximity to existing residential areas.

On balance, it considered that noise mitigation measures available at the structure planning, design and construction stages of the proposed residential estate are extensive enough to minimise potential effects from rail traffic along the adjacent railway. Furthermore, it is considered that options are available to the operator of the railway that could allow traffic increases without significantly increasing noise impacts, such as reduced speed on the curves.

7.7.2.2 STAGE 6 NOISE ASSESSMENT



A noise assessment has been undertaken for Stage 6 to assess noise received from trains travelling on the adjacent freight railway line in accordance with the WAPC's State Planning Policy 5.4 *Road and Rail Transportation Noise and Freight Consideration in Land Use Planning* (SPP 5.4). The approved Noise and Vibration Management Plan for the Port Coogee estate was prepared before the release of SPP 5.4 and did not consider noise generated from idling trains and carriage shunting.

Under the approved Port Coogee Noise and Vibration Management Plan the future number of trains was determined to be 10 per day with 5 during the night period. However, to be conservative, the latest noise assessment assumes one train movement per hour (i.e. 24 movements per day), in accordance with the Implementation Guidelines of SPP 5.4, although compliance with SPP5.4 is not required in this instance.

Based on the analysis undertaken, "Quiet House" design packages will be required to both the ground and upper floors of those dwellings identified in the Noise Assessment Report. In addition, Notifications on Title will also be required for these lots. This approach is consistent with measures applied in other estates adjacent freight and passenger rail and will be implemented at the subdivision/DA stage.

7.7.3 SUMMARY

Having particular regard to the range of noise mitigation measures that can be used to manage railway noise impacts on the proposed residential development, both from:






-  Existing rail usage; and
-  A moderate increase in rail usage,

It was the opinion of the EPA that the proposal can be managed to meet the EPA's environmental objective for this factor, provided that the Recommended Environmental Conditions are incorporated. The Noise and Vibration management Plan has been prepared and approved and a separate Noise Assessment report prepared with respect to noise received within Stage 6, the report will be updated following the installation of a proposed acoustic wall along the new public open space boundary.

7.8 VISUAL AMENITY

7.8.1 DESCRIPTION

The main impacts of the proposal on the visual amenity of the surrounding areas would be as follows:

-  The view from the western side of the limestone ridge, which traverses the site, would change from mostly bare limestone or sandy terrain to a re-contoured and residential scene;
-  Changes to the skyline viewed from the east would result from the proposed removal of some high parts from the ridge for the construction of the re-aligned Cockburn Road within the 'Primary Regional Roads' reservation. However, the proponent has predicted that the proposed residential development will not be visible from this direction (from the east);
-  Views from the western and south-western parts of Beeliar Regional Park would be altered by replacing the vacant industrial land with a re-contoured built environment, and by introducing the proposed marina to the views of the near-shore area of Owen Anchorage;
-  The landscape values of Coogee Regional Open Space would be impacted by a small reduction in the area of 'Parks and Recreation' reserve in this area; and
-  Creating a new parkland area to the east of the site where it is currently vacant and largely denuded, will offer an improved visual amenity.

7.8.2 ASSESSMENT

The EPA's environmental objective for this factor is for the visual amenity of the areas adjacent to the project to not be unduly affected by the proposed scheme amendment.

The EPA recognises that the limestone ridge traversing the site has significant landscape value, as indicated in many of the public submissions. However, it is considered that the development will not significantly alter the integrity of ridge as a regional landscape feature. The proposed residential development on the west of the ridge will replace the current, largely denuded, landscape, but would not significantly compromise the limestone ridge itself. The residential development will also not be visible from the east.

The proposed deviation of Cockburn Road near the crest of the ridge would remove relatively small portions of the ridge but the roadway itself would largely be screened by bunding, revegetation and other parts of the ridge that will remain intact.



With respect to impacts on the visual amenity of Beeliar Regional Park, the EPA noted that the south western section of the Park has views of the amendment area. Under the proposed development, these views would mainly consist of a new residential estate over the former industrial land, the new alignment of Cockburn Road, and the proposed marina. As stated above, the EPA considered that altering the land use from the current, largely denuded, former industrial area, to residential development, does not significantly alter the integrity of the ridgeline, and therefore does not significantly alter the value of the landscape amenity.




In assessing the impact of views of the proposed new alignment of Cockburn Road from Beeliar Regional Park, it is noted that the development site already includes Cockburn Road, and that there are other existing roads and infrastructure such as the railway and high voltage powerlines. The view of the new Cockburn Road can also be reduced through bunding and screen planting. With respect to the views of the proposed marina from the Park, the EPA noted that foreshore commercial and industrial development is common in this region, and that views of the horizon and the remainder of the ocean will not be affected.

