

LOCAL STRUCTURE PLAN

east two rocks

PART TWO
EXPLANATORY REPORT
JUNE 2012



EAST TWO ROCKS
LOCAL STRUCTURE PLAN

Part Two – Explanatory Report

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EXECUTIVE SUMMARY

The East Two Rocks Local Structure Plan (LSP) allows for the creation of a diverse and vibrant community within a setting that recognises key elements of the unique natural landscape and vegetation features in open space corridors.

The Local Structure Plan area encompasses approximately 545ha, being all of Lot 204 Breakwater Drive, owned by Atlantis Cove Pty Ltd. The LSP area is zoned for development, being Urban under the MRS and Urban Development under the City's District Planning Scheme No. 2.

The LSP area is covered by the approved Yanchep – Two Rocks District Structure Plan (DSP), which provides the framework for further detailed local planning. The DSP shows the following broad land use elements over the LSP area and surrounding locality.

- **Centres** - The DSP provides for a Secondary Centre of 130,000m² commercial floorspace, a significant portion of which is located within the boundary of lot 204. In addition, the DSP provides for a Neighbourhood Centre in the south east of the LSP area, and a Neighbourhood Centre to the north of the LSP area. The centres will provide nodes for local employment, as well as a range of services and infrastructure to service the surrounding communities. The Secondary Centre is identified as "Two Rocks Secondary Centre" in State Planning Policy 4.2. In order to remain consistent with the approved statutory framework provided by the DSP, the centre is referred to as the Two Rocks Secondary Centre throughout the Structure Plan.
- **Transport Network** - The DSP provides an indicative permeable neighbourhood connector grid over the site with connections to the future freeway to the east, via Breakwater Drive, and a coastal connection to the west. A mixed use transit corridor traverses the Two Rocks Secondary Centre on a north-south axis, and provides a transit corridor connecting to the northernmost activity centre and Yanchep City Centre. The DSP recognises that this transit corridor could be a bus route in the short term and possibly upgraded to a light rail system between the two main centres, with feeder bus routes connecting from the Two Rocks Secondary Centre.
- **Residential** - The balance of the LSP area is identified as Residential with a base density of 10 dwelling units per hectare. The DSP prescribes an increase in density for those areas within close proximity to activity centres, and other areas of high amenity.
- **Linkages** - The DSP shows indicative Social/Pedestrian/Cycle linkages traversing the LSP area, linking coastal areas and Bush Forever reserves to the north and east.

- Schools - While the DSP does not allocate any high schools or district level community infrastructure to the LSP area, there is an opportunity to provide neighbourhood and local level community facilities, and four primary schools to compliment the district and regional community infrastructure contemplated by the DSP.
- Surrounding Land Uses - The DSP identifies an industrial employment node to the south of the Breakwater Drive Neighbourhood Centre, providing opportunities for increased employment self sufficiency for the LSP area. A tertiary institution and high school adjoin the Two Rocks Secondary Centre to the south, with the tertiary institution separated from the industrial precinct to the east by a regional open space reserve.

The plan allows for the creation of approximately 7,500 dwellings over approximately 545 hectares located between Breakwater Drive and Wilbinga Nature Reserve to the east of Two Rocks town site. In accordance with the DSP, the plan sets aside approximately 34 hectares of land for a Town Centre (identified as Two Rocks North Secondary Centre in SPP4.2), as well as allowing for two Neighbourhood Centres and two Local Centres, creating a range of commercial and other non residential land uses.

The plan allows for environmentally responsive design recognising the natural topography of Lot 204 to create four separate residential neighbourhoods, each serviced by a primary school, substantial passive and active public open space, and a neighbourhood and/or local centre. Each neighbourhood is connected to the Two Rocks Secondary Centre via a permeable road network, creating opportunities for strong public transport and pedestrian/cycle linkages throughout.

Overall the plan allows for the recognition of approximately 50 hectares of strategic public open space, achieving an ideal balance between useable passive and active open space, as well as recognition of key landforms, significant vegetation and drainage requirements within public open space reserves. The public open space also creates the opportunity to provide pedestrian and cycle connections into the adjoining conservation areas to the north and east, linking to the Secondary Centre in the south west corner of the LSP area.

A full land use allocation is set out in Table 1.

The LSP provides an opportunity to manage the interface to the Bush Forever reserves via a road interface, a series of controlled access points, and linkages through public open space connecting to the bush reserves.

Once developed, Lot 204 will meet the DSP and City of Wanneroo housing density, diversity, and affordability targets through housing choice and a variety of lot product. Consistent with the DSP, higher density housing options will be located around the Secondary and Neighbourhood Centres, and key areas of public open space. The plan is entirely consistent with the DSP density targets.

Lot 204 will deliver new community and service infrastructure in strategic locations, while local employment opportunities will be generated by the Two Rocks Secondary Centre and other activity centres as per the DSP, as well as the planned industrial precinct to the south of Breakwater Drive.

The LSP demonstrates a clear and legible hierarchy of roads that is consistent with the DSP, and provides permeable east-west and north-south connections via a series of district and local distributors providing future connections to the landholdings to the west and south of Lot 204.

The Deed in Relation to Infrastructure Contributions, Land Vesting and Road Construction Yanchep – Two Rocks provides the mechanism through which additional roads and infrastructure will be funded. It also determines the timing of such road and other infrastructure construction in line with development progressing.

The LSP creates the framework for a future stand-alone Centre Plan to refine the detail of land use planning within the Two Rocks Secondary Centre at a later stage, when delivery of the Centre is imminent. Once completed, the Centre Plan will integrate with adjoining landholdings to ensure a comprehensive and coordinated plan for the Two Rocks Secondary Centre.

As part of the preparation of the LSP, and in accordance with the DSP and Ministerial Statement 538, the following reports, assessments and management plans have been prepared, and are provided in Parts 2 and 3.

1. Environmental Assessment Report including Vegetation Management Strategy, and Fauna Management Strategy
2. Transport and Access Strategy
3. Economic & Employment Strategy
4. Housing Strategy
5. Local Water Management Strategy
6. Landscape Concept Plan and Open Space Strategy
7. Servicing and Infrastructure Report
8. Community Development Strategy

These reports demonstrate that the LSP comprehensively addresses environmental, social, economic and infrastructure considerations outlined in the Yanchep – Two Rocks DSP.

TABLE 1: Land Allocation Table

Gross Local Structure Plan Area (ha)	545 ha
Residential <ul style="list-style-type: none"> Gross Area (ha) R-Coding Estimated Yield 	470 ha R30-R60 5,900 - 6,200 lots
Mixed Use Frame <ul style="list-style-type: none"> Gross Area (ha) R-Coding Estimated Yield 	18 ha R80-R160 700 – 1,700 dwellings
Strategic Public Open Space	50 ha
Primary Schools (ha)	9 ha
Two Rocks Secondary Centre <ul style="list-style-type: none"> Area* Maximum retail NLA (m²)** Mix of Land Uses (m²)** Jobs** 	34 ha 43,700 86,892 4,139
Northern Neighbourhood Centre <ul style="list-style-type: none"> Area Maximum retail NLA (m²) Mix of Land Uses (m²) 	2 ha 2,100 2,809
Eastern Neighbourhood Centre <ul style="list-style-type: none"> Area Maximum retail NLA (m²) Mix of Land Uses (m²) 	2 ha 6,100*** 4,440
Local Centres	2 ha
Estimated Total Population	17,000 – 18,000
Estimated Total Employment (jobs)	5,924

* Includes only the portion of the Centre located within Lot 204. Total Centre area to be confirmed as part of subsequent structure planning

** Estimates based on entire Two Rocks Secondary Centre area as per Table i of Yanchep – Two Rocks DSP

*** Includes portion of Neighbourhood centre located to the south of Breakwater Drive

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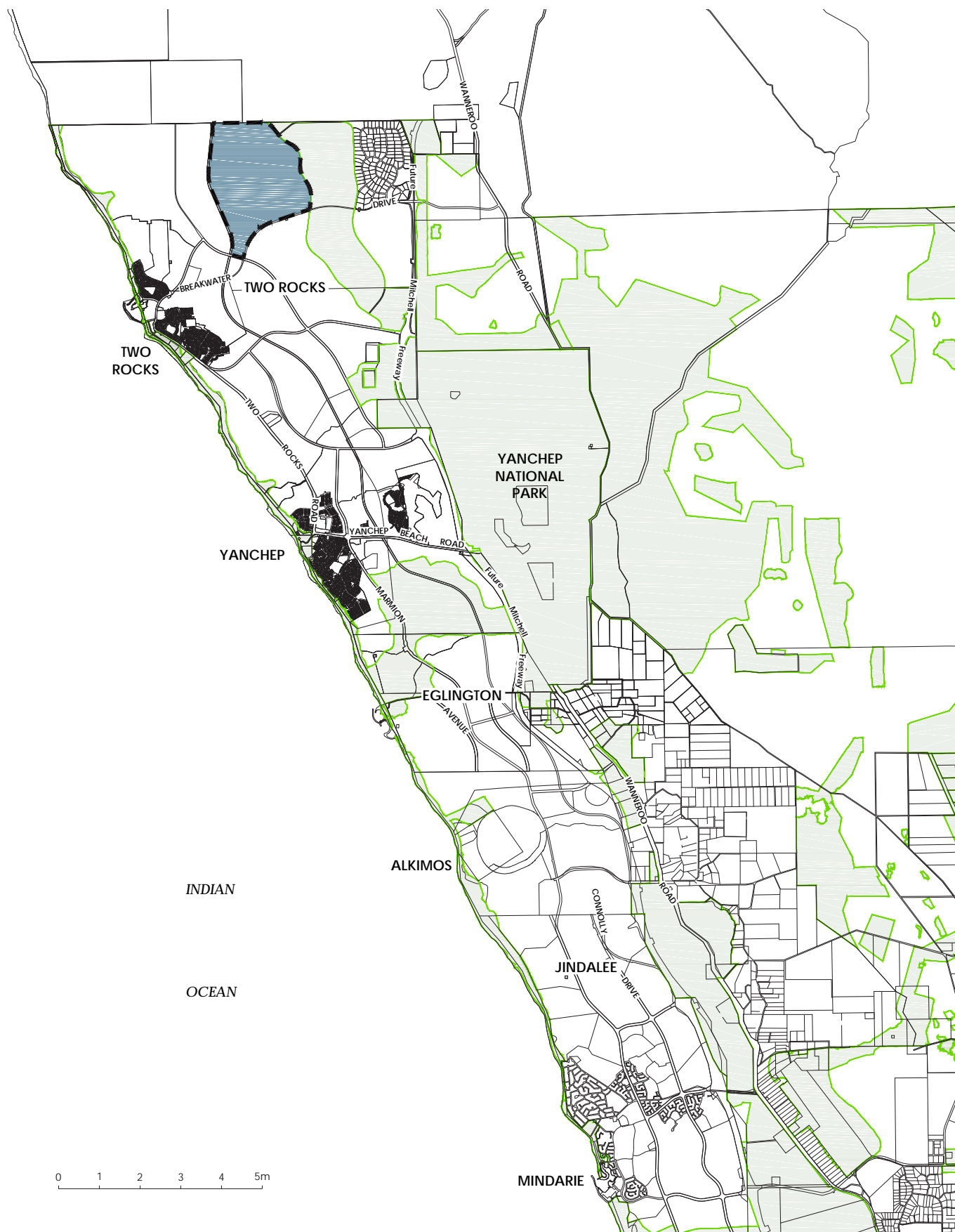
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TECHNICAL APPENDICES

1. Environmental Assessment Report - PGV Environmental
2. Traffic and Movement Network Strategy - Bruce Aulabaugh
3. Transport & Access Strategy - Sinclair Knight Merz
4. Landscape Concept Plan & Descriptions - Plan E
5. Economic & Employment Analysis & Strategy - Shrapnel Urban Planning
6. Local Water Management Strategy - PGV Environmental
7. Community Development Plan - Capire Consulting Group
8. Bush Fire Management Strategy - Fireplan WA
9. Engineering Service and Infrastructure Strategy - Serling Consulting



LOCATION PLAN

PART ONE: BACKGROUND & PLANNING CONTEXT

1.0 INTRODUCTION

The Two Rocks East Local Structure Plan (LSP) is lodged on behalf of the landowner Atlantis Cove Pty Ltd, pursuant to City of Wanneroo District Planning Scheme No 2 (DPS2).

The purpose of this LSP is to refine the level of planning detail provided in the Yanchep-Two Rocks District Structure Plan (DSP) and to enable future subdivision and development. The LSP draws on the key elements of the DSP, while insuring that all environmental, social, economic and infrastructure issues are comprehensively addressed.

The LSP allows for the creation of approximately 7,500 dwellings over approximately 545 ha, and includes provision for a Secondary Centre, two Neighbourhood Centres, two Local Centres, four primary schools, and a comprehensive network of active and passive public open space. The LSP provides the framework for a future Centre Plan to further refine the level of planning detail for the Secondary Centre.

The structure and format of this LSP provides a framework for future subdivision and development consistent with, and implementing the objectives and strategies of, the Yanchep – Two Rocks DSP, and the City’s Structure Plan policy.

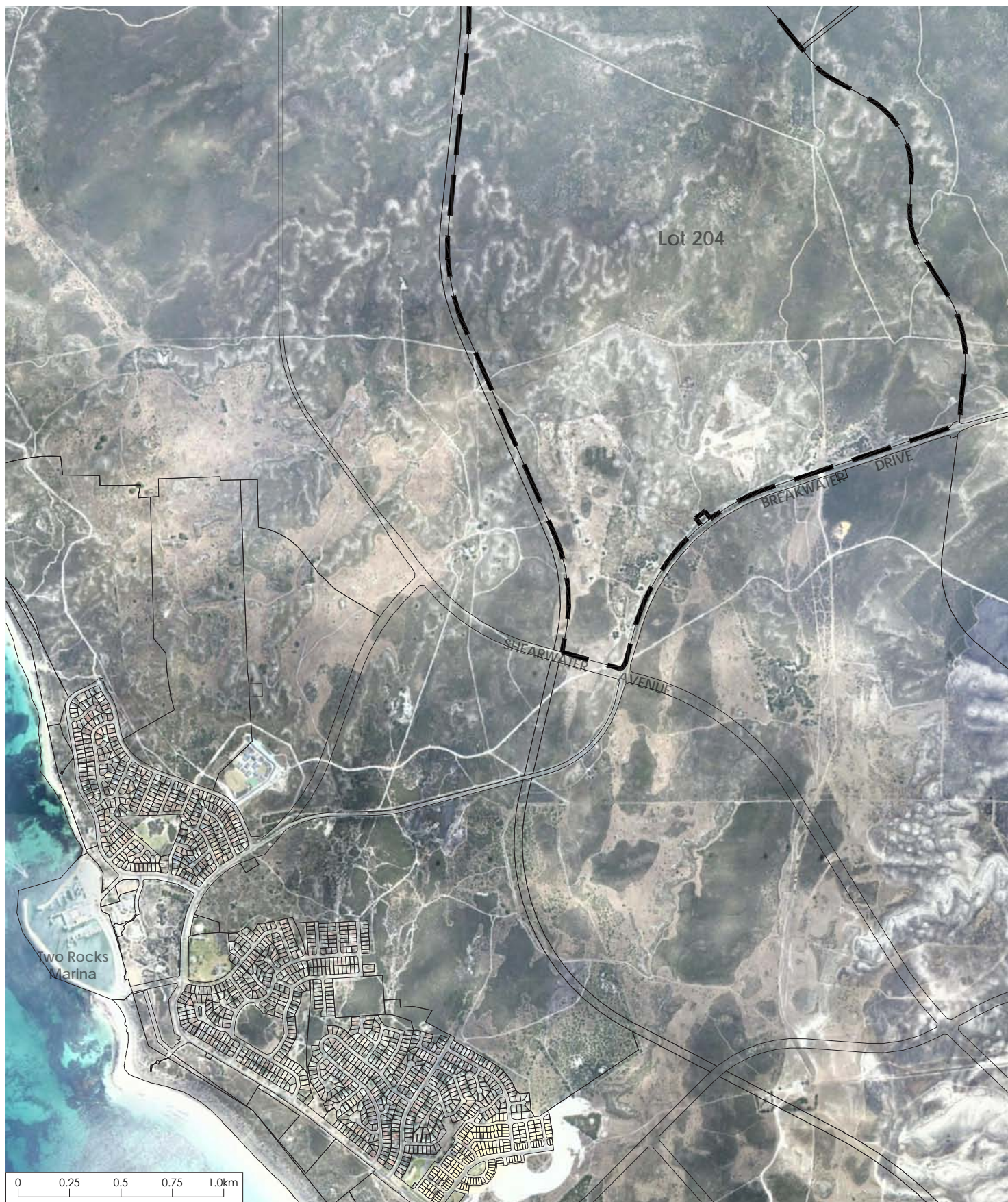
This Report comprises three sections, consistent with the City of Wanneroo’s Local Planning Policy 4.2 - Structure Planning:

- Part 1 – Statutory Section
- Part 2 – Explanatory Report
- Part 3 – Technical Appendices

The Part 1 Statutory Section contains clear, measurable, defined provisions to implement the Explanatory Report outcomes at future stages. These provisions are to be given the force and effect of the Scheme, pursuant to DPS 2 Cl. 9.8.2. The framework for these provisions is derived from existing statutory documents, including the DSP, District Planning Scheme and Residential Design Codes. Part 1 contains the Agreed Local Structure Plan, Zoning Plan and Residential Density Range Map and is consistent with the framework prescribed in the City’s Structure Plan Policy.

The Part 2 Explanatory Report distils the key outcomes and planning implications of the background reports and investigations under the headings of the DSP Elements, to deliver an implementation framework. The Part 2 Explanatory Report uses the same headings as the DSP to ensure consistency and ease of assessment.

- Ecology and landscape (section 8)
- Public realm and open space (section 9)
- Urban structure and built environment (section 10)



- Transport and access (section 11)
- Economy, employment and activity centres (section 12)
- Community development (section 13)
- Resources, infrastructure and services (section 14)

A table is provided at the beginning of each section to demonstrate compliance with the DSP objectives and strategies, as well as referencing the relevant sections of the LSP that respond to the objective or strategy.

Part 2 is based on a detailed site specific analysis of opportunities and constraints and the following technical reports and strategies:

- Environmental Assessment Report, including Vegetation Management Strategy and Fauna Management Strategy
- Transport & Access Strategy
- Landscape Concept Plan and Descriptions
- Open Space Strategy
- Housing Strategy
- Economic & Employment Analysis & Strategy
- Community Development Strategy
- Local Water Management Strategy
- Servicing and Infrastructure Strategy

Preparation of this LSP has involved extensive consultation with the City, Department of Planning, Department of Education, Public Transport Authority and relevant service authorities in accordance with the City's Structure Plan Policy.

1.1 Site Overview

The LSP area encompasses 544.51ha, comprising all of Lot 204 Breakwater Drive, Two Rocks.

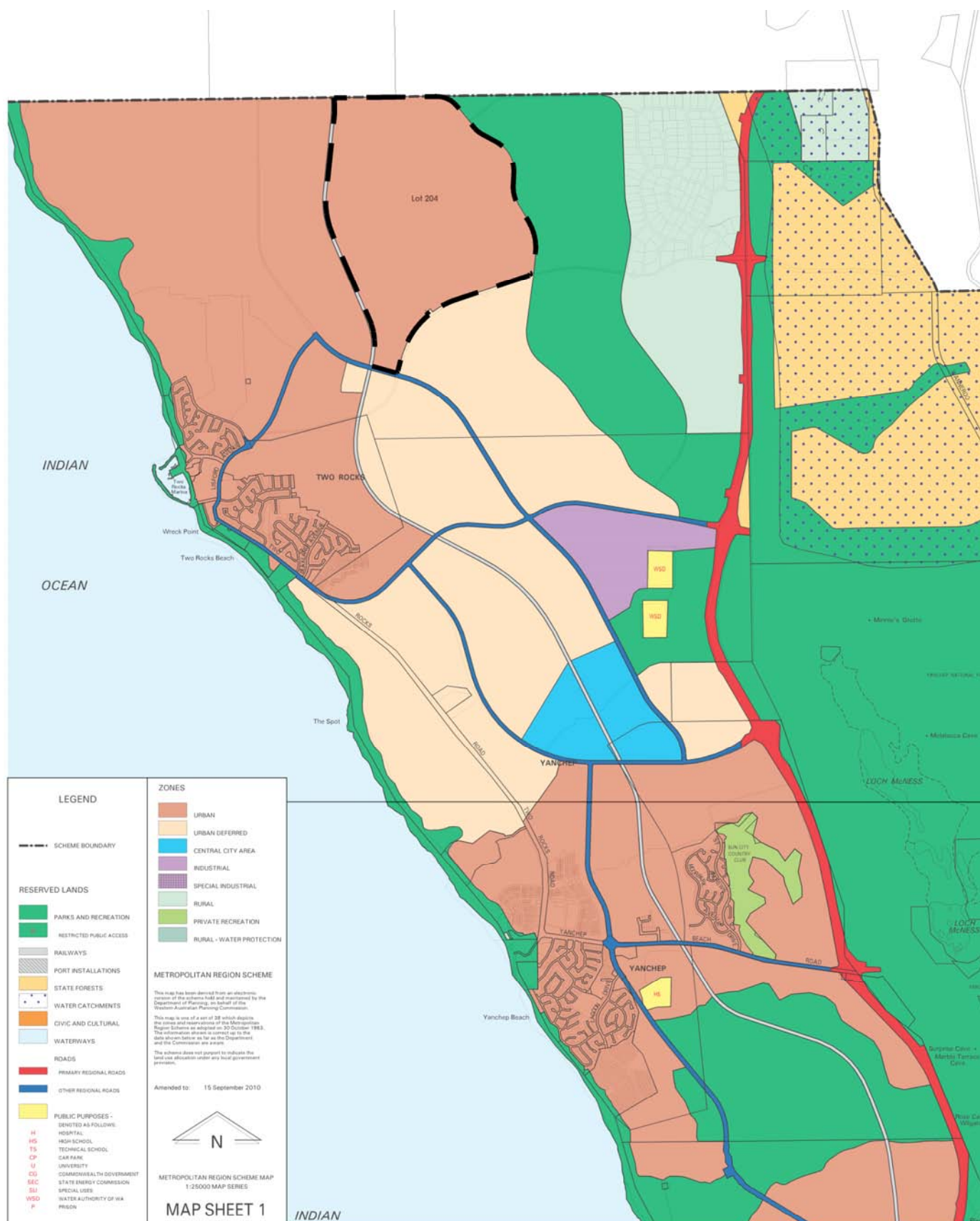
Lot 204 Breakwater Drive is located in the North-West Corridor of the Perth Metropolitan Region, approximately 54km north of the Perth CBD, refer figure 1, and 7km from the Yanchep - Two Rocks City Centre, identified as a future Strategic Metropolitan Centre in SPP 4.2. Lot 204 is located in proximity to:

- Joondalup City Centre - 30km
- Alkimos city centre - 15km

Lot 204 sits north of Breakwater Drive and slightly north and east of the Two Rocks townsite. On its western boundary is the existing Rail Reserve (use to be determined), with a Regional Park reservation to the east (Bush Forever site No.284). The lot sits at the northern boundary of the Metropolitan Region Scheme area, with the Wilbinga Nature Reserve (Bush Forever site 406) to the north, providing opportunities for improvements to managed access and interface to the adjoining regional open space. Lot 204 is located approximately 3km from the coast and the Two Rocks marina, providing opportunities

LOCAL STRUCTURE PLAN

east two rocks



METROPOLITAN REGION SCHEME ZONING MAP

to allow for permeable pedestrian, cycle and traffic networks connecting Lot 204 to the coastal activity areas.

Lot 204 is undeveloped, consisting of coastal dune formation and coastal vegetation typical of the area, refer figure 2. The land is highly suitable for urban development, possessing free draining sandy soils, and only limited vegetation worthy of conservation, while providing a unique opportunity to prepare an environmentally responsive plan incorporating topographical and vegetation features into POS reserves throughout the site.

1.2 Planning Context

1.2.1 Metropolitan Region Scheme

The LSP area is zoned Urban under the Metropolitan Region Scheme (MRS) and is bound by the following MRS reserves, refer figure 3.

- An Other Regional Road reserve to the south (Shearwater Avenue)
- Parks and Recreation reserve to the east (Bush Forever site 284)
- Railways reserve on the western boundary

The land to the north of Lot 204 is a nature reserve and is identified as Bush Forever Site 406. The land to the south-east, south, and south-west is zoned Urban Deferred, while the land immediately to the west of the rail reserve is zoned Urban.

1.2.2 City of Wanneroo District Planning Scheme No.2

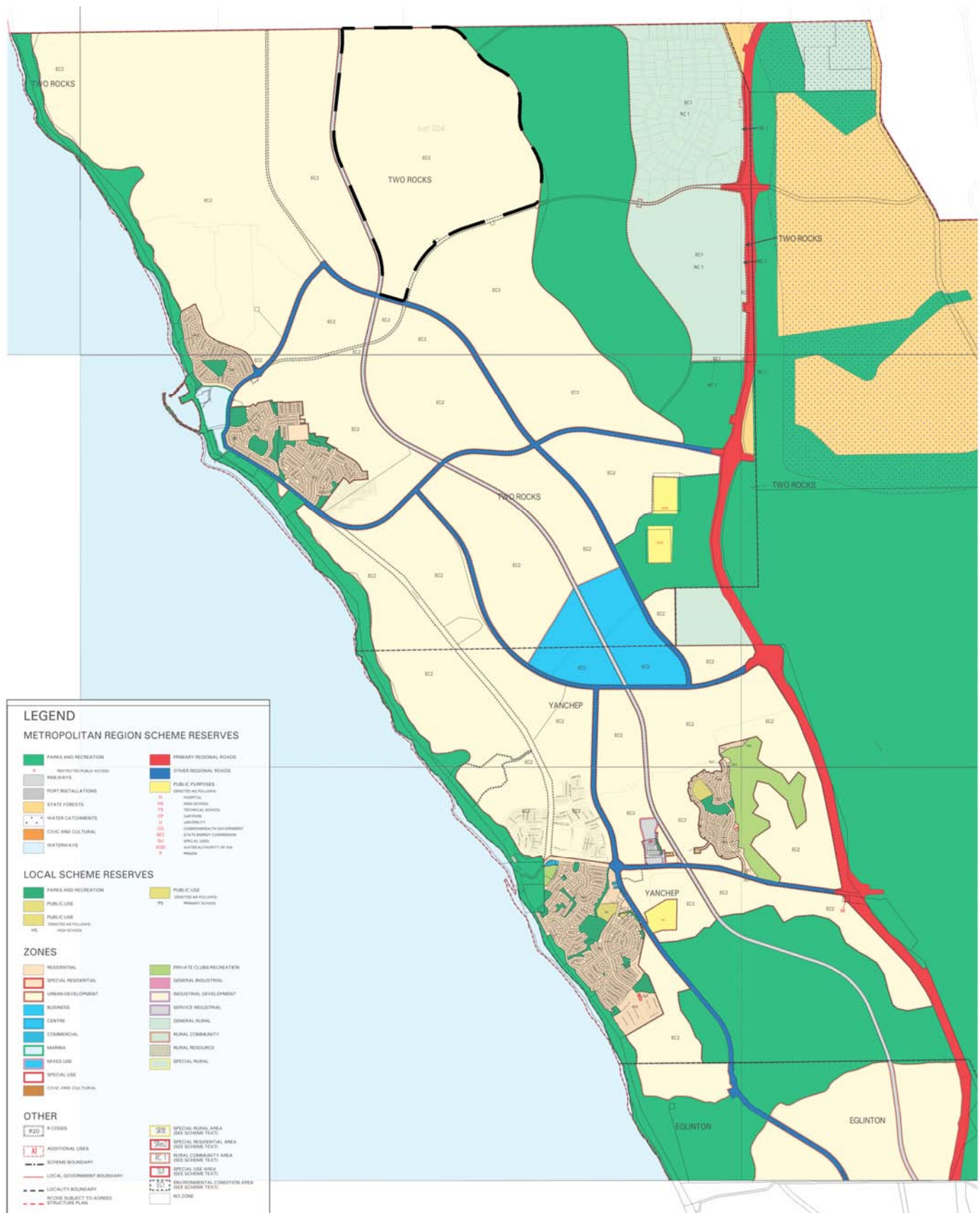
The LSP area is zoned Urban Development under the City of Wanneroo District Planning Scheme No. 2 (DPS 2), refer figure 4. Pursuant to Clause 3.14.2 the objectives of the Urban Development zone are to:

- designate land for future urban development;
- provide for orderly and proper planning of large areas of land for residential and associated purposes through a comprehensive structure planning process;
- enable planning to be flexible and responsive to changing circumstances throughout the development stages of the area.

This LSP is lodged pursuant to Clause 9.11 of DPS 2, where an agreed Structure Plan is required prior to subdivision or development. Pursuant to Clause 9.8.3 of DPS 2, Part 1 of this LSP shall be given the force and effect of the Scheme.

1.2.3 Town Planning Scheme No. 1 Environmental Assessment

The Yanchep Two Rocks District Structure Plan area, including Lot 204, was subject to an environmental assessment as part of Amendment 787 to Town Planning Scheme No. 1 which, amongst other things, rezoned the District Structure Plan area to Urban Development. The Minister for the Environment released Statement 538 containing conditions for implementation of the proposal on 15 February 2000; the conditions are contained in Schedule 12 of DPS 2. This assessment remains valid and is the basis for



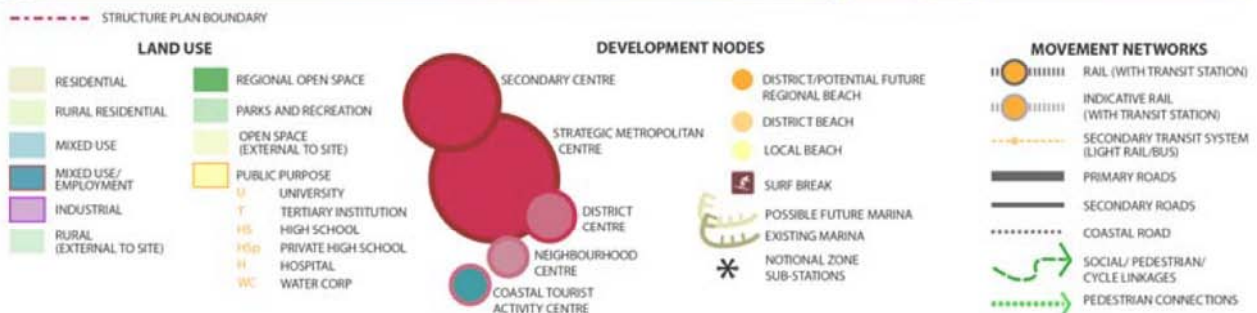
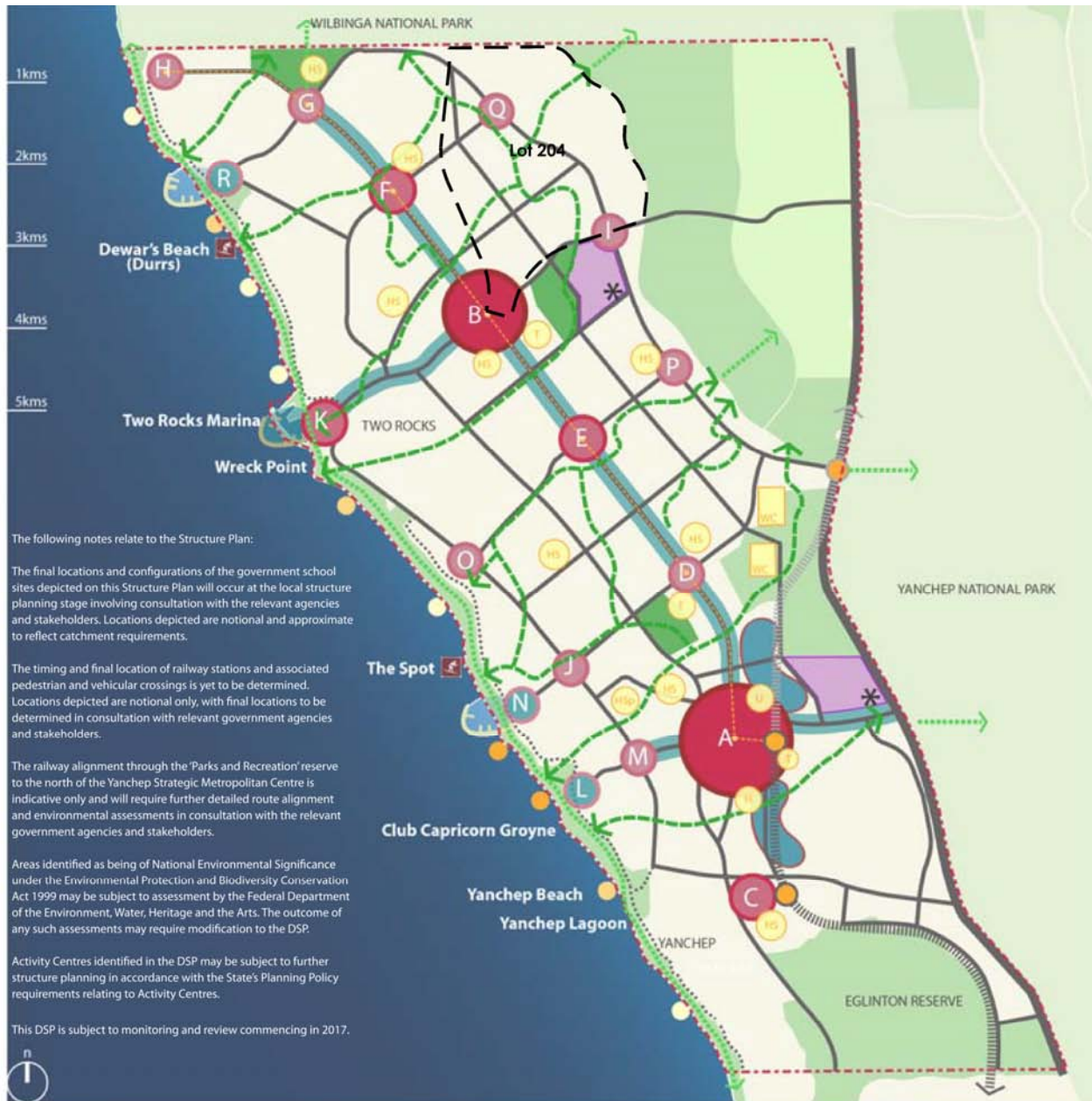
development within the District Structure Plan area.

The Ministerial Statement 583 requires the preparation of the following management plans:

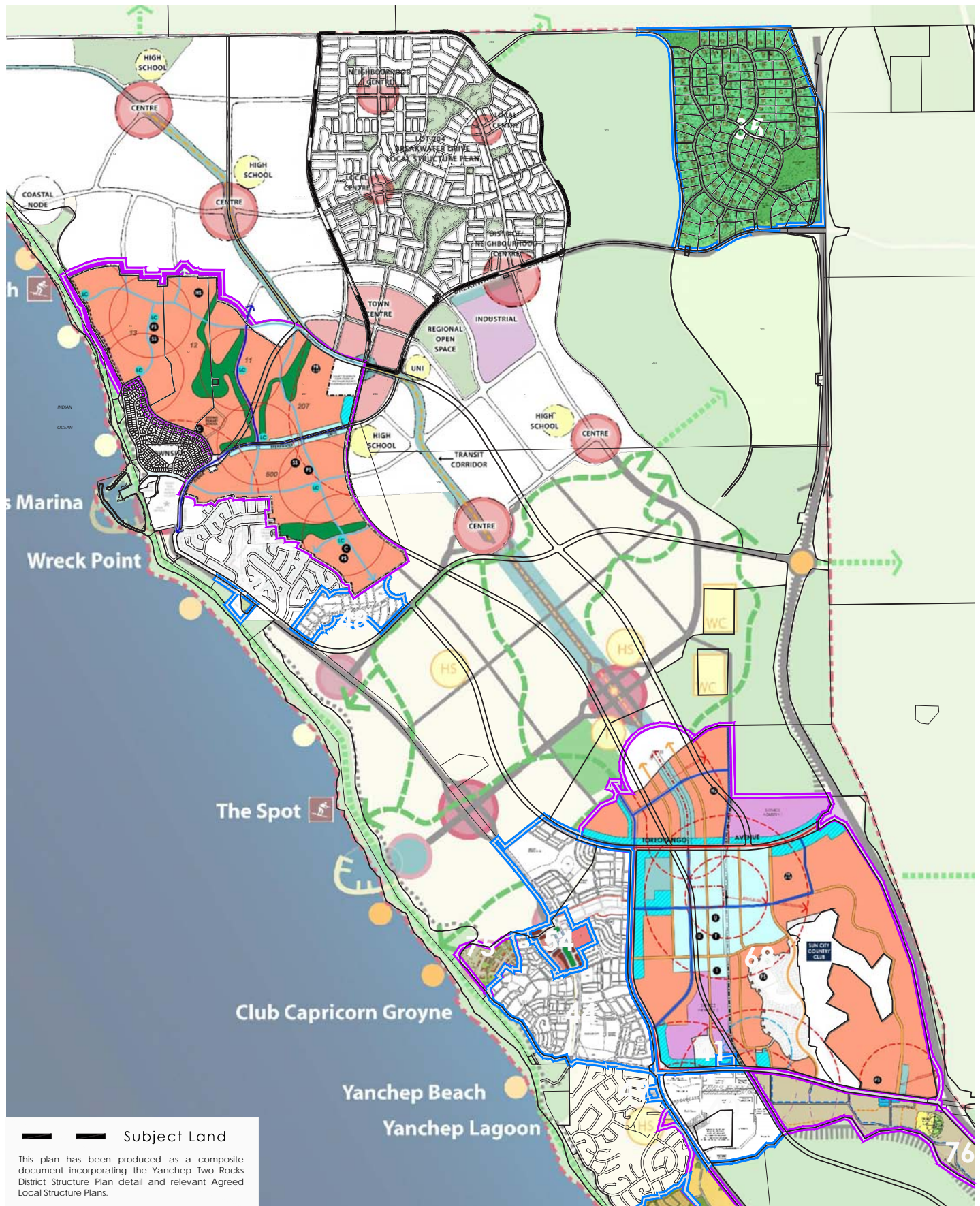
- Stygofauna and/or Troglobitic Fauna Management Plan;
- Drainage, Nutrient and Water Management Plan;
- Karst Management Strategy;
- Solid and Liquid Waste Management Plan; and
- Aboriginal Culture and Heritage Management Plan.

Table 2 below addresses each of the Environmental Conditions pursuant to Ministerial Statement 538 and the LSP response.

TABLE 2: Summary of Response to Environmental Conditions Pursuant to Ministerial Statement 53		
Condition No.	Environmental Condition (Ministerial Statement 538)	LSP Response
2.2 Environmental Management Plans	2.2.1 The following EMPS shall be prepared in accordance with the specification set out in Attachment 1 of the Minister for the Environment's "Statement that a Scheme may be implemented" No. 538 published 15 Feb 2000:	
	o Stygofauna and/or Troglobitic Fauna Management Plan	Refer 2.4 below
	o Drainage, Nutrient and Water Management Plan	The District Structure Plan includes an Integrated Urban Water Management Plan and requires the preparation of a Local Water Management Strategy at LSP stage. A Local Water Management Strategy is included in Appendix 6
	o Karst Management Strategy	Refer 2.5 below
	o Solid and Liquid Waste Management Plan	Refer 2.6 below
	o Aboriginal Culture and Heritage Management Plan.	Aboriginal Culture and Heritage Management Plan included in Appendix 1
	2.2.2 The Environmental Management Plans referred to in condition 2.2-1 shall be prepared and implemented in accordance with the provisions of the Plans, to the requirements of the Responsible Authority.	



2.3 Vegetation and Fauna Management	<p>2.3.1 Regionally significant vegetation (draft Perth's Bushplan sites) which surrounds the amendment area (as shown in Figure 1) shall be protected from indirect and direct impacts associated with the development of the amendment area by the following:</p> <ul style="list-style-type: none"> o Clear delineation of regionally significant areas of vegetation from the amendment area through the use of dual use paths, roads, public open space areas and the like. o Control of off-road vehicle use and dumping of rubbish o Fire Management o Promotion of community awareness of bushland protection 	The LSP and in particular the Vegetation and Fauna Management Strategy (Appendix 1) and Landscape Concept Plan (Appendix 4) address these requirements.
2.4 Stygofauna and Troglobitic Fauna Management	<p>2.4.1 If studies in relation to karst and hydrology (see 2.5-1) indicate the likelihood of significant stygofauna and/or troglobitic fauna assemblages being present in or immediately adjacent to the amendment area, the landowner (with assistance from relevant scientific experts) shall undertake a survey (at the Local Structure Planning Stage) to assess the nature and extent of any population/s.</p> <p>The survey shall be completed prior to finalisation of the LSP and to the requirements of the Responsible Authority on advice from the Department of Conservation and Land Management and the University of Western Australia (Department of Zoology).</p>	
2.5 Assessment of Karst Landform	<p>2.5.1 At the District and Local Structure Planning Stage, the landowner shall review existing geotechnical information and undertake further site investigations to confirm the nature and extent of karst landform within the amendment area.</p> <p>This review shall be completed prior to finalisation of the District and LSP and to the requirements of the Responsible Authority on advice from the Department of Environmental Protection.</p>	
2.6 Solid and Liquid Waste Management	<p>2.6.1 The landowner shall ensure that lots within the industrial zone are connected to the deep sewerage system for the disposal of appropriate liquid wastes as approved by the relevant Government Agency/ies.</p>	Not applicable as the LSP area does not include industrial land use.
2.7 Environmental Reporting	<p>2.7.1 The Responsible Authority shall provide a report to the Environmental Protection Authority every five years, or at the time of the review of the existing town planning scheme (whichever is the earlier), as per Section 48H of the Environmental Protection Act.</p>	Responsibility of the City of Wanneroo.



1.2.4 *Yanchep Two Rocks District Structure Plan*

Lot 204 is within the Yanchep Two Rocks District Structure Plan area, adjoining the DSP's northern boundary, refer figure 5.

The DSP was endorsed by the Western Australian Planning Commission and City of Wanneroo February 2011 and March 2011 respectively.

The approved DSP provides a framework for the logical progression to local structure planning. The LSP is entirely consistent with the DSP objectives and strategies. Section 3 of this report demonstrates in detail how the LSP satisfies each element of the DSP.

1.2.5 *Adjoining Local Structure Plans*

There are no finally endorsed structure plans over the areas immediately abutting Lot 204.