In assessing the impact of the proposal on Coogee Regional Open Space, the EPA noted that the area to be removed from the 'Parks and Recreation' reserve is largely degraded, devoid of vegetation and has restricted access. On this basis it is considered that the proposed rehabilitated and landscaped public parklands adjacent to this area will provide effective mitigation for this reduction in area.

A Landscape Management Plan and Vegetation Management Plan have been prepared and approved. These plans allow for impacts on the visual amenity of adjacent land to be minimised through the provision of public parklands, revegetated areas, and screen plantings.

7.8.3 SUMMARY

Having particular regard to the:

-  design of the proposed scheme amendment which largely preserves the integrity of the limestone ridge as a regional landscape feature;
-  current low amenity value offered by the vacant, and largely denuded, former industrial land; and
-  provision of new public parkland areas along the crest of the ridge,

it was the opinion of the EPA that the proposal can be managed to meet the EPA's environmental objective for this environmental factor, provided that the Recommended Environmental Conditions are incorporated. A Landscape Management Plan and Vegetation Management Plan have been prepared and approved and are being progressively implemented as development proceeds.

7.9 LONG-TERM MANAGEMENT

7.9.1 DESCRIPTION

The construction of the proposed marina and its operation will create a need for long term environmental management. As discussed in previous sections, the marina will have on-going impacts on marine water quality and coastal processes which will require on-going monitoring and management. The acceptability of these impacts will largely be determined by the quality of that monitoring and management.

7.9.2 ASSESSMENT

The provision of adequate funding arrangements and appropriate management responsibilities are important aspects of this project. It was recognised that for the proposed Port Coogee marina to be environmentally acceptable, a management body needs to be in place which has the financial and technical resources and authority to monitor and control the potential environmental impacts.

The EPA was of the view that, prior to the approval of a Town Planning Scheme Amendment for the land over the proposed Port Coogee marina, the WAPC should resolve responsibilities for the on-going environmental management of the proposed marina. This has been completed through the Port Coogee Waterways Management Transfer Facilitation Agreement signed by Australand and the City of Cockburn. This agreement details responsibilities to ensure that the objectives of the Waterways Environmental Management Plan will be achieved. No costs will be incurred by the broader community.

7.9.3 SUMMARY

Having particular regard to the requirements for long term environmental management, it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objectives, provided that the Recommended Environmental Conditions are incorporated.

The preparation of the WEMP and the Port Coogee Waterways Management Transfer Facilitation Agreement will ensure that the EPA's objectives can be maintained in the long-term.






8 PROPOSED INFRASTRUCTURE SERVICING

8.1 MARINE STRUCTURES





Concept studies for the breakwater have confirmed that a conventional rubble mound breakwater is suitable for the wave climate at the site. The rock armour will be limestone which is available from quarries close to the site. The breakwater will be constructed by conventional end tipping in depths ranging up to 9 m of water.

Preliminary design for edge treatments around the canal edges and reclaimed land have considered a variety of designs from simple rubble revetments to vertical walling and soft edges for internal beaches. The design will incorporate various edge treatments to suit the planning layout.

An assessment of the appropriate minimum building level has been completed. This assessment accounted for:

-  Astronomical tides;
-  Storm surge;
-  Possible sea level rise due to the "Greenhouse Effect";
-  Local set up due to winds and waves; and
-  Freeboard as a factor of safety for variance in predicted levels.

The impacts of the proposed breakwater include:

-  Reduced impact on the seagrass than previous proposals;
-  Maintaining and extending the beach to the south of the development;
-  The potential for the northern breakwater to act as a sand trap and develop a north facing beach; and
-  The ability to construct the breakwater as a single stage independently of the onshore construction and the need to realign Cockburn Road.

Based on this initial assessment a minimum finished floor level of 2.5 m above AHD has been used for initial concept planning.

The LSP provides for public access to a large part of the breakwater with road access, turning nodes and parking. Two fishing jetty structures have been included in the plan and will be constructed to be suitable for disabled access and normal public use.




Coogee Beach will be maintained and a spur groyne on the breakwater will help minimise potential sand loss due to local rip currents and changes in wave dynamics. This is expected to result in sand deposition in the nearshore environment with subsequent return to the beach during north-westerly storms. The existing armour along the old Anchorage Butchers site will be removed and replaced to provide an engineered sloping revetment wall with access to the beach area to the south.

8.1.1 MARINA WORKS

Construction of the initial stage of the marina will be determined by the construction of the Marina Village to ensure proper management of the pens. The Marina shown has been planned to accommodate approximately 300 pens either floating or fixed construction. Staging would be related to demand.