Local Structure Plan No.69 – Two Rocks, was adopted by the City of Wanneroo subject to modifications in June 2009, though it has not yet been endorsed by the WAPC. LSP69 encompasses the land to the south-west of Lot 204, refer figure 6. LSP69 is predominantly residential and does not include any specific provision for the Two Rocks Secondary Centre (as identified in the DSP), instead deferring the detailed planning to a future stage. The key elements of LSP69 are:

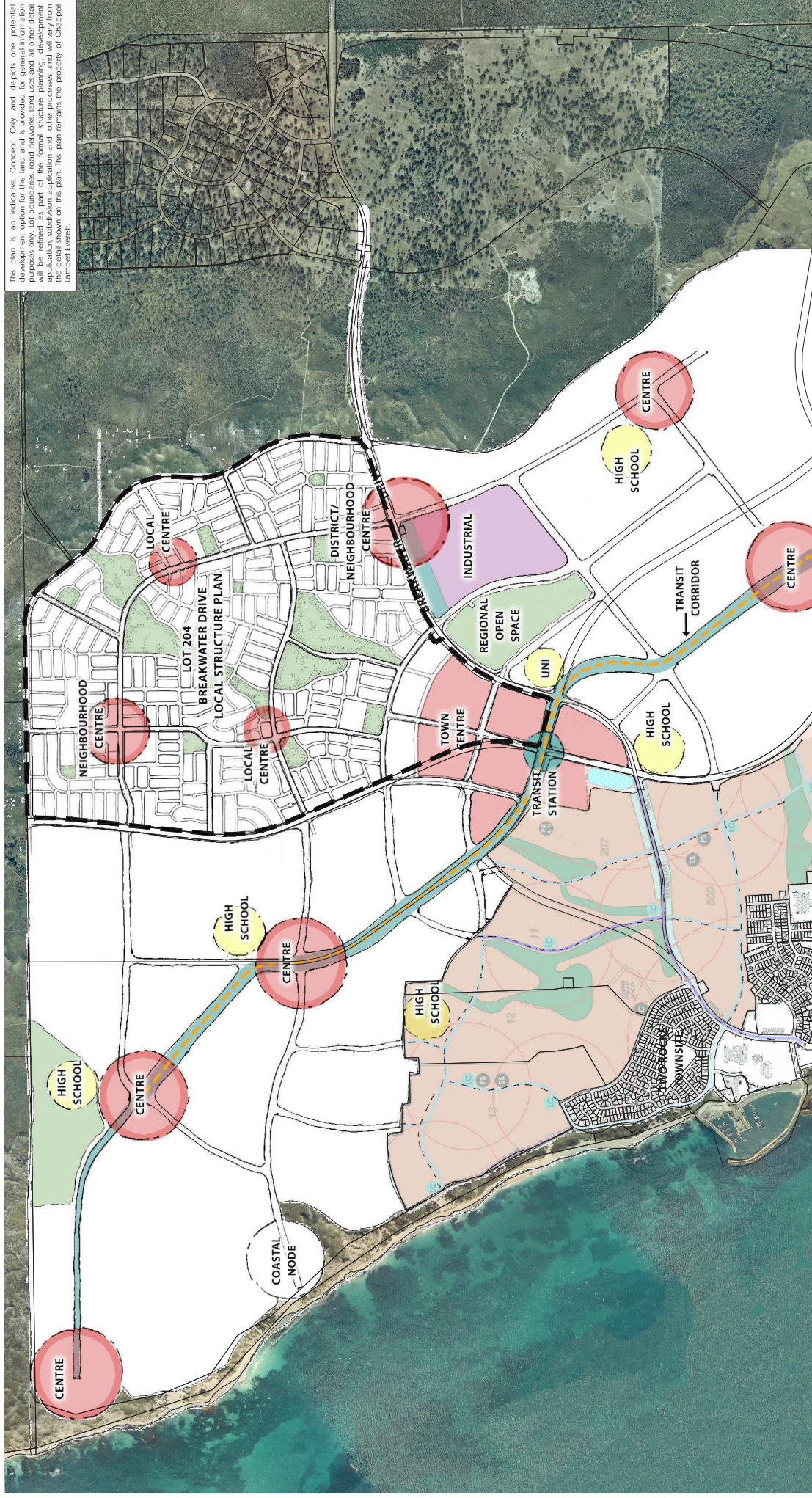
- Provision for a dwelling yield of approximately 5,400 dwellings, with housing types ranging from high density apartments to traditional 'quarter acre' blocks.
- A mixed use corridor along Breakwater Drive between the Two Rocks townsite and the Two Rocks Secondary Centre
- A range of educational facilities including 3 primary schools, 1 high school, and 1 private school (K-12).
- Four specified community purpose sites
- Seven local commercial centres.

LSP69 assists in bringing a critical mass of population, economic activity, and infrastructure to the northern portion of the DSP area, and provides a logical urban connection between Lot 204, Two Rocks townsite, and the coast.

1.2.6 *Superlot Subdivision Application*

A superlot subdivision application was submitted to the WAPC in September 2010 (WAPC Ref: 142949). The application proposes to create three large residential superlots of between 164 to 174ha and a fourth superlot of 34ha for the Two Rocks Secondary Centre. The residential superlots are significantly larger than the 150ha guide set out under WAPC DC Policy 1.1 and are based on key road locations, reflected on the LSP statutory plan. The roads are wholly contained within a single superlot to avoid cost sharing arrangements.

This plan is an indicative Concept Only and depicts one potential development option for the land and is provided for general information only. It is not intended to be used as a basis for any decision-making, and will be refined as part of the formal structure planning, development application, subdivision application and other processes, and will vary from the detail shown on the plan. This plan remains the property of Cleppell Lambert Everett.



DISTRICT STRUCTURE PLAN - LOCAL CONTEXT

East Two Rocks Local Structure Plan : Figure 7

This road network has also been subject to detailed traffic modelling and workshopped with the City, which has confirmed the network.

The LSP area, at 545 hectares, is significantly larger than a typical LSP area and is the same size as many district structure plans. The purpose of the superlot application is to create parcels of a more reasonable and developable size, allowing for staged development and necessary financing arrangements.

The superlot application was approved by the WAPC in March 2011.

1.2.7 Sub Regional Context

Directions 2031

Directions 2031 and beyond is the highest level spatial planning framework for Perth and Peel. Lot 204 falls within the north-western sub-region of Directions 2031, and is incorrectly identified as 'Urban Deferred'

Directions 2031 estimates that by 2031, the north-west sub-region population will increase from 285,000 to 395,000 with an additional 65,000 dwellings required.

Directions 2031 also provides density and employment self sufficiency targets, though these are superseded by the targets in the Yanchep-Two Rocks DSP.

Outer Metropolitan Perth and Peel Sub-Regional Strategy (2010 Draft)

The Outer Metropolitan Perth and Peel Sub-Regional Strategy (OMPPSS) is a draft implementation strategy for Directions 2031. The OMPPSS identifies the LSP area as 'urban zoned-undeveloped and also identifies the Two Rocks Secondary Centre adjacent to the southern boundary of the LSP area.

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PART TWO: OPPORTUNITIES AND CONSTRAINTS ANALYSIS

Based on the background and planning context described above the following section describes key site opportunities and constraints that have informed and impacted on the LSP urban form and structure.

2.0 DISTRICT STRUCTURE PLAN FRAMEWORK – OPPORTUNITIES AND CONSTRAINTS

The Yanchep-Two Rocks DSP provides the statutory framework for more detailed land use planning at the local level. The East Two Rocks LSP has been prepared within the framework specified by the DSP, and addresses each of the critical elements identified in the DSP in detail.

The DSP includes the following land use elements over the East Two Rocks LSP area, which are recognised in future local structure planning, refer figure 7:

Centres

- The DSP provides that a significant portion of the Two Rocks Secondary Centre is located within the southern end of Lot 204. The Two Rocks Secondary Centre will provide a node for employment, services and infrastructure to service the surrounding communities, with approximately 25,500m² of 'bulky goods' retail floor space, 43,700m² of retail floor space, and an overall floor space allocation of 130,592m².
- A Neighbourhood level activity centre astride Breakwater Drive in the south eastern corner of the LSP area, including indicitavely 134m² of bulky goods retail, 6,100m² of retail floor space, and an overall floor space allocation of 10,440m².
- A Neighbourhood level activity centre in the north-western corner of the LSP area including 2,100m² of retail floor space, and an overall floor space allocation of 4,909m².

Transport Network

- An indicative permeable neighbourhood connector grid over the site with connections to the future freeway to the east, and a coastal connection to the west.
- A mixed use transit corridor traversing the Secondary Centre on a north-south axis, and providing a transit corridor to the northernmost activity centre from the Yanchep City Centre within the DSP area. The DSP recognises that this transit corridor could be a bus route in the short term and possibly upgraded to a light rail system between the two main centres, with feeder bus routes connecting from the Secondary Centre.

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Residential

- The balance of the LSP area is identified as Residential.
- The DSP prescribes an increase in density to 25 dwelling units per site hectare for those areas within close proximity to neighbourhood activity centres, and other areas of high amenity.
- Those residential areas closest to the Secondary Centre are allocated a density of 50du/site ha to promote a highly urban mixed use environment in close proximity to a wide range of amenities and services.

Social Infrastructure

- The DSP identifies indicative Social/Pedestrian/Cycle linkages traversing the LSP area. The DSP shows one linkage connecting the Two Rocks marina area in the west to the regional open space to the east of Lot 204, and a second linkage connecting the regional open space to the south of the Two Rocks Secondary Centre with the Wilbinga Nature Reserve to the north of the LSP area. The DSP notes that the function, delineation and management of the linkages will be determined through the preparation of LSPs.
- The DSP does not allocate any high schools or district level community infrastructure to the LSP area.

Surrounding Land Uses

- The DSP identifies an industrial employment node to the south of the Breakwater Drive Neighbourhood Centre, providing opportunities for local employment.
- A Tertiary Institution and High School adjoin the Secondary Centre to the south, with the tertiary institution separated from the industrial precinct to the east by a regional open space reserve.

As demonstrated in Section 3 of this report, the LSP is entirely consistent with the abovementioned land use elements as depicted on the DSP. The LSP also complies with the DSP objectives and strategies.

A table is provided in Section 3 under each LSP section heading demonstrating compliance with the DSP objectives and strategies, as well as referencing the relevant sections of the LSP that respond to the objective or strategy.

The DSP Part 1 Provisions also set out a list of strategies and information to be included, where relevant, at LSP or subdivision stage. These reporting requirements are summarised in Table 3.

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TABLE 3: Yanchep – Two Rocks DSP - Documentation Required to be Submitted at LSP or Subdivision Stage

Documentation Required <i>(where relevant, pursuant to DSP Part 1)</i>	DSP Indicative Timing	LSP Response
Foreshore Management Plan	Subdivision	Not relevant, LSP area not adjoining foreshore
Vegetation Management Strategy	LSP	Included in LSP, summarised in Section 8 and included in Appendix 1
Indicative Earthwork and Contour Plan	LSP	Included in LSP, refer Section 14
Fauna Management Strategy	LSP	Included in LSP, summarised in Section 8 and included in Appendix 1
Local Water Management Strategy	LSP	Included in LSP, summarised in Section 14 and included in Appendix 6
Urban Water Management Strategy	Subdivision	To be completed at subdivision stage
Open Space Strategy	LSP	Included in LSP, refer Section 9
Karst Investigation and Management Strategy (if relevant)	LSP	Included in LSP, summarised in Section 8 and included in Appendix 1 and Appendix 6
Landscape Concept Plan	LSP	Included in LSP, summarised in Section 9 and included in Appendix 4
Traffic Modelling and Movement Network Plan	LSP	Included in LSP, summarised in Section 11 and included in Appendices 2 & 3
Community Development Strategy	LSP	Included in LSP, summarised in Section 13 and included in Appendix 7
Community Development Plan	Subdivision	To be completed at subdivision stage if required
Economic and Employment Analysis	LSP	Included in LSP, summarised in Section 12 and included in Appendix 5
Economic and Employment Strategy	LSP	Included in LSP, summarised in Section 12 and included in Appendix 5
Developer Contribution Plan	LSP	Landowner entered into Deed of Infrastructure and to enter into relevant Development Contribution Plans as required in accordance with State Planning Policy
Detailed Area Plan	Where required at Subdivision	To be completed where relevant at subdivision stage. Standard R Code variations included in Section 10 and Part 1

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3.0 LAND USE CONTEXT – OPPORTUNITIES AND CONSTRAINTS

The site's surrounds provide opportunities for integration with adjoining uses to develop a unique sense of place, and a context in which the future community can evolve over time.

The LSP area is bound by regional open space and nature reserve on the eastern and northern boundaries, creating a landscape interface at the edge of the development area, as well as an opportunity to capitalise on the visual amenity provided by the reserved areas.

To the south the site is bordered by Breakwater Drive, forming a primary vehicular connection between the future freeway to the east, and the future Secondary Centre at the southern end of the LSP area. Breakwater Drive provides an appropriate hard interface to the future mixed use and industrial employment node to the south. It is likely that this area will provide employment opportunities for the residents of the LSP and therefore it is important that connectivity via a permeable local road network, pedestrian and cyclist routes is maintained in the LSP.

The western boundary of the LSP area abuts the current MRS rail reserve. The Yanchep – Two Rocks DSP identifies the rail alignment rejoining the freeway reserve to the south of the LSP area, and proposes an omnibus amendment to the MRS to delete the current rail alignment reservation from the MRS, and realign the reserve to be consistent with the DSP. The Department of Planning and Public Transport Authority are currently working towards finalising an agreed northern suburbs rail alignment. The LSP recognises the existing rail reserve, and shows a road interface to the reserve in order to maintain flexibility. The detail of this interface can be addressed at the subdivision stage, at which point it is expected that more information will be available on the preferred future alignment for the rail corridor. The rail alignment is therefore neither an opportunity nor a constraint to the LSP.

The land located to the west of the LSP area on the opposite side of the rail reserve (lot 206) is zoned Urban. There are opportunities to provide western vehicle and pedestrian connections from the LSP area to Lot 206, and ultimately connect through to the western district centres, high school, and coastal node identified in the Yanchep – Two Rocks DSP once developed.

As noted earlier, Local Structure Plan No.69 – Two Rocks, was adopted by the City of Wanneroo subject to modifications in June 2009. LSP69 encompasses the landholdings to the south-west of Lot 204. LSP69 is predominantly residential, and includes the following elements:

- Provision for a dwelling yield of approximately 5,400 dwellings, with housing types ranging from high density apartments to traditional 'quarter acre' blocks.
- A mixed use corridor along Breakwater Drive between the Two Rocks townsite and the Secondary Centre

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- A range of educational facilities including 3 primary schools, 1 high school, and 1 private school (K-12).
- Four specified community purpose sites
- Seven local commercial centres.

LSP69 is complementary to the East Two Rocks LSP, as it assists in bringing a critical mass of population, economic activity, and infrastructure to the northern portion of the DSP area, and provides a logical urban connection between the LSP area, Two Rocks townsite, and the coast.

The LSP area is located within the context of the existing and planned regional town centres identified in the Yanchep – Two Rocks DSP and SPP 4.2 - Activity Centres for Perth and Peel, and forms an important part of the overall activity centre hierarchy in the northern section of the DSP area. The DSP provides a significant opportunity to provide a range of centres within the LSP area, including a Town Centre (Secondary Centre), two Neighbourhood Centres and two Local Centres. Given the size of the LSP area, and the likely population of the area once developed, there is also an opportunity to provide four primary schools, two of which can be located in close proximity to local centres; one of which can be integrated into the Northern Neighbourhood Centre, and the fourth can be located within the walkable catchment of the Secondary Centre.

The residential portion of the LSP area is an important part of the residential catchment to the Two Rocks Secondary Centre, and the mixed use industrial precinct to the south of the LSP area.

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4.0 ENVIRONMENT – OPPORTUNITIES AND CONSTRAINTS

This section is informed by the Environmental Assessment Report prepared by PGV Environmental and included in Appendix 1.

4.1 Adjoining Regional Open Space

The LSP area is bounded by Wilbinga Nature Reserve (Bush Forever Site 406) to the north, and a Regional reserve (Bush Forever site 284) to the east, both of which form a strong visual edge to the LSP area. These reserves provide a significant opportunity to create physical and visual links through the LSP area to the east and north, particularly from elevated areas and public open space reserves within the LSP area.

A perimeter road reserve between the LSP area and adjoining reserves creates a hard edge interface. This interface will assist in providing a clear delineation between the reserve and the urban area, and will also provide a suitable buffer/low fuel zone for bushfire protection.

4.2 Topography and Landforms

The site's landform provides opportunities for the creation of four residential neighbourhoods, each broadly defined by the dunal landform.

A variety of landform characters exist within the LSP area including ridgelines, valleys, broad flat areas, depressions, steep slopes and undulating terrain. The site is dominated by a major ridgeline running through the centre of the site north-east to south-west, creating a natural division and providing shelter from prevailing winds. The major ridgelines are able to be recognised in open space, as compared to a more chaotic dunal landform where this is more difficult.

The ridgelines contain significant high points that offer the best opportunity for views to the coast and adjacent nature reserve.

Dune formations throughout the LSP area provide topographical relief and interest.

Prominent hillocks to the south and east of the site provide distinct landmark elements offering views back across the site and towards the ocean and surrounding area.

Public open space provides the best opportunity for recognition of significant landforms. While the residential areas will recognise the existing landform, significant earthworks will be required in the residential areas to create serviced sites, and to facilitate drainage.

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4.3 Soils and Hydrology

The soils and hydrological conditions are similar to the rest of the north-west corridor, and are not constraints to development.

The surface geology of the site contains both the Safety Bay Sand and Tamala Limestone. The Safety Bay sand unit adjoins and overlies the Tamala Limestone.

The Safety Bay Sand unit mostly consists of beach sand but in some areas under the parabolic dunes, the sand has become weakly lithified, marking the first stage in conversion to limestone.

Tamala Limestone consists of friable to hard, medium grained, wind-blown calcarenite composed of shell fragments with variable amounts of quartz sand. Tamala Limestone soils can contain surface limestone as well as areas of shallow and deep sand over limestone. Isolated outcrops of surface limestone occur in the eastern part of the site.

The site lies over the western end of the Gngangara Mound and as such contains groundwater beneath the surface. The depth to groundwater under the site ranges from a low of around 19-20m under the small depressions up to 59-60m under the parabolic dunes, providing free draining soils for urban development.

4.4 Vegetation, Flora and Fauna

The LSP area contains isolated stands of Tuart and Banksia vegetation that are worthy of retention where practical. Vegetation is degraded in those areas with the greatest exposure to prevailing winds.

The LSP area contains some clearly defined pockets of good vegetation, predominantly in the valleys and depressions between ridgelines.

This clear definition of significant vegetation creates opportunities to recognise vegetation within POS corridors and road reserves where practical, recognising competing needs for drainage and active open space.

There is no recognised significant fauna within the LSP area.

4.5 Heritage

Previous surveys for Aboriginal archaeological and ethnographic sites, as well as a search of the Department of Indigenous Affairs database, have not identified any archaeological sites in the LSP area.

There are no listed sites of European heritage significance located within the LSP area.

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5.0 MOVEMENT NETWORK – OPPORTUNITIES AND CONSTRAINTS

This section is informed by the comprehensive traffic and transport analysis provided in Section 11 and Appendices 2 and 3.

5.1 Road Network

5.1.1 Regional Network

The subject site is located within a framework of existing and planned regional roads providing excellent access to surrounding regional and district infrastructure, including the proposed Mitchell Freeway to the east and beyond this Wanneroo Road, and the proposed Secondary Centre and existing Two Rocks marina to the west.

The road network provides key north-south and east-west connections throughout the DSP area, including critical road and transit corridor links to the Yanchep Strategic Metropolitan Centre, approximately 7km to the south of Lot 204. The DSP recognises the need for road network extensions as development progresses. The DSP area is subject to a Deed of Infrastructure between landowners and the WAPC relating to contributions, land vesting and construction of regional roads.

The LSP provides an opportunity to advance the regional road network and provide a regional link between the Yanchep Strategic Metropolitan Centre and the Two Rocks Secondary Centre.

5.1.2 District/Local Network

Breakwater Drive is currently constructed to rural standard. Breakwater Drive is classified as a future District Distributor A between the Two Rocks Secondary Centre and eastern Neighbourhood Centre under the DSP, and a District Distributor B between the Neighbourhood Centre and the future Mitchell Freeway. The District Distributor A is forecast to carry approximately 18,000 vehicles per day at buildout where it adjoins the LSP area. Breakwater Drive is ultimately expected to be reserved as Other Regional Road under the MRS, and areas of road widening acquired by the WAPC.

The DSP identifies a future District Distributor B road connecting the eastern and northern Neighbourhood Centres, and a second District Distributor B road roughly parallel to the first connecting through the centre of the LSP.

Access to Breakwater Drive will be managed via either signalised four way intersections or 'T' intersections with sufficient separation to existing intersections and limited direct lot access permitted.

The location of the existing and proposed major road network provides an opportunity

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to develop a permeable road layout through the site on both the north-south and east-west axis.

5.2 Public Transport

5.2.1 Northern Suburbs Rail Line

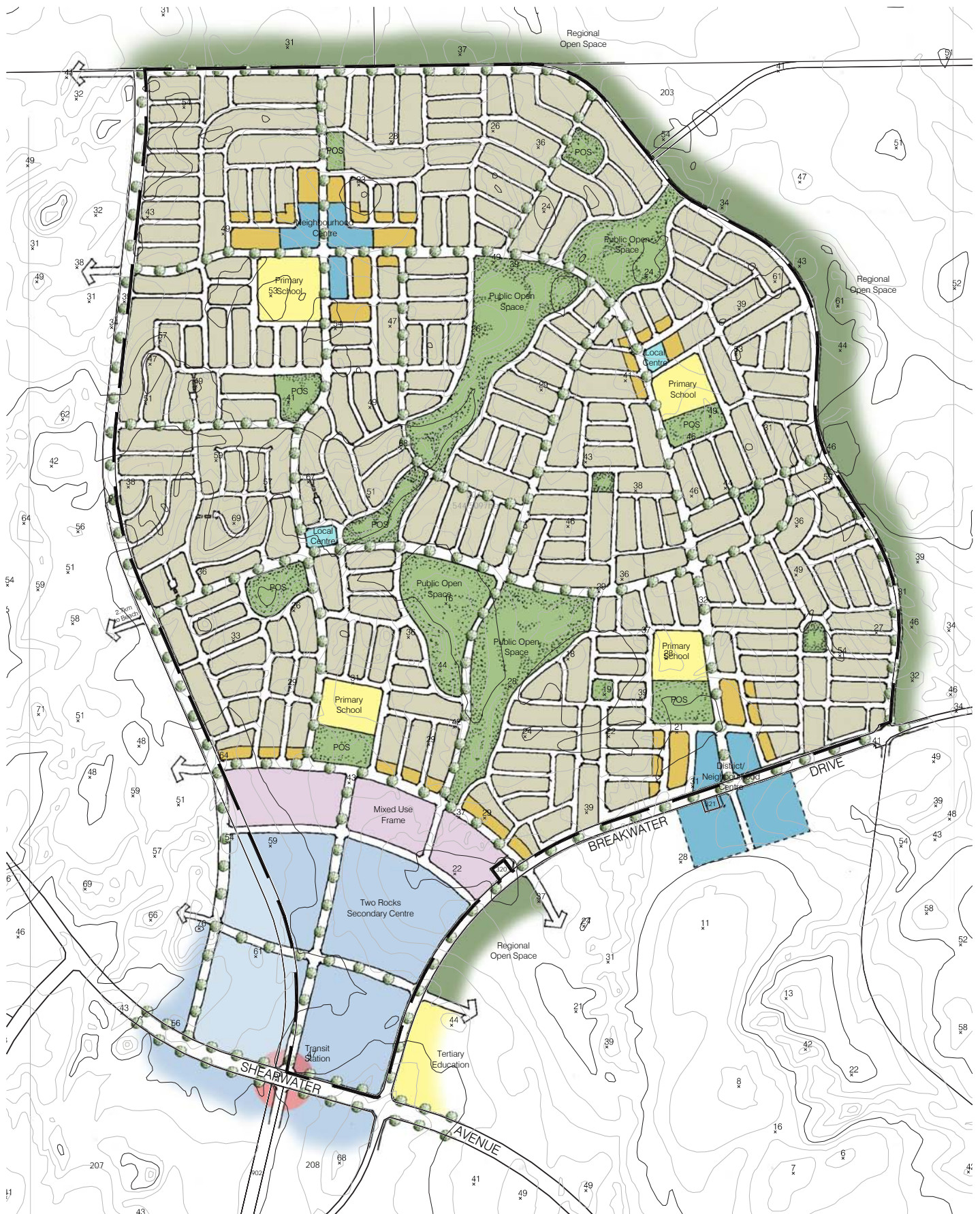
The MRS rail reservation forms the western boundary of the site, and provides the statutory basis for the future northern suburbs rail extension. Contrary to the current MRS alignment, the Yanchep-Two Rocks DSP proposes a rail alignment that curves north-east from the Yanchep Strategic Metropolitan Centre and re-joins the freeway reserve at the next interchange to the north.

5.2.2 Yanchep – Two Rocks Transit Corridor

The DSP provides a transit corridor connecting Yanchep Strategic Metropolitan Centre with the Two Rocks Secondary Centre, and beyond to the north-western coastal activity centre.

The corridor provides an opportunity for a light rail or bus way system in the short term, connecting the various activity centres, and the two main centres within the DSP area. This corridor forms a key movement link between the Yanchep Centre and Two Rocks Secondary Centre which is critical to allowing efficient movement between employment nodes and residential catchments. The DSP also creates an opportunity to provide feeder bus networks linking the Secondary Centre with the LSP area, and the future development of Lot 206 to the north west of the Centre.

The LSP provides opportunities to utilise the transit corridor through the permeable road network, which provides direct connections to the transit corridor via the east-west alignment of major roads, and the intersection of Breakwater Drive and the transit corridor within the Secondary Centre.



6.0 SERVICING AND INFRASTRUCTURE – OPPORTUNITIES AND CONSTRAINTS

Serling Consulting have undertaken a review of existing and planned infrastructure for the LSP area. A comprehensive servicing report is provided as Appendix 9 and summarised in Section 14. The LSP area can be readily serviced from existing and planned infrastructure in the locality. The following provides an outline of the existing servicing capacity, based on the advice provided by Serling Consulting.

- Water – The Water Corporation has advised that planning is in place to ultimately service urban development within the LSP area.
- Sewer – The Water Corporation has wastewater scheme planning in place that includes servicing the LSP area, with gravity fed reticulated sewer connecting to the Alkimos Waste Water Treatment Plant to the south.
- Power – The LSP area has access to the existing electricity network, with the network to be upgraded as loading increases.
- Telecommunications - Telstra has confirmed that the site can be connected to the existing network servicing the Two Rocks townsite.

The DSP requires that a Development Contribution Plan is finalised to establish the infrastructure to be provided/upgraded, as well as the government agencies and private landowners that are responsible for the provision of the infrastructure. It is understood that the City of Wanneroo is currently preparing a Development Contribution Plan for the area.

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PART THREE: LOCAL STRUCTURE PLAN

7.0 OVERVIEW OF THE PLAN

7.1 Design Principles

The East Two rocks LSP presents an opportunity for robust urban development surrounding planned activity nodes and community infrastructure, forming an important part of the Yanchep – Two Rocks community.

The LSP Concept Plan indicatively demonstrates how development could occur on the site consistent with the LSP requirements, refer figure 8. The following outlines the fundamental design components of the LSP, consistent with the guiding principles of the Yanchep Two-Rocks District Structure Plan:

- Allow for the creation of a diverse range of housing choices, meeting affordable living objectives.
- Provide robust urban form and land use response adjoining the planned Secondary Centre.
- Provide a range of services and infrastructure to support the planned community.
- Delivering a permeable, interconnected road and path network encouraging and facilitating multi-modal transport outcomes.
- Deliver a connected network of public open space meeting local active and passive, conservation and drainage needs allowing for planned and unplanned community activity.
- Recognise significant natural features within public open space throughout the LSP area.
- Support the realisation of regional, neighbourhood and local employment opportunities through education, retail, community, commercial, and home based business functions, as well as recognise the LSP's important catchment role in the context of the Secondary Centre, and the adjoining industrial and tertiary education precincts.

7.2 Land Use Overview

The LSP provides a framework for the creation of:

- Approximately 6,590 lots and approximately 7,500 dwelling units, in four distinct neighbourhoods. Higher residential densities are focused around the Two Rocks Secondary Centre, Neighbourhood Centres, Local Centres and key areas of open space. Surrounding these key infrastructure items, residential densities range from

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R60 - R80 with a density range of R30 - R60 across the LSP area.

- A mixed use frame as a transition between the Secondary Centre and the adjacent residential areas.
- A Neighbourhood Centre in the north-west of the LSP area, with retail floor space of approximately 2,100m².
- A portion of a Neighbourhood Centre in the south-east of the LSP area, with total retail floor space of approximately 6,100m².
- Two Local Centres with retail floor space of approximately 1,500m², providing services to the residents of the LSP area.
- Four primary school sites. Three sites co-located with active use public open space, and one primary school site of 4 hectares.
- Approximately 49 ha of strategic public open space meeting active and passive recreation, drainage and conservation objectives, as well as meeting the 10% public open space requirement of Liveable Neighbourhoods.
- A permeable grid of neighbourhood connectors and local streets, providing a framework for the provision of a local bus service, walking and cycling. Future connections to the urban land to the west, and the transit corridor identified in the DSP have been considered, with opportunities for the permeable road network to connect to the western area in the future.

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8.0 ECOLOGY AND LANDSCAPE

8.1 Yanchep Two Rocks District Structure Plan Objectives and Strategies

ECOLOGY AND LANDSCAPE		
Objectives		
<p>O1. To preserve significant natural features such as fauna habitats/ corridors and high quality remnant vegetation, where practicable;</p> <p>O2. To maintain and manage the ecological integrity of the coastal foreshore in balance with the needs for structured and unstructured recreation;</p> <p>O3. To provide greenway corridors between different ecological communities such as coastal and inland reserves and significant natural features of the site;</p> <p>O4. To facilitate the integration of the built environment with the natural ecosystem in a complementary manner; and</p> <p>O5. To ensure the natural topography is considered in conjunction with vegetation retention and the design of the built environment.</p>		
Strategies		
S.	DSP Strategy	LSP Response
S1	LSPs shall identify significant natural features, as identified in Figure 15 Significant Natural Features, and integrate these either within public space (such as POS and road reserves) or suitably controlled and managed private space, or provide suitable justification otherwise	Addressed, refer Sections 8.1, 8.2 , Environmental Assessment Report Appendix 1 and Landscape Concept Plan Appendix 4
S2	LSPs to identify conservation areas such as conservation public open space, and designed these in order for them to remain viable (as is defined by the WALGA/ Perth Biodiversity Project's Local Government Biodiversity Planning Guidelines of the Perth Metropolitan Region 2004)	Addressed, refer Section 9.2 and Landscape Concept Plan Appendix 4
S3	LSPs shall refine the strategic greenway corridors identified in the DSP Map in order to connect areas of ecological significance and transitions between different ecological communities (such as coastal to inland). The corridors may take a variety of forms that correspond with the urban context in line with the Green Link guidelines in Section 3.3 Part 2	Addressed, refer Section 8.2 and Landscape Concept Plan Appendix 4
S4	Where practicable, LSPs shall maintain pre-development topography in order to retain locally significant geomorphology, vegetation and fauna habitat, or provide suitable justification otherwise;	Addressed, refer Sections 8.1, 8.2 and 14.4, Environmental Assessment Report Appendix 1 and Landscape Concept Plan Appendix 4
S5	Landscape plans for public spaces shall utilise local indigenous plant species, or provided suitable justification otherwise, and their use shall be encouraged in private landscaping	Addressed, refer Section 9.2 and Landscape Concept Plan Appendix 4
S6	Where applicable, local Foreshore Management Plans (FMPs) shall be prepared broadly in accordance with the City's Yanchep - Two Rocks Foreshore Management Plan 2007 (as amended)	Not relevant to LSP area
S7	Foreshore setbacks shall balance the requirements for ecological systems and human activity. In this regard it is envisaged that the majority of the foreshore will have sufficient setbacks to protect primary dune systems, however LSPs and FMPs may explore opportunities for strategic activity centres to integrate more closely with the foreshore with reduced setbacks, subject to appropriate risk assessment, including the most recent climate change modelling	Not relevant to LSP area
S8	A karst investigation shall be carried out for each LSP area prior to the lodgement of the respective LSP	Addressed, refer Appendix 1
S9	LSPs shall include a Vegetation Management Strategy, which, where appropriate, will include a vegetation survey, fauna survey, fauna habitat survey, highlight the areas of vegetation and habitat to be retained and highlight opportunities for existing vegetation to be retained in the landscape through measures such as local seed provenance and retention in public space	Addressed, refer Section 8 and Environmental Assessment Report Appendix 1

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8.2 Vegetation and Fauna Management Strategy

The following provides a summary of the Vegetation and Fauna Management Strategy contained in Appendix 1. The Vegetation and Fauna Management Strategy addresses the interface to the Bush Forever sites, retention of native vegetation where practical, fauna management, and pre-construction management.

Vegetation Management

The Plan recognises ten of the 'Significant Natural Features,' previously identified in the DSP within key areas of public open space. The retained vegetation includes Banksia and Tuart woodlands, as well as Quindalup dune vegetation. These vegetated areas are of sufficient size to be viably retained and maintained within areas of public open space.

Other areas containing vegetation of significance are deemed too small to be incorporated into larger open space areas, or are deemed to be in poor condition, and not worthy of retention. Retention of vegetation in proximity to the activity centres is also unviable given the additional requirements for density and infrastructure. Refer Environmental Assessment Report, Appendix 1, where this is discussed further.

Interface to Bush Forever sites

The Management Strategy recommends a road interface to be provided adjoining all Bush Forever areas. The Plan provides a suitable road interface, with the precise width of the road reserve to be determined at subdivision stage. The road interface assists to provide a suitable separation between dwellings and the Bush Forever sites, ensuring that adequate bushfire protection can be achieved, refer Section 8.3.

The boundary to the Bush Forever Site will be permanently fenced with 1.2m ring lock mesh, to avoid dumping of rubbish and unauthorised entry. The boundary will be appropriately signed to promote community awareness, and in accordance with the DSP, access can be managed via appropriate pedestrian linkages to POS within the LSP area.

The Management Strategy ensures that no cut/fill or drainage infrastructure will be located within the Bush Forever Sites, with full earthworks, retaining, and drainage to be contained within the LSP area.

8.3 Fire Management Strategy

The following provides a summary of the Fire Management Strategy, prepared by Fireplan WA, and included as Appendix 8.

The purpose of the Fire Management Strategy is to reduce the threat to residents and fire fighters in the event of bush fire within or near the site. The Fire Management Strategy has been prepared in accordance with the WAPC's Planning for Bush Fire Protection Guidelines (Edition 2), and informs and sets out management options for the preparation of Fire Management Plans at subdivision stage.

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The Fire Management Strategy incorporates the following fire management methods:-

- Road system;
- Strategic Fire Access systems;
- Fire protection adjoining areas of Public Open Space and Reserves;
- Fire protection around each stage of development; and
- Building Protection Zones.

The recommended fire protection requirements for the Bush Forever interface include provision of a road adjacent to bush areas.

In addition, the Fire Management Strategy recommends two alternative Building Protection Zones of 30 metres and 20 metres, to be determined by the building construction standard (in accordance with the WAPC guidelines and AS 3959 – 2009 - Construction of Buildings in a Bushfire Prone Area). Building Protection Zones and construction standards depend on slope and fuel classification and can be determined as part of the preparation of Fire Management Plans at subdivision stage.

TABLE 4: Public Open Space Schedule (based on Plan 2129-85B-01)

Site Area			544.0
Less			
Primary Schools co-located with open space	10.5		
Northern Primary School	4.0		
Eastern District / Neighbourhood Centre ¹	2.0		
Northern Neighbourhood Centre	2.0		
Local Centres	2.0		
Two Rocks Secondary Centre ²	34.0		
1 in 1 year drainage storage in POS	2.77		
Non Credited Surplus Restricted Use Open Space	7.21		
Total Deductions		64.5	
Gross Subdivisible Area (GSA)			479.5
Public Open Space @ 10% of GSA			48.0
Minimum 8% Unrestricted Open Space			38.4
Maximum 2% Restricted Open Space			9.6
Public Open Space Contribution³	Net Open Space Area	Restricted⁴	Unrestricted
Passive Open Space A	6.6	2.0	4.7
Passive Open Space B	12.8	4.8	8.0
Passive Open Space C	2.6	1.1	1.5
Active Open Space D	7.9	2.7	5.2
Active Open Space E	12.3	4.3	8.0
Active Open Space F	1.7	0.1	1.6
Active Open Space G	3.2	0.2	3.1
Active Open Space H	1.9	0.1	1.8
Passive Open Space I	1.9	0.8	1.1
Passive Open Space J	1.4	0.2	1.2
Passive Open Space K	0.5	0.1	0.4
Passive Open Space L	1.1	0.1	1.0
Passive Open Space M	0.2	0.1	0.1
Passive Open Space N	0.4	0.0	0.4
Passive Open Space O	0.2	0.1	0.1
Passive Open Space P	0.3	0.1	0.2
Community Purpose Site Northern Neighbourhood Centre	0.2	0.0	0.2
Total Open Space	55.2	16.8	38.4
Non Credited Surplus Restricted Use Open Space		7.2	
Credited Open Space		9.6	38.4
Total Public Open Space Provision			48.0
Public Open Space Provision			10.0%

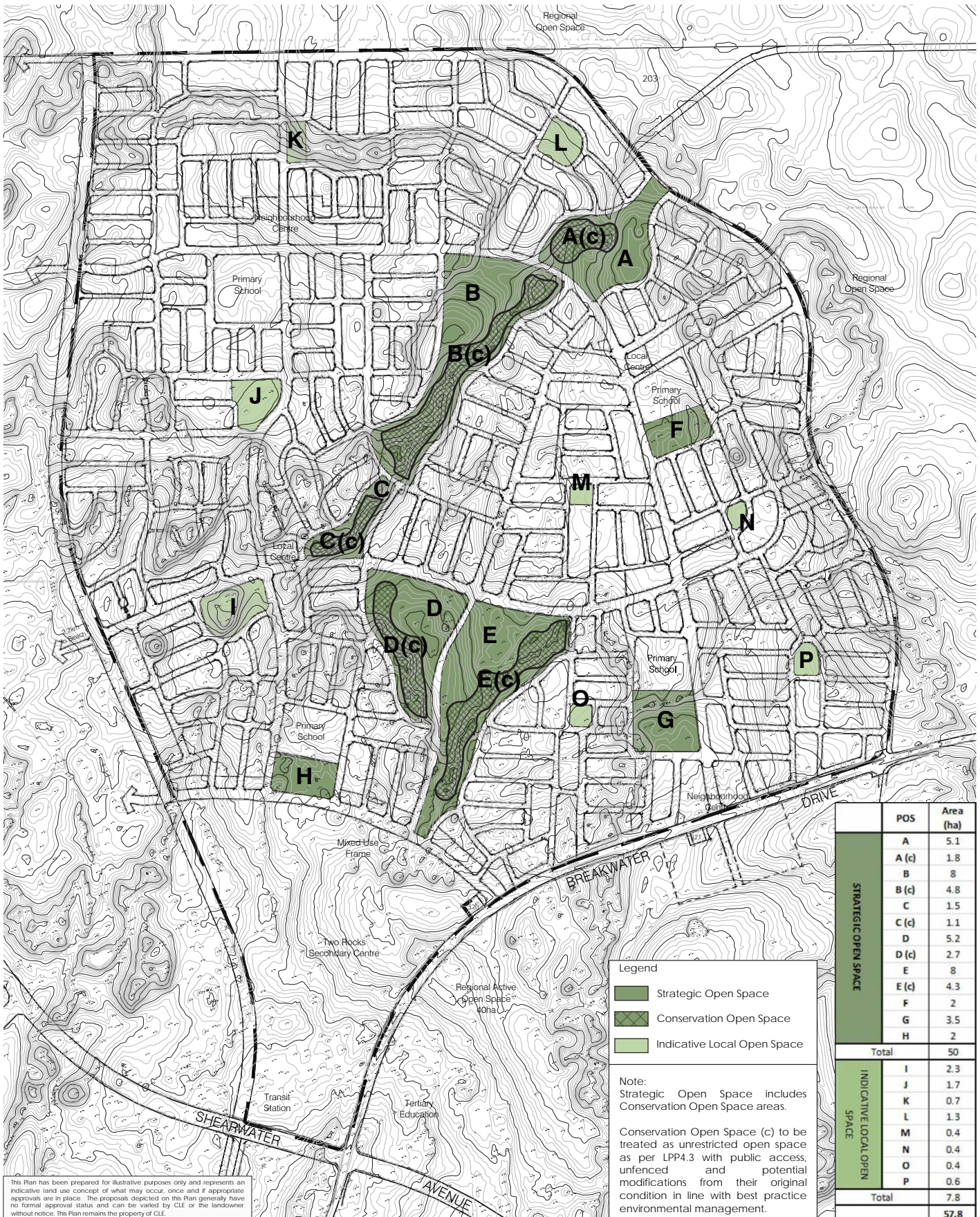
Notes

1. The Neighbourhood Centre straddles Breakwater Drive and the balance of the centre area is located south of Breakwater Drive.
2. The Two Rocks Secondary Centre area corresponds with the area zoned Centre and forms part of the Secondary Activity Centre as per SPP4.2. There may be urban open spaces and residential development within the Centre Plan area and this is to be determined at the time of centre planning. The Mixed Use Frame is included in the gross subdivisible area.
3. Open space areas A - H are strategic open space areas identified in Part 1 Table I.
4. Restricted Use Open Space comprises areas of open space subject to inundation more frequently than a one year ARI event, and less than a 5 year ARI event. In addition, Open space areas A-E contain portions of Conservation Open Space, as defined in the City of Wanneroo's Local Planning Policy 4.3. At the request of the WAPC the conservation portions of open space have been classified as restricted use open space. The classification of any restricted versus unrestricted open space will be confirmed at subdivision stage in accordance with Liveable Neighbourhoods and LPP 4.3.