8.1.2 COASTAL PROCESSES

The following presents a review of the available coastal engineering data for Owen Anchorage conducted by M P Rogers & Associates (1997). The review included:

-  Shoreline movement plans derived from aerial photographs between 1942 and 1994;
-  Beach profile surveys taken between 1976 and 1994; and
-  Aerial photographs taken for a variety of purposes.

Review and initial analysis of this information suggests that the Owen Anchorage shoreline is generally stable and is fed by significant amounts of sand from Success and Parmelia Banks. The work suggests that the typical onshore feed of sand from Success Bank is about 33,000 m³/year, and about 20,000 m³/year from Parmelia Bank. Subsequent data collected for Cockburn Cement Limited suggested that the long term rates are about 27,000 m³/yr from Success Bank and 13,000 m³/yr from Parmelia Bank. Once the sand reaches the shore in the vicinity of Catherine Point and Woodman Point respectively, it is moved along the shore by wave induced longshore drift.

A substantial portion of the sand from Success Bank is moved to the south. The groyne at Catherine Point, together with the breakwater at the South Fremantle Power Station, have restricted the movement of sand from Success Bank to the Port Coogee site and Coogee Beach. To the south, the WAPET Groyne has markedly altered the sediment transport dynamics at Woodman Point, and limited the natural feed of sand from Parmelia Bank to Coogee Beach.

The proposed breakwaters at Port Coogee should suffer little siltation problems while the Catherine Point Groyne and the Power Station structures continue to trap the sand from Success Bank. Once these sand traps are full, then sand would reach the proposed development. The proposed northern breakwater would be an effective and substantial trap for sand coming from Success Bank. The accumulation of sand in the area north of the breakwater will cause a significant beach and foreshore to form over a long period of years. It is unlikely that maintenance dredging would be needed for many decades.

The LSP shows beaches to the north and the south of the breakwaters. These beaches, accumulated over time, would provide excellent public recreational facilities.

A Construction Management Plan will require that existing man-made sea walls and revetments that are not removed as part of the development be either removed, rehabilitated or replaced to ensure the beach is safe and attractive. AHL will also investigate the possibility of removing the existing groyne in order to expand the area of beach currently available to the public south of the marina.

8.2 ROADS

8.2.1 ROAD SYSTEM

Cockburn Road is proposed to be realigned as part of the Fremantle-Rockingham PRR. The alignment adopted is the easternmost alignment developed by Main Roads WA during initial studies and provides an optimum grade separated crossing of the existing railway. North of the railway, a temporary diversion connects to the existing Cockburn Road.



The vertical alignment proposed suits the proposed development earthwork levels so that batters will not occur between the road and the development area. This may provide some ocean views and outlooks from the road and for one section an eastward aspect.

The existing Ocean Road will be slightly realigned to meet the proposed alignment and level.

The initial phase of construction is proposed to be the western carriageway of the ultimate dual carriageway. The road design is being prepared by Main Roads WA to its standard criteria.

As far as possible, it is proposed to stage the project to allow the existing Cockburn Road to be retained during the initial stages enabling construction of the realignment to be deferred and programmed into later stages. Cockburn Road will be maintained until realigned.

Main Roads WA has identified that the project could have up to two access points onto the future PRR, the southern most being south of the Ocean Road junction, and the second point being approximately midway between Ocean Road and the rail crossing. Both of these access points have been incorporated into the design, and form the primary entrances into the development.

The northern-most junction will ultimately form the main entrance into the project area, being relatively central to the whole estate, and providing a direct east-west linkage from the main district arterial road system through to the marina complex, with its associated tourist and commercial facilities.

The southern junction will provide a secondary entrance into the development, as well as marking the southern end of the primary north-south local distributor road through the estate. This road will provide a central spine, marking a physical division between canal and marina development to the west, and the dry land residential development to the east. It serves as the main link road between the local street and pedestrian system and the Marina Village. This road extends northward on the west side of the railway to meet with another local distributor road running alongside the railway reserve. That road, in turn, extends further northward beyond the project area, to eventually cross the railway line at a level crossing, to intersect with Cockburn Road.

The local road network has been designed with an objective of orienting lots to derive the maximum benefit from the marine views, whilst also recognising the importance of solar efficient design principles and other climatic conditions such as the strong prevailing sea breezes. The design has also been strongly influenced by the contours of the site.

The principles of the Liveable Neighbourhoods Community Design Code have been employed in the modified grid layout of streets and the pedestrian/cycle network. The layout, as a result, is highly permeable and connected with good legibility for both the local resident and visitor to the estate. Key destinations are linked together (e.g. roads and pathways link to the village centre, foreshores, possible future railway station, sea walls, marinas, etc).

The road system allows for direct linkages to the possible future rail station with the main north-south local distributor road providing direct connection between the notional rail station location and the Marina Village. The north south orientation of much of the local road pattern also provides clear and legible access through the local street system for both vehicles and pedestrians, to the rail station location.