9.0 PUBLIC REALM AND OPEN SPACE

9.1 Yanchep Two Rocks District Structure Plan Objectives and Strategies

PUBLIC REALM AND OPEN SPACE		
Objectives		
O1.	To guide development in response to the natural landscape and preserve significant natural and cultural features where practicable;	
O2.	To provide for a full range and complement of open space areas catering to diverse community recreational and environmental needs;	
O3.	To ensure accessible and high quality/amenity walking and cycling networks connect with key destinations and with other transport networks; and	
O4.	To ensure public spaces are developed to a high quality, are multiple use where practicable, highly accessible to all transport networks, safe, interconnected and integrated with surrounding land uses and the built environment.	
Strategies		
S.	DSP Strategy	LSP Response
S1	LSPs shall retain significant landscape features such as ridgelines, dunal formations and valleys either within public open space or with a highly landscape-responsive form of development, or provide suitable justification otherwise	LSP design allows retention of natural landscape features. To be refined through the detailed subdivision design process. Refer Sections 9.2 and 14.4, Environmental Assessment Report Appendix 1 and Landscape Concept Plan Appendix 4
S2	LSPs and landscape plans shall enhance the natural landscape character with the use of locally native planting where practicable	The Vegetation Management Strategy includes seed collection and propagation of local species. Refer Vegetation Management Plan Appendix 1 and Landscape Concept Plan Appendix 4
S3	LSPs and/ or Foreshore Management Plans (FMPs) shall provide a continuous foreshore shared path and identify appropriate locations for public beach access and facilities	Not relevant to LSP area
S4	LSPs shall provide public spaces with high levels of amenity, usability, safety and surveillance	A comprehensive open space network is established through the LSP. Refer Section 9.2
S5	LSPs and/ or subsequent detailed design plans/ guidelines shall consider the built environment from the perspective of the public realm and include appropriate provisions to deliver attractive and functional streetscapes	Detailed precinct and streetscape discussion included in Section 9.2
S6	LSPs shall include an overall Open Space strategy for the provision of regional and district active and passive open space (including beaches and recreational facilities), greenway corridors, neighbourhood and local open space, urban spaces and streets	Public Open Space Strategy set out under Section 9.2.
S7	LSPs shall provide for co-location, such as schools with public open space, and multiple uses, such as conservation and passive recreation, where practicable	Active open space co-located with the proposed primary schools central spine allows for multi function POS, refer section 9.2
S8	The design of the public realm in activity centres shall be generally based around a grid of open streets	Discussed in Section 10.



9.2 Landscape Concept Plan and Open Space Strategy

9.2.1 Open Space Schedule

The LSP Concept Plan allows for the provision of approximately 57 ha of public open space, or 11.6%, exceeding the minimum 10% public open space requirement pursuant to Liveable Neighbourhoods, refer Table 4 and figure 9.

The following summarises the key aspects of public open space provision, with the detailed description of each open space type outlined in Section 9.2.2 below.

- Based on a Gross Subdivisible Area of 482ha the 10% open space requirement is 48.2ha.
- The City's Structure Planning Policy: LPP 4.2 identifies strategic open space areas, shown on the Part 1 LSP plans.
- The LSP provides 49ha of strategic open space, identified in the LSP Part 1.8ha of gross POS is provided in local open space, resulting in the potential gross provision of approximately 58ha or 11.6% based on the LSP Concept Plan.
- The strategic open space areas (A-H) balance recognition of landform and remanent vegetation with active open space adjoining schools, and drainage requirements, in accordance with the principles of Liveable Neighbourhoods and the City's Public Open Space Policy LPP 4.3.
- The local open space areas (I-P) provide a series of passive open space areas for kick-about and children's play, drainage, vegetation retention opportunities, local amenity and a community meeting place. The precise location and size of local open space can be determined at the subdivision stage, following further detailed subdivision design, earthworks and drainage design.
- Both strategic open space and local open space serve a limited drainage function. The drainage over the 1 in 1 year event will be directed to areas of open space for infiltration in landscaped basins and swales. Drainage for the 1 in 1 year event will be captured in verge and median swales at source.
- Approximately 2ha of the open space will receive drainage from the 1 in 1 to 1 in 5 year drainage event in landscaped infiltration basins, in accordance with water sensitive urban design principles. The 1 in 1 to 1 in 5 year drainage event is treated as restricted use open space.
- A 0.2ha community purpose site is provided within the Northern Neighbourhood Centre. The need for a community purpose site was identified in the Community Development Plan in consultation with the City, refer Appendix 7, and is discussed further in Section 13. In accordance with the WAPC's endorsement of the LSP the community purpose site has been treated as unrestricted open space.



- The City's Public Open Space Policy LPP4.3 requires a minimum 4% active open space within an LSP area and 3% conservation open space where natural features defined by the policy occur within the LSP area.
- The LSP provides approximately 14.7ha, or 3% of conservation open space. Contrary to LPP4.3, the WAPC has requested that conservation open space is restricted use open space for the purpose of calculating POS credits in accordance with Liveable Neighbourhoods.
- 3% active open space is distributed across the LSP area within the strategic open space areas within ovals adjoining primary schools (areas F, G and H) and a recreation precinct in areas D and E between the dunal ridge. In addition there will also be active open space located within the north western primary school site.

As recognised in CI 2.4 of LPP 4.3 active open space provision must be considered in the context of the DSP area. A significant regional active open space area of 40ha adjoins the site to the south, providing a substantial active recreation facility in close proximity to the LSP area. Any further increase to the provision of active open space within the LSP area will reduce the ability to provide open space for landform and vegetation purposes.

9.2.2 Open Space Description

The detailed Landscape Masterplan outlines the intended function and key design principles of each open space area, refer Figure 10a, Figure 10b and Appendix 4. The LSP ensures that the open space can serve a variety of functions throughout the LSP area, providing a sensible balance of active / passive / conservation public open space, whilst allowing for the recognition of significant landforms and vegetation in strategic public open space areas.

The following outlines the key principles of each open space type.

Central Spine

The central spine allows for the recognition of significant dunal formations, vegetation and ridgelines through the centre of the LSP area where practical, serving a predominantly passive role, and providing a complimentary backdrop to the areas of local active spaces provided within the valleys adjacent to the ridgelines.

The northern end of the central spine allows for some significant vantage points with views over the LSP area and out to the coast. Pockets of active space are incorporated within the spine, and adjacent to neighbourhood connectors, allowing for easy access and excellent surveillance. The active areas are well sheltered from prevailing winds by the ridgeline.



The southern end of the central spine has a slightly larger area of active open space, incorporating opportunities for active play facilities such as hard courts, cricket nets, and playing fields. The passive areas incorporate informal walk trails, with opportunities for interpretive and information signage throughout.

Access to the dunal areas will be via designated pathways and boardwalks.

Local Active Open Space

The Concept Plan provides a range of local active open space In addition to the active areas provided within the central spine.

Two school sites have adjoining active open space areas of approximately 2.5ha, allowing for provision of a junior sized oval. The south-eastern school site adjoins 3.5ha of open space, allowing for a senior oval as requested by the City. These sites are all in areas subject to extensive earthworks, ensuring that the active open space will be suitably level, meeting City of Wanneroo design requirements.

The local active open space is unrestricted open space in accordance with Liveable Neighbourhoods and City of Wanneroo's Public Open Space policy.

Neighbourhood Parks

Neighbourhood parks of between approximately 4000m² and 2 ha are provided within a maximum 400m walk from homes.

The design of neighbourhood parks is based on the following key principles:

- Retention of existing vegetation where appropriate
- Shade structures and seating facilities will reinforce community meeting opportunities
- Drainage for the storm event greater than 1 in 5 years will be incorporated in landscaped swales and basins that serve both a recreation and drainage function
- Recognition of existing landform through design
- Incorporation of interpretive signage, creating a sense of place and local identity
- Incorporation of children's play equipment in design of some of the neighbourhood parks.

Neighbourhood parks present high community utility and in accordance with Liveable Neighbourhoods and the City's Policy are shown as unrestricted open space in Table 4, receiving a full open space credit.

Streetscapes

While not acknowledged as traditional public open space pursuant to Liveable Neighbourhoods and recognised under Table 4, streetscapes make up an important component of the public realm. Effective streetscape outcomes are not just a landscape function, but also driven by consistent and effective traffic and built form products, as discussed in Sections 10 and 11.

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The following outlines the fundamental landscape and design principles for the delivery of streetscapes (to be read in conjunction with Sections 10 and 11):

- Street trees, for shade and amenity, will be used throughout the development, with the species in accordance with City of Wanneroo requirements.
- Footpaths will be located as a minimum on one side of every street, in accordance with Liveable Neighbourhoods requirements.
- Verges can also serve a drainage function along inactive lot frontages, providing a functional landscaped verge treatment to an often 'dead' area.
- Parking provided on street, slowing traffic but also providing a buffer between the pedestrian and vehicular zone.



10.0 URBAN STRUCTURE AND BUILT ENVIRONMENT

10.1 Yanchep Two Rocks District Structure Plan Objectives & Strategies

URBAN STRUCTURE AND BUILT ENVIRONMENT		
Objectives		
O1.	To create an urban structure comprised of a legible, efficient and accessible network of activity centres connected by mixed use corridors serviced by high frequency public transport, cycle lanes and footpaths.	
O2.	To provide neighbourhood clusters with walkable mixed use centres that function as the primary structuring component of development.	
O3.	To ensure a high quality built environment is delivered with diverse and innovative architecture, yet with distinct local identity and sense of place.	
O4.	To ensure the building form will be capable of adaptation over time to meet changing needs of the community.	
O5.	To provide for a variety of housing choices to support different needs, lifestyles and affordability thresholds.	
O6.	To ensure the design of buildings will be responsive to the site context and enhances local character and heritage whilst simultaneously responding to current needs, changes in society and cultural diversity.	
O7.	To ensure buildings will be responsive to climatic and environmental conditions and will be energy-efficient with reference to both their construction and on-going operation.	
O8.	To ensure the built environment uses land efficiently and effectively with the appropriate allocation of residential densities, housing types and land uses.	
O9.	To ensure integration of land use and transport, including high levels of accessibility and minimisation of travel demand and transport-energy use.	
Strategies		
S.	DSP Strategy	LSP Response
S1	LSPs shall allocate residential densities in accordance with the following criteria: <ul style="list-style-type: none"> o A minimum average density of 50 dwellings per site hectare within 400 metres of regional activity centres; o A minimum average density of 30 dwellings per site hectare within 400 metres of district activity centres; o A minimum average density of 25 dwellings per site hectare within 400m of neighbourhood activity centres and along neighbourhood connectors supporting future public transport routes; and o Appropriate density in other locations in order to deliver housing diversity and maximise accessibility to amenities and services 	Density analysis included, linked to housing typologies and built form outcomes, refer Section 10.2.1 and 10.2.2. Criteria for allocation of R-Codes and housing densities provided in Part 1 Statutory Section
S2	LSPs shall include a Local Housing Strategy to deliver housing diversity, which is broadly in accordance with the City's Housing Strategy, 2005 (as amended) and Liveable Neighbourhoods and shall include minimum residential densities, housing typology diversity and strategies to provide an acceptable level of housing affordability;	Comprehensive Housing Strategy completed, Refer Section 10.2
S3	LSPs shall include or provide for precinct and/or streetscape character and building design guidelines;	Precincts identified, refer Section 10.2.5.
S4	LSPs shall ensure that the arrangement of spaces and services within activity centres is safe, convenient and efficient and that the form of buildings is adaptable to changing needs; and	Design principles for Centres outlined and to be refined through Detailed Area Planning, refer Section 10.3.2 and 10.3.3
S5	LSPs shall provide mechanisms to ensure buildings are responsive to the climate and landscape and promote resource efficient, affordable and flexible building designs.	Refer Section 10.2.3

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10.2 Housing Strategy

The LSP Housing Strategy, set out below, provides a structure for the delivery of a diverse range of affordable, climate responsive housing, achieving residential densities commensurate with the site's location between Bush Forever and the Secondary Centre.

The Housing Strategy includes:

- Description of lot yield and dwelling unit yield estimates
- Residential density analysis against policy framework
- Description of key lot and housing typologies
- Description of the principal housing precincts in terms of their context, character, density and built form control
- Strategy for the achievement of climate responsive design through both subdivision and built form processes
- Strategy for the delivery of a diverse range of housing, including affordable housing options
- Description of statutory Residential Design Code variations enforced through the LSP Part 1 Statutory Section.

10.2.1 Housing Typology & Yield Estimates

The LSP will deliver a range of densities, housing types and tenures to facilitate residential yields commensurate with the strategic and statutory planning framework, and the strategic location of activity centres throughout the LSP area.

The LSP has the potential to realise approximately 6,500 residential lots and 7,500 dwelling units, including any residential development provided in the Secondary Centre.

Densities will range from R30 in the traditional residential areas, up to R60 in the Mixed Use Frame.

Based on these yield estimates and the DSP population per dwelling ratios, the anticipated population at full development is 17,000-18,000 people.

The plan delivers an estimated 25 dwelling units per site hectare across the entire LSP area, with 23 dwelling units per site hectare outside of the Two Rocks Secondary Centre. This is significantly higher than the Liveable Neighbourhoods minimum of 20 dwellings per site hectare (site hectare is the pure residential area, excluding open space, roads, and non-residential uses), and as demonstrated in the section below, is consistent with the density targets prescribed in the DSP and the City's Housing Strategy.

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10.2.2 Housing Density Targets

The City of Wanneroo Local Housing Strategy 2005, Yanchep Two Rocks District Structure Plan, Directions 2031 and Beyond, and Liveable Neighbourhoods all set out guides for residential density targets within certain distances to key infrastructure. While the fundamental principles of each are generally consistent, the actual residential density targets and criteria vary significantly between the documents.

Table 5 below sets out a comparison of the residential density targets under the City of Wanneroo Local Housing Strategy (2005), Yanchep Two Rocks District Structure Plan (2008), Liveable Neighbourhoods (2007), and Directions 2031 and Beyond (2010).

This LSP provides the framework to achieve these residential density targets. Overall the LSP is anticipated to achieve 25 dwelling units per site hectare across the LSP area.

Table 5: Local Structure Plan Compliance with Residential Density Targets					
	Across Structure Plan Area	Within 400m of Regional Centres / Town Centres	Within 400m of District Centre	Within 400 of Neighbourhood Centres	Adjoining Bus Routes
City of Wanneroo Local Housing Strategy 2005	12 – 20 du/sha	40 du/sha	30 – 40 (large NC) du/sha	20–30 (small NC) du/sha	20 – 30 du/sha
Yanchep Two Rocks District Structure Plan 2008	-	50 du/sha	30 du/sha	25 du/sha	25 du/sha
Liveable Neighbourhoods 2007	12 – 20 du/sha	30 – 40 du/sha	-	20 – 30 du/sha	20 – 30 du/sha
Directions 2031 and Beyond 2010	15 du/gha	-	-	-	-
SPP 4.2 – Activity Centres for Perth and Peel		25-35 du/gha	20-30 du/gha	15-25 du/gha	-
LSP Residential Density Estimate *	23 du/sha	60 du/sha	25-35 du/sha	20-22 du/sha	20-22 du/sha

du/sha - Dwelling units per site hectare

du/gha - Dwelling units per gross urban hectare

Notes:

- Site hectare is the pure residential area, excluding non-residential land uses, roads, lanes and open space
- Gross hectare is the total urban area, inclusive of roads, POS, non residential land uses etc.
- The residential densities achieved by the LSP are indicative based on the designated residential density criteria and indicative subdivision layout.
- Density estimates in proximity to the Two Rocks Secondary Centre are indicative and are subject to refinement as part of a future centre plan.

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The LSP allows for the delivery of a diverse range of lot and housing types, with typologies ranging from contemporary, compact traditional lots with an average lot size of between 450 – 550m² to terrace lots of 225m² and grouped or multiple dwellings.

The residential component of the future Secondary Centre is anticipated to range from R80 to R160 largely comprised of multiple dwellings, this detail will be resolved as part of future centre planning.

10.2.3 Housing Strategy Precincts

The Housing Strategy is based on three separate housing precincts, which are broadly defined by their proximity to strategic land uses. Each precinct can be defined by its streetscape character, housing diversity, residential density codes and built form control mechanisms.

The strategic land use context of each precinct will inform the density R-Code for each precinct, to be refined and confirmed at subdivision stage.

The following provides an indicative description of each housing precinct, to be further refined as part of the detailed subdivision design process.

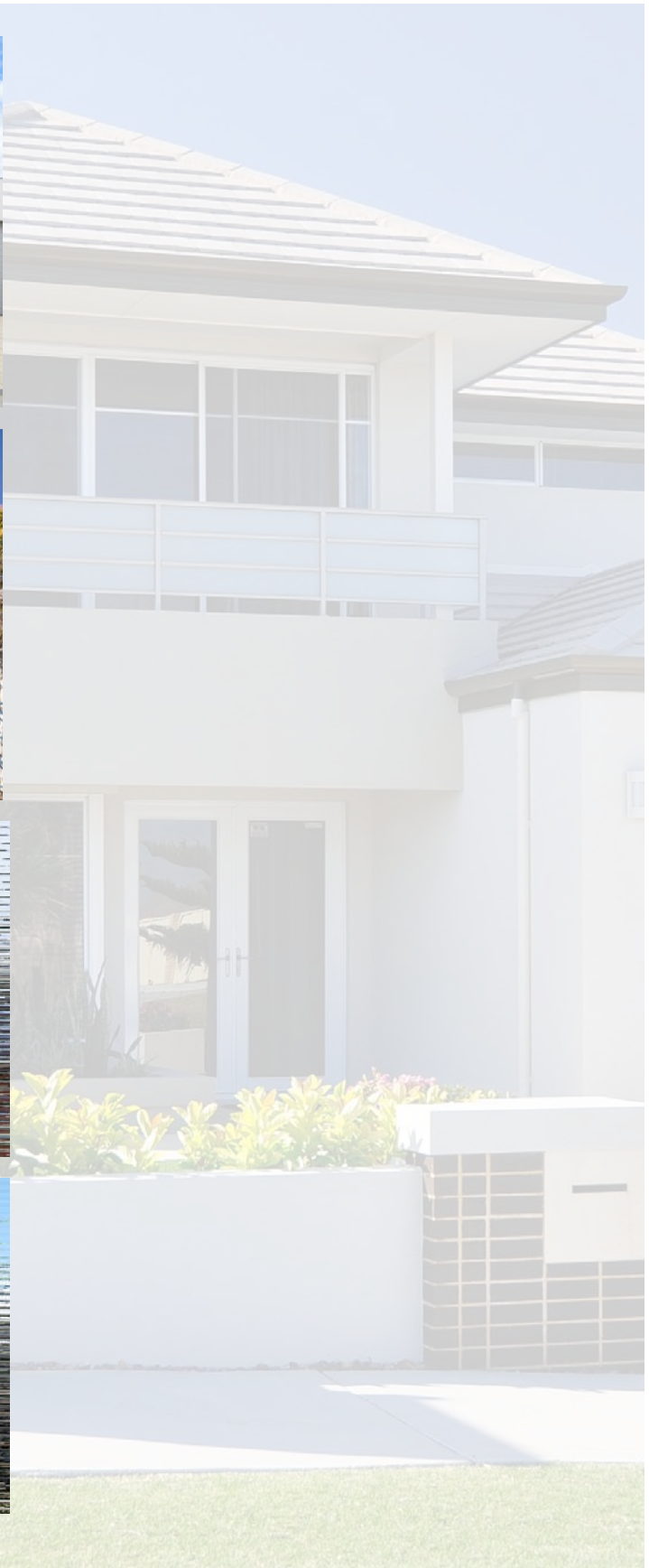
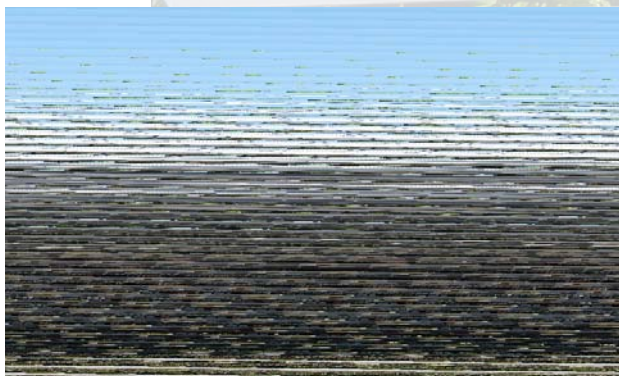
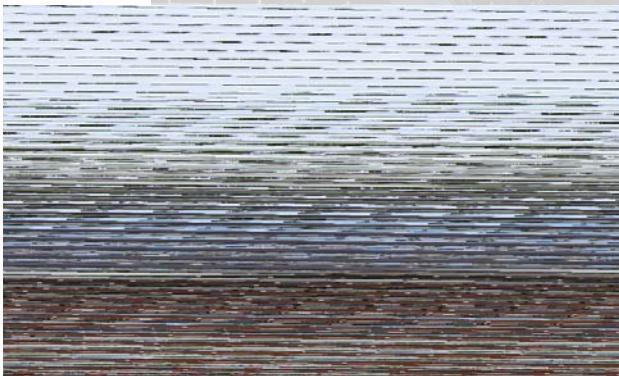


Mixed Use Frame Precinct

Strategic Land Use Context	<p>Generally within 800 metres of the Secondary Centre this precinct has the opportunity to comprise residential, retail, commercial, and community based land uses.</p> <p>The adjoining Secondary Centre will provide excellent access to public transport, including access to the Yanchep Strategic Metropolitan Centre via the central transit corridor.</p> <p>This context provides a framework for a diversity of housing types and medium to high densities.</p>
Streetscape & Built Form Character	<p>An urban streetscape, characterised by:</p> <ul style="list-style-type: none"> o generally rear loaded lots with laneways, removing garages / carports from the front of the dwelling, enhancing the relationship of the dwelling to the street o embayed car parking o pockets of visitor car parking provided for density sites and rear loaded lots o street trees providing shade for pedestrians accessing the town centre, with selected boulevard treatments with median planting o urban street furniture o a modified grid of connected streets, with slow speed environments o reduced front building setbacks, encouraging use and engagement with the street environment o grouped and multiple dwellings providing scale to the streetscape of over two storeys, while being pedestrian in their scale at the street level.
Housing Typologies and Diversity	<p>REAR LOAD: Terrace</p> <p>Corner Duplex</p> <p>Apartments/Walkups</p>
Residential Density Coding	<p>Residential R160</p> <p>Residential R60</p>
Built Form Control	<p>Residential Design Codes</p> <p>Residential Design Code Variations (pursuant to LSP Part 1, refer Section 10.2.8)</p> <p>Potential for Design Guidelines implemented by the proponent</p>

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Neighbourhood Centre Precincts

Strategic Land Use Context	Located within 400m of the proposed Neighbourhood Centres, providing access to the retail, local office, and community uses within the Neighbourhood Centres, as well as primary schools. The precinct is serviced by local bus routes connecting to the future town centre. This context provides a framework for a diversity of housing types and medium to high densities.
Streetscape & Built Form Character	<p>An urban streetscape, characterised by:</p> <ul style="list-style-type: none"> o generally rear loaded lots with laneways, removing garages / carports from the front of the dwelling, enhancing the relationship of the dwelling to the street o Some narrow front loaded lots on local streets o embayed car parking o pockets of visitor car parking provided for density sites and rear loaded lots o street trees providing shade for pedestrians accessing the Neighbourhood Centre and primary school, with selected boulevard treatments with median planting o urban street furniture o a modified grid of connected streets, with slow speed environments o reduced front building setbacks, encouraging use and engagement with the street environment o single and grouped dwellings of 1-2 storeys with multiple dwellings providing scale to the streetscape of over two storeys, while being pedestrian in their scale at the street level.
Housing Typologies and Diversity	<p>REAR LOAD: Terrace Corner Duplex</p> <p>FRONT LOAD: Cottage</p> <p>Density Sites - grouped and multiple dwellings</p>
Residential Density Coding	<p>Residential R40</p> <p>Residential R60</p>
Built Form Control	<p>Residential Design Codes</p> <p>Residential Design Code Variations (pursuant to LSP Part 1, refer Section 10.2.8)</p> <p>Potential for Design Guidelines for density sites implemented by the proponent</p>

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Residential Precinct

Strategic Land Use Context	Located to the north and east of the Town Centre Fringe Precinct, this area includes the 400m catchment of the Local Centres and/or 800m catchment of the Neighbourhood Centres. Serviced by local bus routes connecting to the Two Rocks Secondary Centre and transit corridor. This context provides a framework for a mix of low to medium densities and a diversity of housing types, achieving DSP density targets.
Streetscape & Built Form Character	<p>A contemporary traditional streetscape, acknowledging the site's strategic context in relation to the activity centres and public transport links, but at the same time recognising that it is outside of the walkable catchment to the town centre. The streetscape will be characterised by:</p> <ul style="list-style-type: none"> o generally front loaded lots, with garages and carports setback, but visible from the street o front loaded dwellings set back in accordance with the Residential Design Codes o some narrow rear loaded lots creating pockets of density around centres and public transport routes in accordance with DSP principles o generally no formal embayed car parking, except in front of rear loaded cottage lots o Informal on street car parking on the road pavement and behind the garage setback o street trees providing shade for pedestrians o a modified grid of connected streets, with slow speed environments.
Housing Typologies and Diversity	<p>FRONT LOAD: Traditional Compact Traditional Victorian Cottage Executive</p> <p>REAR LOAD: Cottage Density Sites</p>
Residential Density Coding	<p>Residential R30 Residential R40</p>
Built Form Control	<p>Residential Design Codes</p> <p>Residential Design Code Variations (pursuant to LSP Part 1, refer Section 10.2.8)</p> <p>Design Guidelines for density sites implemented by the proponent</p>

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10.2.4 Climate Responsive Design Considerations

At the LSP stage the delivery of climate responsive design considerations can be achieved through a combination of the following two factors:

- Providing a robust framework, via the land use distribution and indicative road network, for the delivery of lots with a long north – south or east – west axis. For standard home builders this is considered to be the optimal lot configuration for solar passive design.
- Introducing incentives through the development control process to encourage the delivery of solar passive and water efficient outcomes.

This site, like most, presents a number of factors that influence the configuration and orientation of the road network and thus the lot orientation, including:

- acknowledgement of the existing topography
- existing drainage flows to low points
- location of existing vegetation that is able to be retained in open space
- managed interface to Bush Forever and Nature Reserve.
- irregular site boundaries

The LSP provides a preliminary road network, to be refined as part of the subdivision process, that responds and balances these considerations to maximise the delivery of lots orientated to achieve their long axis on either an east – west or north – south alignment, in accordance with Liveable Neighbourhoods.

In addition to the road network and lot orientation, the LSP also includes incentives through the development control process to require the solar responsive locations for major openings, outdoor living areas and boundary walls for medium density lots. These built form control mechanisms, described further in Section 10.2.6, coupled with maximising optimal lot configuration, allow for the achievement of solar passive design outcomes through the subdivision and dwelling design process.

10.2.5 Delivering Affordable Living

The LSP allows for the delivery of affordable living, not just affordable housing. Affordable living is achieved through: multi modal transport choice, residential densities that respond to the strategic land use context, housing choice and land use mix facilitating local employment.

The delivery of a comprehensive bus network provides transport choice, supported by a grid of local streets and POS pedestrian/cycle linkages that encourage walking and cycling.

Climate responsive design considerations set out under Section 10.2.4 further enhances affordable living, providing a framework for solar passive design through the road network and Residential Design Code Variations, minimising heating and cooling costs.

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The realisation of local employment within the District Structure Plan area, including home based business and employment within the LSP area further enhance the delivery of affordable living.

10.2.6 Residential Design Codes: Variations to Development Standards

The LSP Part 1 – Statutory Section includes a responsive and tailored set of R-Code variations focused on addressing the built form requirements of higher density subdivisions. The variations are essential to the delivery of housing density in accordance with local and state government targets.

The provisions recognise and respond to the following key driving forces:

- Solar responsive design outcomes are to be encouraged through the inclusion of development control incentives.
- Smaller lots demand greater flexibility for some design components, including walls on boundaries, site cover, overshadowing and overlooking, in order to achieve practical building envelopes and affordable outcomes.
- Reduced front setbacks to lots improve flexibility in building design, while also reinforcing engagement with the public realm.
- Demographic changes increase the need for flexible living arrangements such as ancillary accommodation (studios over garages or 'granny flats').
- Greenfield development provides the opportunity for greater flexibility of design controls as the site represents a 'blank slate', with all purchasers acquiring land with a clear understanding of amenity expectations. The R-Code variations provide certainty for landowners as to permissible variations and possible development outcomes for both themselves and adjoining landowners, minimising conflict and concern.

Similar provisions currently operate effectively within a number of agreed structure plans within the City of Wanneroo, including:

- Lot 102 Yanchep Beach Road (ASP40)
- Lots 1 and 2 Yanchep Beach Road (ASP76)
- Butler Ridgewood (ASP27)
- Banksia Grove (ASP21A)

The additional / modified provisions to the R-Codes relate to:

- Design Element 2 - Streetscape
- Design Element 3 – Boundary Setbacks
- Design Element 4 – Open Space
- Design Element 8 - Privacy
- Design Element 9 – Design for Climate
- Part 7.1 - Ancillary Accommodation.

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These R Code variations apply to R40 and R60 coded lots, and can be supplemented with more specific building design controls through developer administered design guidelines or Detailed Area Plans if required. The following provides an overview of the R-Code variations applicable to the R40-R60 coded areas.

Setbacks

Reduced setbacks to the primary street for lots with vehicular access to a public laneway (1.5 metre minimum and 3 metre maximum).

At present the R-Codes require an average 4m setback from the primary street with a minimum of 2m to the dwelling in areas coded R40 and R60.

Primary street setbacks are generally required in order to 'protect' the streetscape from a continuous facade of garage roller doors. Given that the lots in question have laneway access for the parking of vehicles, this issue is avoided, and an opportunity is provided for dwellings to move forward and engage with the street in a traditional terrace housing manner.

The variations propose a minor relaxation to the front setback requirements to facilitate flexibility in building design, as well as reinforcing engagement with the public realm. In particular, the reduced setback will:

- bring the dwellings forward to address and engage with the street in a more interactive manner than a traditional street setback
- allow 'tight' urban streetscapes, consistent with the urban context for laneway lots
- allow efficient siting and sizing of the private open space/outdoor living areas at the rear of the dwelling, maximising the use of land, and reducing unusable open space.

Boundary Walls

Permitted boundary walls on both side boundaries (with the exception of laneway boundaries) in accordance with the following table:

BOUNDARY WALLS		
Description	Max. Height	Max Length
Dwelling – Single Storey	3.5 m	No Limit
Dwelling – Two Storey	6.5 m	12 m

The R Codes currently allow as of right a single storey wall for up to two thirds of the length of one boundary within R40 and R60 coded areas, with no second storey boundary walls.

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This precludes terrace style development and restricts design options on smaller lots where efficient use of space is critical, and discourages two storey development. Greater flexibility is needed if housing forms are to respond to density and solar imperatives.

Allowance for walls on both side boundaries for the length of the boundary is proposed, with a restricted length of 12m for the second storey. This allowance provides sufficient flexibility to encourage two storey built form, while achieving a reasonable level of amenity protection for adjoining properties.

Private Open Space

Minimum open space provided reduced to a minimum of 25% of the site area.

The R Codes currently require 45% of the site to be retained as open space in R40 and R60 densities, which severely limits single storey dwelling design on smaller lots, undermining affordability imperatives.

A variation in the minimum open space provision to 25% is necessary to successfully achieve and implement terrace housing, facilitating the delivery of affordable and diverse dwellings.

Privacy

The setback to major openings and unenclosed outdoor active habitable spaces (balconies, verandahs, terraces or other outdoor living areas) which have a floor level more than 0.50 metres above natural ground level which overlook any part of any other residential property behind its street setback line, shall be setback in direct line of sight with a cone of vision from a boundary to a minimum of 4.5 metres for all laneway lots.

Like overshadowing, the standards for privacy applicable to lower density areas cannot be applied in the same way in higher density precincts without severely impacting on the quality of dwellings. For example, the 7.5m balcony privacy setback would preclude provision of balconies on almost all of the R40 and R60 lots due to the narrowness of lots.

Again, greater flexibility in regards to these requirements has been incorporated as a necessary prerequisite to achieving the densities and housing diversity. As such, the standard privacy provisions do not apply to the R40 and R60 areas, with a reduced privacy setback of 4.5m applying to major openings to all habitable spaces, including bedrooms and balconies. This approach has been successfully implemented in other areas, and is widely accepted by the building industry, local authorities and WAPC.

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Design for Climate

The overshadowing provisions shall not apply.

Greater flexibility in regards to overshadowing requirements has been incorporated as a necessary prerequisite to achieving the densities and housing diversity outlined in this report.

The standards for overshadowing applicable to lower density areas cannot reasonably be applied in the same way in higher density precincts without severely impacting on the quality of dwellings. For example, the overshadowing provisions would limit, or in some situations preclude the majority of single storey development on the 7.5m and 10m wide cottage lots, and would preclude almost all two storey development. As such, the overshadowing standards do not apply.

Ancillary Accommodation

Permitted on laneway lots less than 450m². Ancillary accommodation with a plot ratio not exceeding 40m² does not require an additional car parking bay on site.

The R-Codes preclude ancillary accommodation on lots under 450m² as of right, restricting the capacity for studios / granny flats in R40 and R60 coded areas. This undermines the ability to deliver alternative high density, affordable housing options, particularly within the station precinct.

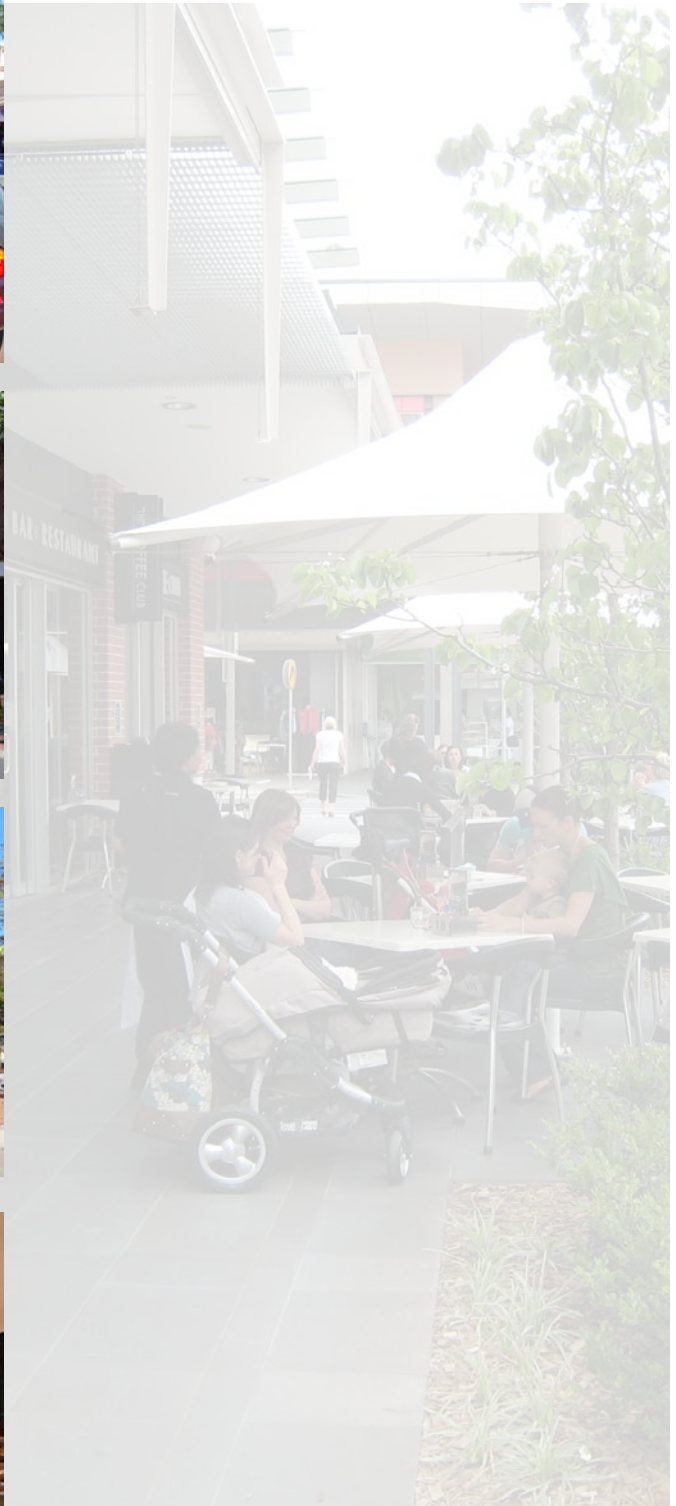
The provisions remove this restriction where the lot is accessed via a rear laneway, supporting the achievement of dense, affordable housing options. Pursuant to similar provisions studios have been constructed over garages in Brighton adjoining the Neighbourhood Centre, providing a demonstration for such housing alternatives.

The R- Codes require an additional car parking bay for ancillary accommodation. An additional car parking bay is unnecessary for ancillary accommodation located within high density precincts with good access to public transport. Providing three car bays per site in such close proximity to public transport infrastructure is unnecessary and unachievable, undermining the ability to deliver innovative outcomes.

The requirement for an additional parking bay to accompany ancillary accommodation has been removed, as a further incentive to provide this type of accommodation. Where any additional parking demand is generated this can be accommodated through on street parking; however any disadvantages of this are more than compensated for by the diversity of housing choice and affordability.

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10.3 Centres Built Form

10.3.1 Two Rocks Secondary Centre

The Two Rocks Secondary Centre is a strategic centre within the DSP area, second in size only to the Yanchep Strategic Metropolitan Centre. The Two Rocks Secondary Centre is identified in State Planning Policy 4.2 – Activity Centres for Perth and Peel as the 'Two Rocks North' Secondary Centre.

It is envisaged that the Secondary Centre will consist of high density commercial, retail, entertainment and community based uses, potentially including:

- Supermarkets
- Discount department stores
- Specialty shops
- Bulky goods
- Non retail (offices)
- Restaurants, cafes, fast food
- Cinema complex
- Tavern
- Youth Centre/Skate Park/Hall

The DSP also allows for a regional aquatic and indoor sport facility, and a regional library to be included within the Centre. In addition, it is reasonable to expect provision of additional community services such as child care centres, and health care/medical centres.

The built form will be responsive to the key strategic elements of the centre – in particular the transit station, the existing and proposed road network, and the mixed use frame.

Given the size of the town centre (130,000m² of total commercial floorspace), and the location of the Centre over multiple land parcels, the detailed planning including built form controls will be included as part of a comprehensive Centre Plan, which will enhance the planning framework provided in this LSP.

The key objectives for the built form of the Centre, to be reinforced in the Centre Plan, are:

- Encourage building designs to address street frontages and public spaces, maximising opportunities for passive surveillance through the placement of entrances and a high degree of street front glazing.
- Facilitate appropriate built form controls that enable continuity of frontage to the main streets.
- Provide opportunities to integrate signage with buildings at an appropriate scale and character.
- Encourage local landmarks, artwork, landscape and street trees to improve legibility.

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- Recognise Crime Prevention Through Environmental Design principles as a tool to create a safe and enjoyable pedestrian experience.
- Provide parking areas in locations that allows co-ordinated access, reciprocal use of bays and strong pedestrian connectivity, whilst minimising their visual impact on the streetscape.
- Create a structure and land use control regime that will facilitate land use change over time, in a staged manner.
- Recognise the optimal long term development potential and intensity of activity associated with the transit station and allow redevelopment of these areas to reflect transit oriented development principles in the medium to longer term.

10.3.2 Neighbourhood Centres

The LSP includes provision for a Neighbourhood Centre in the south-east of the LSP area, and a Neighbourhood Centre in the north-west. The following outlines the key characteristics of each Centre.

As noted previously, the eastern Neighbourhood Centre, identified as Centre I in the DSP, sits astride Breakwater Drive. The bulk of the Neighbourhood Centre is likely to be located on the southern side of Breakwater Drive, to provide a commercial, retail function to compliment the future industrial area. The controlled intersection on Breakwater Drive provides a pedestrian focus and demarcation for the commencement of the main street environment for the portion of the Neighbourhood Centre that falls within the LSP area.

Neighbourhood Centre Q straddles a four way intersection of two local distributor roads, and is adjacent to a 4ha primary school site, forming a commercial and community hub to the north western neighbourhood. The plan allows the provision of a main street based Neighbourhood Centre located along key neighbourhood connectors, allowing for a range of predominantly retail uses. Centre Q will also encompass a community facility with a floor area of approximately 1,200m², providing neighbourhood level community services including child health facilities and other shared facilities.

The following sets out the key development principles applicable to both of the Neighbourhood Centres located within the LSP area:

- a main street based centre
- a range of uses including local retail, office, restaurant/cafe, and community uses
- the boundary between the public and private realms blurred
- the treatment of the street environment to calm traffic, facilitate pedestrian and public transport use
- integration of the surrounding path network with the local centre, encouraging walking and cycling to the centre, and clearly defined access between the primary school and the centre

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- car parking oriented so as not to detract from the amenity of the centre with on street parking where possible, to be credited as part of the car parking contributions for proposed retail uses
- suitable interface and integration with the surrounding residential uses.