The major vehicle, cycle and pedestrian movement system is shown in **Figure 5**.

The internal road system will be designed in accordance with normal subdivision requirements and to the City of Cockburn's standards, and in accordance with Liveable Neighbourhoods.

8.2.1.1 TRAFFIC VOLUMES

The main traffic movement is the north-south movement on Cockburn Road. This traffic movement will remain on the realigned Cockburn Road. The estimated 2021 traffic volumes on Cockburn Road, once the Port Coogee Local Structure Plan has been fully implemented, are about 21,000 vpd to 28,000 vpd.

Internally, traffic on the internal road network has a high level of connectivity, maintaining low traffic volumes on the residential streets. Generally, intersections will be sign controlled and complemented with differential pavement.

The main north-south connector and the east-west entry road are proposed to be dual carriageway roads providing a high level of traffic access to the development and the marina. The major intersections will be signalised, signed and treated to encourage slower speed traffic movements. These main links provide adequate capacity for the residential and marina traffic.

Main Roads WA has advised that installation of traffic signals at the northern access road, Pantheon Avenue / Cockburn Road intersection, is not required as part of the current Port Coogee development. Main Roads WA acknowledges that installation of traffic signals at this northern intersection may be required in the long term. As traffic modelling predicts this may be in excess of some 10 years time, Main Roads WA would treat the need at the time as business as usual, i.e. a need based and funded on standard road safety grounds at the time.

8.2.2 PEDESTRIAN AND DUAL USE PATHS

The development provides for the needs of various types of pedestrian and cyclist activities, through a tri-level pedestrian network. The pedestrian and dual use path (DUP) system is shown on the LSP (**Figure 9**).

The highest level of the network is the regional commuter system, which will follow the north-south road and the second level is the local commuter network, which essentially enables pedestrians and cyclists to travel between destination points within the estate, and to link with the regional commuter network. The local commuter network will primarily follow the main local distributor roads.

The third level is the recreational system, which provides for recreational pedestrians and cyclists. The emphasis, at this level, is to provide the user with an attractive route for riding or walking, taking the maximum advantage of the variety of visual and recreational experiences available throughout the estate, in particular the waterfront facilities, including boardwalks, promenades, developed parklands, the Marina Village, etc. and the Regional Open Space to the east of the Cockburn Road realignment.

Consistent with the Liveable Neighbourhoods principles, the permeable road system also serves to maximise the degree of legibility and connectivity for pedestrians throughout the entire estate.

Following discussions with MRWA, the originally proposed dual use path along Cockburn Road has been replaced with an enhanced path on the north-south road. This is because the profile of Cockburn Road is not conducive to regional commuting and space is limited in the MRS reserve. Regional cyclists who wish to use Cockburn Road are catered for by an on-road cycle lane in Cockburn Road.

Other paths will link east-west to the paths in the ROS. This will comprise an at-grade crossing at the main entry road and the main path crossing at the southern entry.



8.2.3 PUBLIC TRANSPORT

8.2.3.1 RAIL

As previously detailed, there is currently a freight rail system traversing the north of the site. Whilst there has been suggestion that this system may, at some stage in the future, accommodate pedestrian rail, the opportunity is at this stage remote.

8.2.3.2 BUS NETWORK

Discussions have been held with Transperth service planners to determine the potential bus routes within Port Coogee.





Transperth has advised it is keen to progress the introduction of bus services into the Port Coogee development once the road network is suitable for frequent bus movements. Ultimately, Transperth intends to operate the 825 bus service which is a regional route connecting Rockingham and Fremantle Stations. Transperth has advised it prefers to minimise buses making right turns onto main roads without the assistance of traffic signals. Accordingly, it is understood that Transperth will reroute the 825 bus service once traffic signals are constructed and functional at Cockburn Rd / Orsino Boulevard (the southern entrance). It is understood that MRWA will install the lights only after Pantheon Avenue is constructed.

It is also understood that Transperth does not require signals at Cockburn Rd / Pantheon Avenue to reroute services into Port Coogee (with a longer term upgrade likely by others once delays reach a point that they impact bus service operation).

8.2.3.3 PARKING

The primary objective of the project is to offer appropriate parking provision whilst avoiding the creation of expansive car parks along the beachfront.



Parking will be provided as follows:

-  Roads surrounding the public facilities (marina, beachfront, etc.) will all be designed with parallel parking or angled parking along the roadsides to provide maximum access to public facilities;
-  Areas of high usage such as the seawall/breakwater entries and areas for fishing and disabled access will be provided with dedicated car parks;
-  Additional parking areas will be discreetly located behind buildings or above or below ground within the Marina Village for easy access to the restaurants, tourist and retail facilities and the marina waterfront.
-  Sufficient parking is available to meet the marina and parking requirements as demonstrated in the Port Coogee Transport Report (subject to separate approval).

A comprehensive Transport Report has been prepared separately for Port Coogee. The following parking requirements identified in the Port Coogee Transport Report apply to development within the Port Coogee Marina Village Precinct.

RESIDENTIAL PARKING

In accordance with the RD Codes, unless otherwise specified below:

-  Up to 50% of the visitor parking requirement shall be allowed to be provided off site (within public parking areas) subject to demonstrated availability.
-  In the case of 1 bedroom dwellings the parking requirement is to be calculated at a ratio of: 1 bay per 1 bedroom dwelling plus visitor parking at 10% of number of dwellings.

Note: The parking requirements for residential development may be subject to further detailed investigation via the built form codes and/or local development plans.

Retail:	1 bay per 18.75 m ² NLA
Commercial:	1 bay per 30 m ² NLA
Food and Beverage:	1 bay per 8.5 m ² seating area
Hotel (Accommodation):	1 bay per room
Community:	1 bay per 50 m ²
Boat:	1 bay per 4 pens
General Parking:	A total of 50 parking bays are required to be provided within the 'public parking areas' for general visitor use.

Notes:

1. Parking requirements to provide for specific development proposals will be calculated at each DA stage based on the ratios outlined above unless otherwise approved by Council following further detailed parking analysis.
2. Parking for non residential uses will be provided within 'public parking areas' on public and private land as shown on the indicative public parking supply plan (Figure 4.1) within the Port Coogee Transport Report. Parking requirements shall be allowed to be provided off site subject to demonstrated availability. In accordance with the Port Coogee Transport Report, public parking locations will be subject to more detailed planning under a future Parking Management Plan.
3. Where a proposed development does not provide its entire parking requirement on site, the Application for Approval to Commence Development is to be accompanied by a Parking Plan based on the Port Coogee Transport Report showing the location of off-site parking for the development (either temporary or permanent).
4. As noted in the Port Coogee Transport Report, the above parking ratios represent a conservative approach to the provision of parking. That is; in all probability, the parking proposed is more than is likely to be required in a centre of this type.

BOAT PEN PARKING

Boat pen parking will be provided on the southernmost 'island' (Stage 5) at a rate demonstrated in the Port Coogee Transport Report, and not exceeding 23 bays. Public parking areas will be provided and access to public



pens will be available via the pedestrian access ways. Car bays are to be in close proximity to the public boat pens and universally accessible in accordance with current industry standards.

8.2.4 UNIVERSAL ACCESS ARRANGEMENTS

Whilst natural beaches are a popular recreational feature, they tend to be a difficult environment to access for people with a disability, particularly for wheelchair users. There are few opportunities along the metropolitan coastline where close access to the waterfront (beaches or otherwise) is available for wheelchair users.

The proposed treatment of Port Coogee offers opportunities to provide universal access to all of the various waterfront experiences, including Coogee Beach, linear waterfront parkland, boardwalks, promenades and jetties around the marina, and fishing platforms along the breakwaters.

8.3 WATER SUPPLY

Proposed services are shown in **Figure 13**. The development area is situated at the north-western extremity of the Thomsons Lake Water Supply Scheme. An investigation of this scheme has been carried out by the Water Corporation to establish the extent of upgrading and augmentation required to provide an adequate water supply for future development of western portions of the scheme. The study was based on current MRS zonings (i.e. Industrial, Parks and Recreation).