The Neighbourhood Centres will be subject to a Detailed Area Plan, required pursuant to the Part 1 Statutory Provisions. The Detailed Area Plan will address the following:

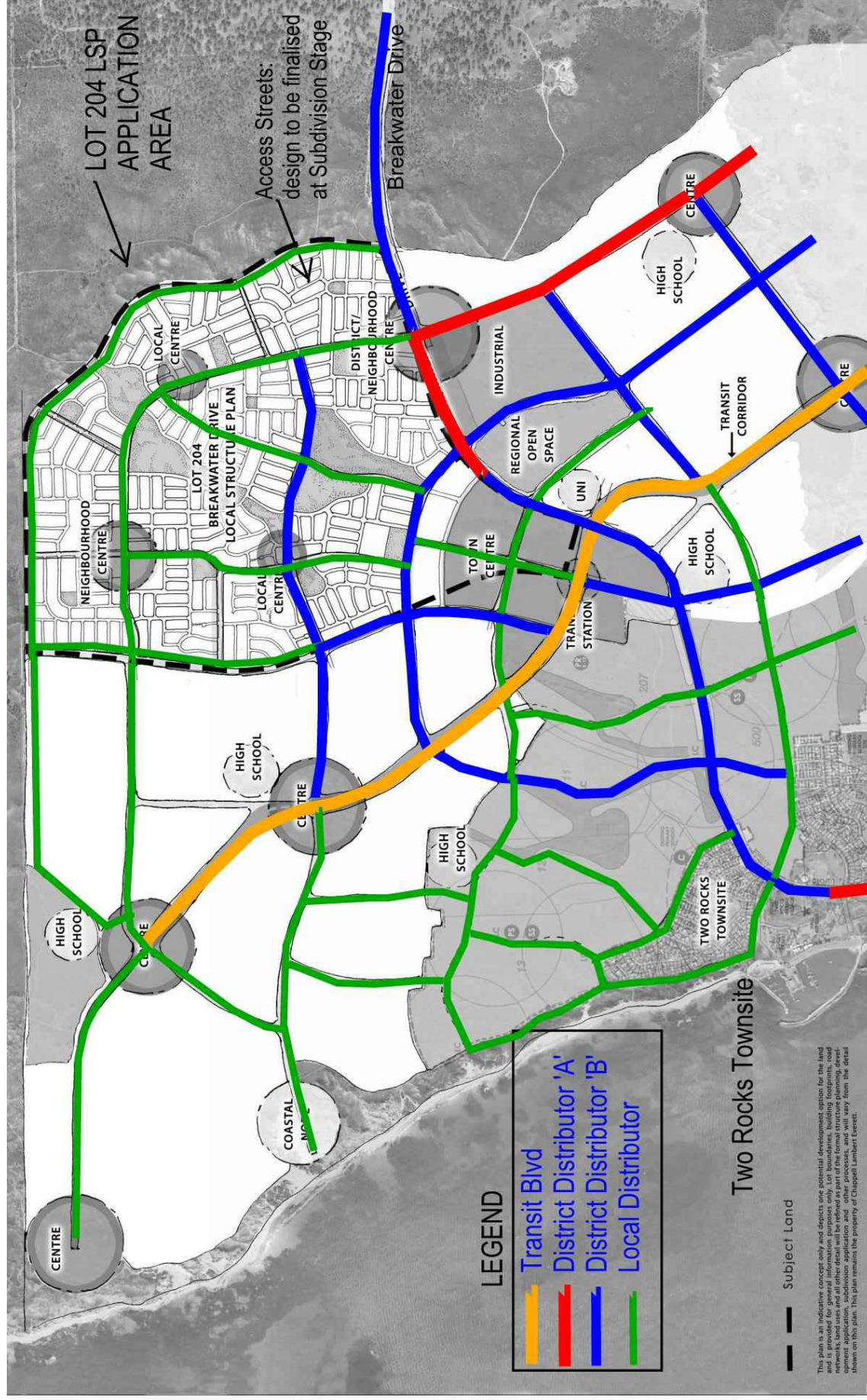
- setbacks
- height
- plot ratio
- pedestrian and cyclist network
- location of car parking areas
- cross over locations
- location of service areas.

10.3.3 Local Centres

The plan provides for two Local Centres adjoining key district and neighbourhood connectors. The Local Centres have a site area of approximately 1ha, and will provide commercial/retail services of a local nature, with a combined floorspace of approximately 1,500m² per centre.

Each Local Centre site is located so that primary frontage is provided to a neighbourhood or district distributor, with secondary frontage to local streets to the side and rear. This allows for buildings to address the major roads with reduced or nil setbacks, and parking to be provided to the side or rear. The multiple road frontages also allow buildings to 'wrap' around corners and address both street frontages, creating a pedestrian friendly environment.

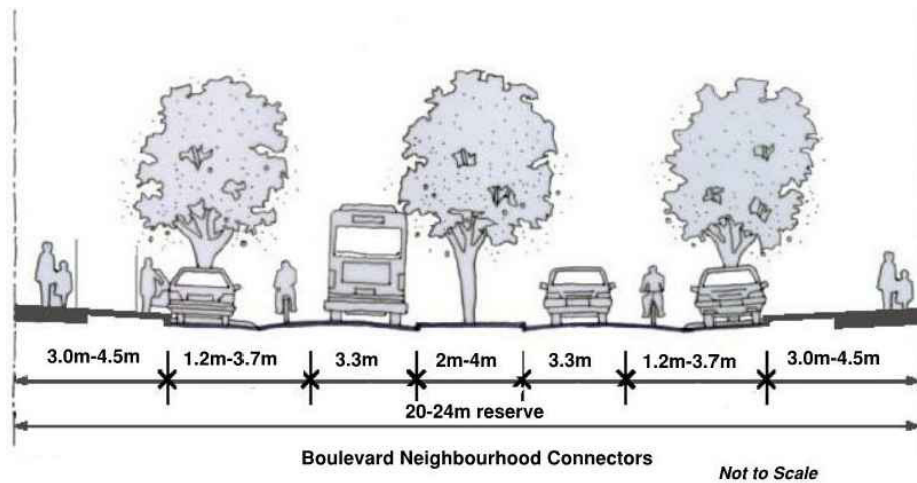
The Local Centres are of a relatively small scale, and are likely to be developed in their entirety at day one, thereby mitigating the need for detailed area plans prior to lodgement of development applications.



11.0 TRANSPORT AND ACCESS

11.1 Yanchep – Two Rocks District Structure Plan Objectives and Strategies

TRANSPORT AND ACCESS		
Objectives		
O1.	To ensure that both existing and new communities have convenient public transport access to all activity centres and significant destinations in the Yanchep - Two Rocks area.	
O2.	To ensure that land use and building form is designed in conjunction with the transport system to ensure efficient operation of the transport network and safe and convenient movement between places or residence and employment, recreation and commercial activity.	
O3.	To provide for a pattern of development, which is supportive of an efficient transport system, including high frequency public transport, cycling and walking with appropriate movement networks and streetscape design.	
O4.	To encourage public transport use through high quality, attractive and efficient bus/rail interchanges, frequent services and accessible stops and stations.	
O5.	To make connections an essential part of place-making by ensuring all routes respond to their context in terms of safety, amenity and level of service.	
Strategies		
S.	DSP Strategy	LSP Response
S1	LSPs shall maximise the convenience, efficiency and usage levels of public transport by integrating high frequency public transport stops with the higher density and diversity of development located within and adjacent to activity centres;	LSP includes planned bus route strategy, maximising access to local infrastructure and services, including the transit corridor connecting the Two Rocks Secondary Centre with the Yanchep City Centre. Refer Section 11.5 below and Appendix 3
S2	LSPs shall make provision for cycling and walking networks that are continuous, connected, convenient, attractive and safe, and are linked to key destinations;	LSP includes a comprehensive path network linking the Two Rocks Secondary Centre with residential precincts, and regional open space. Refer Section 11.6 below and Appendix 2.
S3	LSPs shall, where appropriate, investigate the negotiation of strategic agreements with public transport authorities to gain a commitment on timeframes to extend the Perth northern rail line to the regional town centre and for the delivery of high frequency feeder routes such as those illustrated in figure 24 Public Transport, so as to provide high frequency public transport services to all activity centres and corridors in a reasonable timeframe;	The timing of the construction of the Northern Suburbs Railway to Yanchep is currently under investigation to examine options and potential timing of the railway extension. Discussions on timing of the feeder bus routes into the Northern City Centre have been held with the PTA. The PTA have indicated in principle support for the proposed feeder bus network indicated in section 11.5.
S4	LSPs, where appropriate shall be designed to accommodate future high frequency feeder routes such as those illustrated in figure 24 Public Transport;	LSP bus network has been designed in accordance with DSP principles to provide high frequency feeder routes. Refer section 11.5.
S5	Roads within activity centres shall be designed to create a safe pedestrian focused environment that also allows for the efficient movement of vehicles; and	Design principles for activity centres outlined and to be refined through future centre planning for the Two Rocks Secondary Centre, and Detailed Area Planning, refer Section 10.3
S6	LSP shall ensure a road open space or appropriate land use interface occurs with the above ground railway reserve and sensitive land uses such as residential development to help address noise amenity issues, or provide suitable justification otherwise.	The alignment of the MRS rail reserve to the north of the Two Rocks Secondary Centre has not been confirmed and is currently under review. Current indications are that the rail corridor will terminate at the Two Rocks Secondary Centre, with feeder bus routes servicing the town centre from the north. The LSP allows a road interface to the reserve to address noise and amenity issues, though it is understood that the rail reserve will be removed from the MRS as part of a future omnibus amendment.

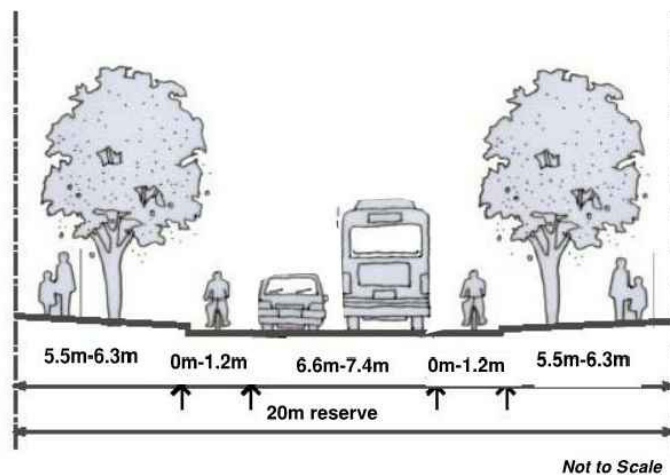


Type 1 (with parking/cycle space): 22-24m =
3.0 verge + 3.7 parking/cycle + 3.3 lane + (2 - 4) median + 3.3 lane + 3.7 park/cycle + 3.0 verge

Type 2 (with cycle space): 20 - 22m =
4.5 verge + 1.2 cycle lane + 3.3 lane + (2-4) median + 3.3 lane + 1.2 cycle lane + 4.5 verge

Notes:

1. Median width to suit tree species (e.g. 4.0m for large trees such as Norfolk Pines).
2. Footpath to be constructed on one side and shared path on opposite side.



Type 1 (traffic < 3000vpd with no cycle lanes): 20m = 6.3m + 7.4m + 6.3m

Type 2 (traffic > 3000vpd with cycle lanes): 20m = 5.5+1.2 (cycle lane)+6.6+1.2 (cycle lane) + 5.5

Note: Footpath to be constructed on one side and shared path on opposite side.



11.2 Background & Context

As indicated in the table above, the traffic and transport aspects of the LSP have been analysed and assessed in the context of the DSP, and are fully consistent with the strategies and objectives of the DSP.

The DSP provides the key transport elements, and identifies the regional and district road hierarchy for the DSP area. The planned Mitchell Freeway extension to the east of the LSP area provides the future regional connector on a north south axis. The existing Breakwater Drive and the planned Central Transit Corridor provide the most significant district level roads. Breakwater Drive will link the LSP area and Two Rocks Secondary Centre to the future freeway, while the Central Transit Corridor provides a rapid transit link between the future Yanchep City Centre to the south, and the Secondary Centre.

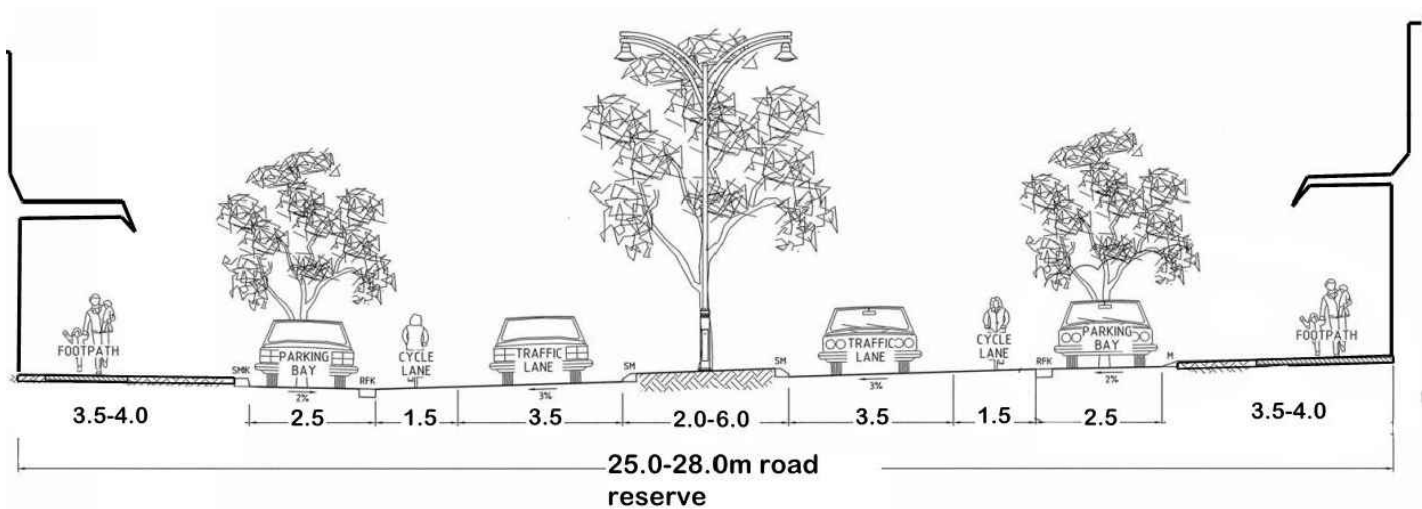
The DSP shows a permeable grid of district distributors and local distributors across the LSP area, providing connections between the various activity centres within the LSP area, and connecting to the west, south, and north.

The DSP also provides for a fully integrated and efficient public transport system that recognises land use, and allows for coordinated transfers between different transport modes. Integral to the transport philosophy of the DSP, a Central Transit Corridor consisting of a future light rail or bus connection links the Secondary Centre with the Yanchep City Centre to the south, with a high density, mixed use corridor 'sleeving' the transit corridor. A transit station is proposed within the Secondary Centre, with a series of feeder bus routes connecting the Centre with the urban areas to the east, north and west of the town centre.

The DSP provides for a series of feeder bus routes through the LSP area, connecting to the Centre, as well as the surrounding employment areas, tertiary campus, and regional open space.

In order to further demonstrate the LSPs consistency with the principles of the DSP, the LSP is supported by two technical analyses:

1. A comprehensive Traffic and Movement Network Analysis, prepared by Bruce Aulabaugh Traffic Engineering and Transport Planning, refer Appendix 2. This report addresses the following aspects of the LSP:
 - Regional road network
 - Street types and cross sections
 - Traffic forecasts
 - Access, intersection control and traffic management
 - Pedestrian and cyclist facilities
 - Traffic management at schools



Notes:

1. Median width through 'Main Street' section may be reduced to 2.0m minimum as part of comprehensive review of design requirements.
2. Verge width is specific to pedestrian, landscaping, parking and servicing requirements.
3. Cycle lane may be removed where 'Main Street' design with 40km/hr speed zone is achieved.
4. Parking lane may be replaced with turn lane at signalised intersection.
5. Median of 5.5-6.0m is used where right turn lanes are accommodated.



2. A Transport and Access Analysis prepared by Sinclair Knight Merz (SKM), refer Appendix 3. The SKM report addresses:
 - Travel demand and traffic patterns
 - Public transport
 - Further analysis of the regional road network

Traffic and transport assessment, and implications for the LSP were discussed in detail with the City's traffic engineers and planners at a workshop on 27 August 2010.

The following provides a summary of the key planning implications of these reports.

11.3 Road Network, Capacity and Arterial Road Access

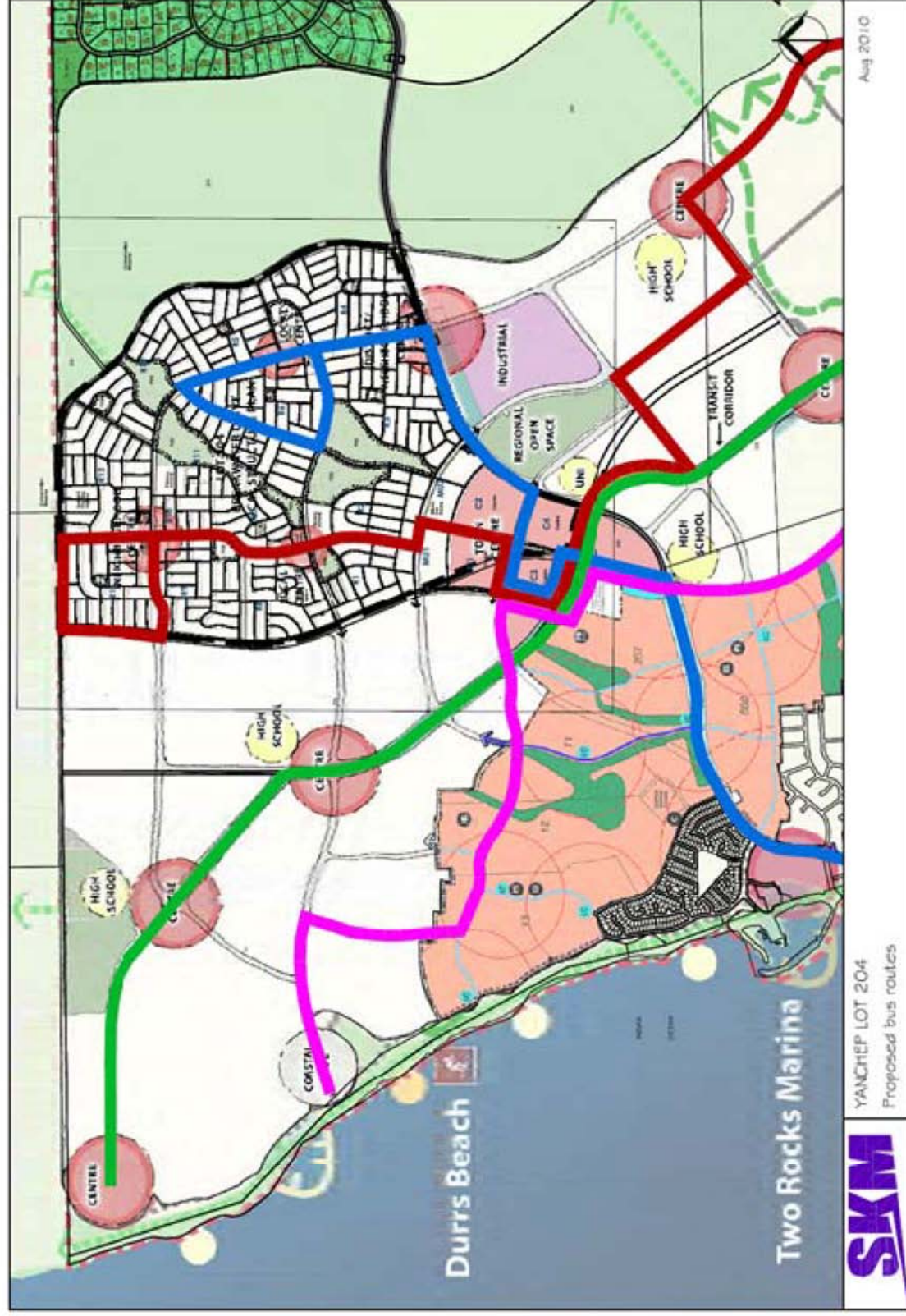
The District Street Types Plan in figure 11 identifies the proposed road network, including the identification of a hierarchy of district distributor roads and local distributor roads (neighbourhood connectors) within the LSP area.

The District Distributor Roads are designated as either 'Type A' or 'Type B' depending on modelled traffic volumes. Consistent with the DSP, the LSP shows Breakwater Drive between the Secondary Centre and the Neighbourhood Centre as Type A, while two Type B District Distributors provide east-west and north-south connections through the LSP area. The cross section shown in figure 12b demonstrates indicative reserve widths for Type B District Distributors, and is consistent with the indicative cross sections provided in the DSP.

The local distributor roads shown in figure 12a provide a highly connected local framework throughout the LSP area, with the detailed local access street network to be refined as part of the subdivision design process. Indicative reserve widths for the local distributors range from 20 metres to 24 metres. These cross sections are consistent with the indicative cross sections provided in the DSP.

The planned road network described above has been modelled to forecast traffic volumes, and to demonstrate that the road hierarchy and reserve widths have adequate capacity to accommodate the traffic movement at full development. The modelling incorporates data and information from the DSP, as well as surrounding LSP's that have been submitted and endorsed to the south of the LSP area.

The traffic volumes forecast for the LSP road network are comfortably within the acceptable limits as prescribed in the DSP and Liveable Neighbourhoods. Breakwater Drive (Distributor A) is forecast to carry approximately 11,000-15,000 vpd adjoining the LSP area – well within the recommended capacity of 40,000vpd prescribed in the DSP. The LSP district distributor B roads are typically forecast to carry 10,000-16,000vpd, while the local distributors will typically carry approximately 5,000-7,000vpd. The estimated traffic volumes and road hierarchy are consistent with the nominal road capacities provided in the DSP, and the indicative volume range provided in Liveable Neighbourhoods.



Arterial access to the site is provided from Breakwater Drive to the south via two district distributors and two local distributor roads. Intersections between district distributor roads are generally controlled via roundabouts, while uncontrolled Stop and Give Way intersections are provided with local distributor roads, with priority to Breakwater Drive.

The arterial access through the site is consistent with the DSP regional road network, and is complimented by a number of local connectors, providing a permeable grid network throughout the site. This grid network includes future connections to the west of the site, allowing for integration of the road network with future development to the west, and through to the coastal activity centres.

11.4 Local Street Cross Sections & Traffic Management Treatments

Access streets will form the vast majority of local streets within the LSP area. The indicative cross sections for these access streets are consistent with the Liveable Neighbourhoods cross sections figures 19-21. Reserve widths and design of access streets can be further refined at subdivision stage.