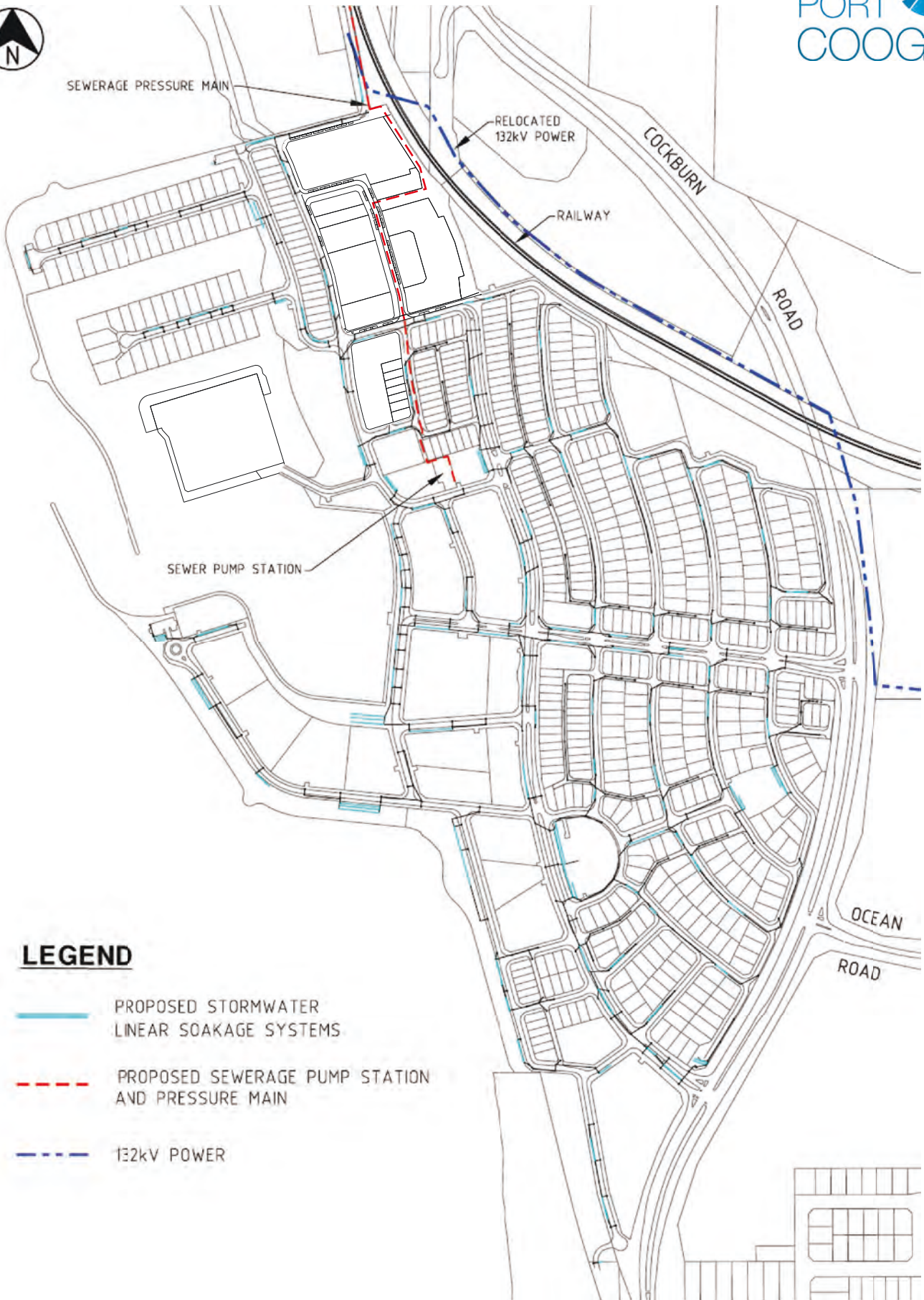
The existing 225 mm diameter water main along Cockburn Road is proposed to be replaced by an equivalent buried main located in the proposed road reserves through the estate. Where the water main is located within Public Open Space an easement will be provided. The main has limited, if any, capacity to provide service and is not proposed to be used for supply except in an early stage as an interim supply.

The proposed water supply will be provided by a mains extension of 600 mm diameter and 300 mm diameter in Hamilton Road and Ocean Road which is occurring in the adjoining Packham development. The main will be extended westwards in Ocean Road and the estate serviced by a water reticulation system. The system will be constructed to Water Corporation criteria.

8.4 WASTEWATER DISPOSAL

Currently the area is not served by a reticulated sewerage disposal system. The development will require a permanent sewerage pump station with emergency storage. The pump station will have discharge pressure main extending north to Robb Road discharging into the Water Corporation's gravity system.

The existing pressure main from the pump station to the north will be relocated from along Cockburn Road and Ahoy Road to road reserves in the future development. Where the sewer pressure main is located within Public Open Space an easement will be provided. It is not proposed to relocate the deep section east of Ahoy Road, through the coastal ridge and the proposed entry road to the estate has been aligned to include this section of the pressure main in the road reserve.



LEGEND

- PROPOSED STORMWATER LINEAR SOAKAGE SYSTEMS
- - - PROPOSED SEWERAGE PUMP STATION AND PRESSURE MAIN
- - - 132kV POWER

Source : SINCLAIR KNIGHT MERZ

Proposed Services





8.5 POWER SUPPLY

The 132 kV power lines traverse the northern boundary of the site. Depending on how the project is staged, the relocation of these power lines could be early or late in the development of the project. In any event, it is proposed to relocate the 132 kV power lines to reduce the impact on the project.

Advice from Western Power is that it is not opposed to a relocation of the 132 kV power lines. The alignment for the relocated power lines has been discussed with WAPC, LandCorp and MRWA and an alignment north of the railway secured.

Relocation of the 132 kV power line is also impacted by the construction of the PRR as one of the towers is inside the PRR reserve. The construction at the PRR will be the significant factor in the timing of the power line relocation.

In addition to the above, there are also 22 kV overhead power lines in Cockburn Road and Ocean Road and these will be replaced with the underground power system.

8.6 TELECOMMUNICATIONS

Telstra has indicated that a new off-site cable would be required to connect the development to the telephone exchange in Mell Road.







8.7 GAS

Alinta Gas has indicated that the proposed development could be supplied and reticulated with a gas service.




8.8 EARTHWORKS/SITWORKS

Figure 14 identifies proposed earthworks.

Various studies to date have been undertaken to determine:

-  Soil and rock profiles (onshore & offshore);
-  Excavatibility of limestone rock;
-  The extent and nature of non-engineering fill;
-  The strength of limestone rock and the potential for caverns;
-  Foundation conditions for the breakwater; and
-  Sources of fill material including general fill, breakwater core, light armour and breakwater armour.

The results of the studies show a thin sand bed of less than 500 mm overlies limestone rock offshore in the area for breakwater construction. Onshore the depth of sand over rock is highly variable. Sand and limestone/sand gravel overlies limestone rock of variable strength. The limestone is highly variable and occurs in three main forms all within the Tamala limestone unit:

-  Unit 1 - Lime sand
-  Unit 2 - Low to medium strength limestone
-  Unit 3 - Low to high strength limestone caprock



Proposed Earthworks









All material can be excavated with D9 Caterpillar or greater ripping capability.

There is a possibility that rock for light armour and core material for the breakwater can be obtained from the site and the existing sea wall at the Anchorage Butchers site. This will be determined in future geotechnical investigations. Core and armour material for the breakwaters will otherwise be imported from local quarries. During the borehole investigation no significant cavities were intersected although drilling fluid loss occurred in some drill holes.

Interpretations made of limestone permeability show very high permeability which suggests the likelihood of voids in the limestone. The voids are most likely associated with groundwater flow, and as a result will be primarily below the water table.

The LSP proposes no excavation inshore for the current development concept. It requires the cut to fill of approximately 1.5 million m³ of material with some 1.13 million m³ being required for reclamation to create the offshore land. Preliminary design indicates it is possible to achieve a cut to fill balance. It is expected that topsoil will be imported due to a lack of significant volumes available from the site.

The proposed construction methodology is as follows:

-  Following construction of the breakwaters, establish a silt curtain at the entrance to the harbour. The construction of the breakwaters is proposed in a sequential methodology with the northern breakwater being constructed first;
-  Reclamation would be undertaken with earthworks from the site in conjunction with the various earthworks stages. Earthworks would be achieved by ripping and transporting to the fill face in open bowl scrapers. The material would then be pushed out using dozer to an approximate level of 0.5 to 1.0 AHD. Initial compaction at this level would be undertaken using High Impact Energy Compaction (HIEC) rollers;
-  The balance of the fill would be placed and compacted in lifts. If satisfactory compaction is not achieved at lower levels surcharging would be used to achieve the required compaction; and
-  The edge treatment would be placed after trimming of the batters and excavation above RL-3.0 AHD.

The LSP enables the retention of Cockburn Road for some period of time during which construction of the early stages of the subdivision can be completed along with the construction of the breakwaters and offshore reclaimed land. To provide access for reclamation work, it is proposed to provide a temporary diversion of Cockburn Road with a haul road underpass which will safely maintain existing traffic flows.

The LSP also shows residential construction on reclaimed land adjacent to the breakwater. Key planning issues associated with this construction are seawater overtopping of the breakwater and geotechnical stability for construction on the reclaimed land.

The seawater overtopping is based on criteria requirements of the DPI. Both this issue and the need for geotechnical stability have led to a requirement for the boundaries of any construction to be a minimum of 40 m from the seaward edge at the top of the breakwater. In certain zones the height of the breakwater may be raised to provide additional protection.

Onshore earthworks will use a stepped lot system to create subdivision lots with optimised views and relative ease of residential construction. Marina lots will be established with a minimum level at RL 2.5 m AHD. Variations in level will be used to alleviate a “flat” appearance.

8.9 STORMWATER MANAGEMENT

The City of Cockburn has advised that no stormwater discharge to the ocean is permitted, therefore disposal by soakage on site is proposed.







A Stormwater and Nutrient Management Plan has been submitted to the City of Cockburn and accepted in principle. The key objective is the maximisation of Water Sensitive Urban Design principles.

Stormwater run-off will be managed by a piped system using gullies, pits and soakage structures. The proposed system will allow for a combined system of maximum soakage and retention on site to accommodate up to the 1 in 10 year average recurrence interval (ARI) storm. Peak flows for the 1 in 100 year ARI storm will be managed by overland flow paths along roads and over public open space.

The soakage structures are proposed to be underground for both aesthetic and space utilisation reasons. The types of structures will vary from Atlantis Cells through to underground concrete elements for soakage and detention.

8.10 SERVICING RELOCATIONS

The development of Port Coogee will require the relocation of all the trunk services currently traversing the site including:

-  A 150 diameter high pressure gas main in Cockburn and Ocean Roads and a 100 diameter high pressure and gas main in Cockburn Road south of Ocean Road;
-  Western Power 22 kV power lines in Cockburn and Ocean Roads;
-  A 225 mm diameter Water Corporation water main in Cockburn Road;
-  A sewer pressure main in Cockburn and Ahoy Roads
-  Western Power 132 kV power line in the north east corner of the site; and
-  Implementation.

8.11 METROPOLITAN REGION SCHEME

The Metropolitan Region Scheme Amendment to rezone the land the subject of the Port Coogee development to 'Urban' and also to realign the Cockburn Road PRR Reserve to follow the proposed new alignment, has been gazetted.

8.12 MUNICIPAL BOUNDARY

The City of Cockburn Municipal boundary has been modified to reflect the Development Area.

8.13 LOCAL STRUCTURE PLAN

The original approved LSP was dated April 2004. Since that time several revisions have been undertaken to the LSP. This LSP presents a further revision to the LSP approved by the City of Cockburn in February 2015.



8.14 SUBDIVISION

Following finalisation of the MRS Amendment, Scheme Amendment and adoption of the original LSP, subdivision applications were lodged with the WAPC and approved over the entire estate. Since that time, subdivision applications have been progressively lodged and approved.

8.15 RELATIONSHIP TO LIVEABLE NEIGHBOURHOODS COMMUNITY DESIGN CODE

The Port Coogee LSP is submitted for consideration under the Liveable Neighbourhoods Community Design Code.

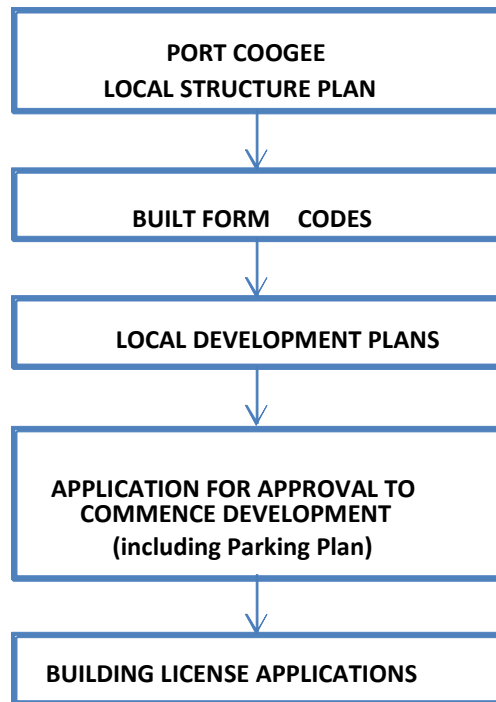
8.16 ROAD CLOSURES

There were a number of public road reserves within the Study Area required to facilitate the development of Port Coogee. All roads requiring closure, other than Cockburn Road and Kiesey Street, have now been closed.

The DPI, City of Cockburn and Department of Land Administration will progress these closures at the appropriate stage.

9 MARINA VILLAGE INDICATIVE IMPLEMENTATION SCHEDULE

The following flowchart provides an indicative schedule of the process required to implement the development of the Marina Village Precinct of the LSP.



Note:

Where a proposed development does not provide its entire parking requirement on site, the Application for Approval to Commence Development is to be accompanied by a Parking Plan based on the Port Coogee Transport Report showing the location of off-site parking for the development (either temporary or permanent).



10 CONCLUSION

The Port Coogee project has been the subject of considerable discussion and consultation over a protracted period; and over that time, the development concept has undergone various changes in design and direction. The LSP design has evolved as a result of the extensive consultative process with the State Government planning, environmental and servicing agencies, the local authority and local community representatives.

The LSP reflects the emphasis towards minimising impact upon the existing public assets within the project area, whilst still offering unique and diverse new opportunities and experiences for the enjoyment of the general public.

The extensive research and consultation that has been undertaken in association with the various design concepts leading to the current proposal means that the concept is supported by a thorough and comprehensive information base. This includes the extensive and rigorous environmental assessment that has been undertaken during the course of the formal environmental assessment process associated with the MRS Amendment proposal.

The LSP provides a clear guide to the development of Port Coogee. The revised LSP reflects the refinement of the design, whilst still being consistent with the principles of the previously approved LSP.