The Traffic and Movement Network Analysis, refer Appendix 2, establishes traffic management treatments throughout the LSP area. The Analysis proposes a range of traffic management treatments at a local level based on the road hierarchy, the modelled traffic volumes, and the City of Wanneroo's standard requirements. The proposed traffic management treatments include:

- Restricted access to District Distributors and high volume Local Distributors;
- Intersection type and spacing that is commensurate to vehicle speeds and traffic volumes along main arterial roads;
- The use of traffic signals within the town centre to accommodate efficient movement of vehicular and pedestrian traffic;
- A combination of roundabouts, stop, and give way controlled intersections for local traffic;
- Use of speed control devices such as intersection plateau treatments;
- Designated pedestrian crossings near schools and local centres.

11.5 Public Transport

The proposed bus network and feeder routes have been prepared in consultation with the Public Transport Authority, and have received in principle support from the PTA, refer figure 13.

The LSP builds on the public transport framework established by the DSP. The DSP provides indicative alignments for feeder bus routes connecting the two Neighbourhood Centres and the Secondary Centre. From the Secondary Centre, the feeder bus routes connect to the transit boulevard, connecting south to the Yanchep City Centre, and north to the northernmost coastal district centre.

The LSP enhances the DSP public transport network via:

- Aligning the transit boulevard through the Secondary Centre at the southern boundary of the LSP area to allow for a grid network of town centre streets on a near north-south alignment, and to provide opportunities for a transit interchange as part of the detailed centre planning. Details of the transit interchange can be refined as part of the future Centre Plan. Consistent with the DSP, the transit corridor provides a southern connection to the Yanchep City Centre, which can ultimately become a light rail corridor as the area populates. The transit station and immediate vicinity is envisaged to ultimately serve a similar function to the Wellington Street transit facility.
- Providing a feeder bus route servicing the north-east of the LSP residential area, primary school and Local Centre. This route utilises Breakwater Drive to provide convenient access to the proposed industrial employment precinct and regional open space to the south, as well as connecting to the Secondary Centre transit interchange.
- A second feeder route is provided on a north-south axis through the western half of the LSP area, connecting the northern Neighbourhood Centre and residential catchment with the central primary school and Local Centre before progressing south into the Secondary Centre transit interchange. There is an opportunity to continue this route to the south of the Centre, providing a connection to the proposed university and high school shown on the DSP.

Critical to the LSP, the planned feeder bus routes align with the district road network identified in part 11.3, and provides a mechanism to reduce private vehicle traffic on the district road network during peak hours.

11.6 Pedestrian and Cyclist Facilities

The DSP makes provision for a safe, convenient and legible movement network for both cyclists and pedestrians. The DSP also makes provision for pedestrian and cycle linkages through the main public open space areas connecting to the northern and eastern bushland reserves.

The LSP includes a comprehensive movement network for both pedestrians and cyclists, aligned with the road and POS network throughout the LSP area.

As demonstrated in figure 14, the principal cycle network is aligned with the district distributor and local connector roads, utilising a combination of on road and shared path cycle network, thereby catering for the full variety of cyclists. The network of shared paths provides legible connections between primary schools, local/Neighbourhood Centres, and key areas of public open space, allowing for safe and convenient movement throughout the LSP area. Figure 14 also identifies shared paths providing linkages through the central public open space areas and connecting with the bushland reserves to the north and east of the LSP area. These linkages serve a vital recreation function to the LSP area, and are consistent with the linkages provided in the DSP.

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Safe and efficient pedestrian movement has also been provided for in the LSP. Access streets will generally have a footpath on at least one side of the road consistent with Liveable Neighbourhoods, while the shared path and recreational path network also caters for pedestrian usage. Low speed zones and controlled pedestrian crossings are provided adjacent to each of the primary schools, while the use of traffic signals in the Secondary Centre will ensure that the centre is pedestrian friendly.



ACTIVITY CENTRES LOCATION PLAN

12.0 ECONOMY, EMPLOYMENT & ACTIVITY CENTRES

12.1 Yanchep – Two Rocks District Structure Plan Objectives and Strategies

ECONOMY, EMPLOYMENT & ACTIVITY CENTRES		
Objectives		
O1.	To ensure the development of a regional economic base which will achieve a target 75% employment self sufficiency within the DSP area and contribute towards an overall self-sufficiency for the North-West Corridor of at least 72%, with a wide spectrum of job types and skill levels, including higher order and knowledge intensive industries and employment.	
O2.	To provide for a network of vibrant, robust and dynamic activity centres of varying types from regional to local, with a multi-use transit boulevard, containing a high concentration of commercial uses, linking the Regional Activity Centre and Northern District Activity Centre.	
O3.	To plan for a built environment of a scale, land use mix and intensity to support a diverse regional economic base.	
O4.	To ensure provision of the appropriate infrastructure, services and built form guidelines to attract and support a wide spectrum of business.	
Strategies		
S.	DSP Strategy	LSP Response
S1	LSPs shall provide regional activity centres and supportive district, neighbourhood activity centres and coastal tourist villages connected with mixed use corridors and employment precincts for industry, commerce, community and education/science/ technology/ research, generally as depicted on the DSP Map	Distribution of Neighbourhood Centres and Secondary Centre is in accordance with the DSP map. Local Centres are not shown on the DSP map, and additional local floorspace is allowed under table 10 of the DSP. Retail modelling has indicated the need for two local centres within the LSP area.
S2	LSPs shall generally accommodate the scale and allocation of retail, commercial, community service and associated floorspace as indicated in the economic technical report (Part 3)	The LSP is consistent with the allocation of floorspace provided in the DSP and economic technical report.
S3	LSPs shall participate in economic development programs where appropriate to ensure the necessary elements required to develop the economic base are in place such as Strategic Co-operation Agreements, IDEAS Project and government/industry collaborative projects	Economic development and strategies will be addressed in detail as part of the Centre Plan for the Two Rocks Secondary Centre.
S4	LSPs and servicing reports shall provide high capacity telecommunications and a range of commercial sites in order to attract and support the development of competitive businesses	Details to be provided as part of the Centre Plan for the Two Rocks Secondary Centre.
S5	LSPs shall include provisions to support the development of home-based businesses to provide more flexible employment opportunities	The residential zoning allows for Home Based Business as Permitted and Discretionary Uses. Appendix 5 forecasts 10% of total employment being 'home based'.
S6	LSPs shall investigate and where necessary provide for the potential tourism industry opportunities identified in the DSP	Not applicable to the LSP area which, by virtue of its location is not a strategic tourism area. Tourism opportunities can be investigated as part of the centre plan for the Two Rocks Secondary Centre, and as part of coastal LSPs.
S7	LSPs to provide an Economic and Employment Strategy that, amongst other things, clearly define the roles and responsibilities in the delivery of employment, and provide a clear process and set of milestones, which can be used as decision making points and performance monitoring for employment development.	Refer Appendix 5. Further detailed employment strategies for the Secondary Centre can be provided as part of future centre planning.

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12.2 Overview

Shrapnel Urban Planning has prepared an Economy, Employment and Activity Centres Analysis and Strategy for the LSP area, refer Appendix 5. The following summarises the key findings of this report and the implications for the LSP, with further explanation provided in Sections 12.3 and 12.4 below:

- The Yanchep – Two Rocks DSP forms the overall context for considering the activity centre and employment potential for the LSP area.
- Consistent with the DSP, centres modelling has confirmed the provision of:
 - A Secondary Centre with an indicative maximum retail floorspace of 43,700m².
 - A Neighbourhood Centre (Centre I) on Breakwater Drive with an indicative maximum retail floorspace of 6,100m².
 - A Neighbourhood Centre (Centre Q) in the north-western portion of the LSP area with an indicative maximum retail floorspace of 2,100m².
- The DSP recognises both district and neighbourhood centres, and provides for local centre floorspace to be identified at LSP stage with 30,600m² retail floorspace allocated for other local centres in Table 10 of the DSP.
- The centres modelling demonstrates the need for two additional local centres of 1,500m² indicative maximum commercial floorspace each in the immediate vicinity of primary schools within the LSP area.
- The LSP will ultimately generate approximately 5,900 jobs for an estimated workforce of approximately 8,000 people, resulting in an employment self sufficiency rating of 74% - consistent with the objectives of the Yanchep-Two Rocks DSP.
- An Employment Strategy is to be prepared for the centre zone as part of a future centre plan for the Two Rocks Secondary Centre.

12.3 Retail Floor Space

The Yanchep – Two Rocks DSP defines a broad framework of high level activity centres, consistent with the Centre hierarchy in SPP4.2.

The analysis prepared by Shrapnel Urban Planning is consistent with the retail floor space allocations for the Secondary Centre, and Neighbourhood Centres, and identifies further opportunities for retail floor space within two Local Centres within the LSP area, refer figure 15.

12.3.1 Two Rocks Secondary Centre

The Two Rocks Secondary Centre is one of two regional activity centres within the Yanchep – Two Rocks DSP area, and is second in size only to Yanchep City Centre to the south of the LSP area.

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The Two Rocks Secondary Centre is identified as a Secondary Centre in State Planning Policy 4.2. The Centre has an indicative maximum retail floorspace allocation of approximately 69,000m² (including bulky goods retail), with an overall commercial floorspace allocation of approximately 130,000m².

A portion of the designated Centre is located within Lot 204, with the balance to the south and west. The LSP creates a centre zone over the portion of the Centre within the LSP area, to allow for the preparation of a centre plan to encompass the entire Centre area including the portion within Lot 204. The centre plan will provide a more detailed analysis of the floorspace allocation and employment generation.

12.3.2 Neighbourhood Centres

The Yanchep - Two Rocks DSP identifies a Neighbourhood Centre (Centre I) on Breakwater Drive in the south eastern corner of the site, and a Neighbourhood Centre (Centre Q) within the north-western area of the LSP.

Pursuant to Part 1 Statutory Provisions, the Neighbourhood and Local Centres are zoned 'Commercial'. A Detailed Area Plan is required to be prepared for each Neighbourhood and Local Centre within the LSP area consistent with the built form principles outlined in Section 10.

A residential density code of R60 is allocated over the Neighbourhood Centres, creating the opportunity for mixed use development.

Centre I - Neighbourhood Centre on Breakwater Drive

Centre I is located on Breakwater Drive to the east of the Two Rocks Secondary Centre and straddles north (Lot 204) and south (Lot 205) Breakwater Drive. The DSP identifies Centre I as a Neighbourhood Centre, with an indicative maximum retail floorspace of 6,100m². The analysis undertaken by Shrapnel Urban Planning is consistent with the floorspace allocation of the DSP.

Centre I is in close proximity to a planned industrial precinct, and a planned tertiary institution. The location of Centre I, and the fact that it spans Breakwater Drive, creates an opportunity to serve different and discrete functions on either side of Breakwater Drive. The portion of Centre I within Lot 204 is likely to assume a local centre role, with retail and local services for the surrounding residential catchment. The larger portion of Centre I located on the southern side of Breakwater Drive is likely to serve as a complimentary commercial centre to the surrounding future industrial precinct identified in the DSP. It is therefore envisaged that the majority of the floorspace allocated to Centre I could be located to the south of Breakwater Drive, outside of the LSP area.

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Centre Q - Northern Neighbourhood Centre

Centre Q is located in the north western quadrant of the LSP area, and is a smaller centre. The plan creates an opportunity to provide a main street based Neighbourhood Centre located along key neighbourhood connectors, allowing for a range of predominantly retail uses.

The DSP allocates an indicative maximum retail floorspace of 2,100m², with a total floorspace of approximately 4,900m². The modelling prepared by Shrapnel Urban Planning concurs with the DSP floorspace allocations for Centre Q.

12.3.3 Local Centres

The DSP defines regional and district level centres appropriate to its scale of planning and acknowledges the need to define and locate local centres as part of the local structure planning process.

Retail modelling undertaken as part of the LSP, refer Appendix 5, is based on the DSP centre distribution and population forecasting as well as including known local centres within the immediate context and a preliminary framework of local centres across the balance of the DSP to provide context.

The DSP recognises that up to 30,600m² of retail floorspace over and above that proposed in the identified activity centres can be distributed within local centres through more detailed stages in the planning process. The DSP does not prescribe the number or location of local centres, and requires that this be examined further at the LSP stage.

The analysis undertaken by Sharpnel Urban Planning concluded that there is sufficient demand for two additional Local Centres, each comprising an indicative maximum retail floorspace of approximately 1,500m², including provision for a small supermarket of approximately 900m², approximately 300m² of convenience specialty shops, with food catering floorspace assuming the balance.

Both Local Centres are located on neighbourhood connector routes, allowing for integration with public transport connections. The north eastern Local Centre is adjacent to a primary school and shared public open space, providing an opportunity for convenience based retail. The south western Local Centre is between two key strategic areas of public open space, creating potential for a high amenity local centre.

It is estimated that the land requirement for the local centres will be approximately 1-1.5 hectares.

Pursuant to Part 1 Statutory Provisions, the local centres are zoned 'Commercial'.

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12.4 Employment

The Yanchep – Two Rocks DSP states that the DSP area will be an ‘economic anchor’ for the North West Corridor, with a focus on a higher level of economic activity that will deliver an employment self sufficiency ratio of approximately 75%. A large proportion of these jobs will be delivered through strategic employment opportunities and not just population driven employment. The DSP identifies land to be set aside for employment generating uses, including:

- mixed use town, village and coastal nodes
- an extensive mixed use employment corridor connecting town centres
- at least two universities and other tertiary education facilities
- technology park
- district employment areas for light industrial uses
- primary and secondary schools
- an urban structure that facilitates home based business.

The residential areas, inclusive of the bulk of the LSP area, provide the workforce necessary for these strategic employment uses, and most of the expenditure which, in turn, provides the consumer demand that business needs to satisfy. These residential catchments form an important component in the delivery of these employment generating uses.

The LSP provides a number of employment generators within and adjoining the Secondary Centre, Neighbourhood Centres, and Local Centres, including:

- Commercial/retail
- Professional (office)
- Entertainment
- Childcare
- Medical
- Pre-School
- Primary School
- Home based business

The analysis undertaken by Shrapnel Urban Planning forecasts a workforce of approximately 8,000 people within the LSP area. It is estimated that the range of employment generators listed above will provide approximately 5,900 jobs, approximately 52% of which will be located within the Two Rocks Secondary Centre, with the remaining 48% distributed throughout the other activity centres and residential areas. The Shrapnel report notes a high proportion of home based employment within the LSP area and the wider DSP region, and concludes that home based business will account for 10% of employment within the LSP area (based on current ABS trends).

The overall local employment self sufficiency within the LSP area is 74%.

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In addition to the local employment within the LSP area, there are a number of other strategic employment nodes planned within close proximity, including:

- An industrial precinct immediately to the south of Breakwater Drive, providing a range of service and light industrial land uses, and connected to Lot 204 via a north-south District Distributor road.
- A tertiary education campus to the south of the Secondary Centre co-located with regional open space.
- A mixed use activity corridor connecting the Secondary Centre with the Yanchep City Centre.
- A coastal tourist activity centre to the north west of the Secondary Centre.
- Yanchep City Centre to the south, connected by a rapid transit corridor.

In considering the high percentage of local employment self sufficiency, and the number of strategic employment nodes within close proximity to the LSP area, it is apparent that the LSP is consistent with the DSP self sufficiency target of 75%.

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13.0 COMMUNITY DEVELOPMENT

13.1 Yanchep – Two Rocks District Structure Plan Objectives and Strategies

COMMUNITY DEVELOPMENT		
Objectives		
O1.	To facilitate the development of active and healthy communities well connected to each other and the natural environment, and built on distinctive local identity and that offer a broad range of lifestyle choices.	
O2.	To ensure a full range of community services and facilities are located within or near regional and district activity centres; integrated with surrounding uses; where practicable co-located with other activities to enable shared uses or designed for multiple use; locally accessible; and catering for the diverse needs of the community.	
O3.	To provide for urban environments that value and support the public realm and encourage public life, community engagement and active lifestyles.	
O4.	To facilitate the establishment of healthy lifestyles through the widespread provision of recreational facilities, walk trails, bicycle paths and publicly accessible open space areas.	
Strategies		
S.	DSP Strategy	LSP Response
S1	<p>LSPs shall include (or make a requirement to prepare) a Community Development Plan, which should include (but not limited to):</p> <ul style="list-style-type: none">o Development of local residents groups and networking with other residents associations in the region;o Undertake facilities planning and provide community facilities that service local needs (such as community hall, civic buildings, church) for each activity centre or neighbourhoodo Activities and services to respond to the needs of diverse age groupso A range of options for community enterprises including environmental management, arts, education and local tourism activitieso Recognition and enhancement of cultural and community characteristics via public and community arto Local community actions to encourage adoption of environmental initiatives.	A Community Development Plan is included as Appendix 7
S2	LSPs shall locate civic, cultural, community and education facilities within or near activity centres and to design these facilities as buildings that are integrated with the surrounding form and land uses in the centre.	LSP provides a community purpose site adjacent to the northern Neighbourhood Centre, and provides an opportunity for it to be integrated into the surrounding form and land uses. The Secondary Centre will provide regional and district scale facilities, to be determined as part of the Centre Plan.
S3	LSPs shall provide activity centres that offer suitable spaces for social gatherings and community events of varying types and scales and use social infrastructure as a focal point for community interaction	The Northern Neighbourhood Centre can provide a suitable space for social gatherings, while school sites co-located with POS provide alternative locations. Social spaces can be incorporated into the Secondary Centre as part of the Centre Plan.

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S4	<p>LSPs shall provide the following social infrastructure/ services and, where applicable, generally in accordance with the DSP Map:</p> <ul style="list-style-type: none"> o A health campus of suitable size to accommodate a hospital and other health services such as specialists and an ambulance service; o Active recreation playing fields and recreational facilities such as aquatic centres; and o Primary, secondary and tertiary education sites 	<p>Four primary schools provided in accordance with Department for Education requirements for the LSP catchments, refer Section 13.3.</p> <p>The DSP does not allocate any secondary, tertiary education facilities or health campus facilities within the LSP area.</p> <p>Active playing fields provided adjacent to primary schools – 2 junior sized ovals and one senior sized oval, with further active POS distributed throughout the LSP area.</p>
S5	<p>LSPs shall provide land of a sufficient size, configuration and topography to accommodate the variety of educational institutions depicted on the DSP Map and that are highly accessible by a range of transport modes;</p>	<p>Four primary schools provided in accordance with Department for Education requirements for the LSP catchments, refer Section 13.3.</p> <p>All school sites have been agreed to by the DOE and will be earthworked to meet universal access requirements (refer section 14).</p>
S6	<p>LSPs shall facilitate synergies between civic and educational institutions, based on such initiatives as:</p> <ul style="list-style-type: none"> o Extended hours activity/ creativity precincts around tertiary institutions o Government/ Industry collaborative research initiatives in association with tertiary institutions o Co-locating performing arts venues and libraries with secondary or tertiary institutions o Where appropriate, encouraging partnerships that enable joint provision and shared-use of infrastructure and facilities 	<p>The DSP does not propose any tertiary or secondary institutions within the LSP area. The LSP provides opportunities for joint use of facilities by encouraging larger local community purpose facilities to serve a wider range of functions.</p>
S7	<p>Where practicable, developers and/ or local governments shall design civic buildings to accommodate a range of uses to maximise shared usage, accommodate changing community needs and showcase leading practice sustainable building design</p>	<p>Noted, to be considered in the detailed design process for the northern Neighbourhood Centre as part of DAP and Two Rocks Secondary Centre as part of the Centre Plan.</p>
S8	<p>Where practicable, landscape plans and civic building designs shall incorporate public art that celebrates the environmental and cultural heritage of the site, and demonstrates best practice landscape design.</p>	<p>Refer Section 9.2 – POS Strategy</p>

13.2 Community Infrastructure

The Yanchep – Two Rocks DSP includes a Regional Community and Human Service Infrastructure Provision Strategy identifying regional infrastructure requirements to be integrated with regional and district centres as well as local and district level facility requirements.

At a regional level, active open space, health facilities, sport and recreation facilities and art and culture facility needs have been defined, providing a regional framework for community infrastructure provision.

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The DSP states that the majority of the regional and district level community infrastructure will be located within the Secondary Centre to ensure that the infrastructure is accessible to the wider community, and is located in conjunction with other amenities and services.

The DSP identifies a range of community infrastructure to be integrated with the Centre, including:

- A regional indoor aquatic and sports facility
- A regional library (co-located with tertiary facility)
- A tertiary education site adjacent to the town centre and co-located with 40ha of district open space.

These facilities will serve the LSP area, as well as a wide catchment to the north, west and south.

The DSP also notes that the location of additional district and local level facilities throughout the DSP area are to be confirmed at LSP stage, including:

- 5 x district community centres integrated with district centres
- 1 x police station (possibly co-located with a court house) situated within the Yanchep City Centre
- 1 x community museum
- 32 x local / neighbourhood community centres / halls.

Capire Consulting Group has prepared a Community Development Plan to identify the need, size and location of neighbourhood and local community facilities within the LSP area, refer Appendix 7. The Community Development Plan concludes that based on the DSP requirements, the wider regional provision of regional and district facilities, and the forecast population demographics, that the following community infrastructure is necessary within the LSP area, in addition to the infrastructure proposed in the DSP to be located in the Two Rocks Secondary Centre:

- A community facility located in the northern Neighbourhood Centre. This facility is likely to require a site area of approximately 2000m², and will include medium sized community meeting/activity spaces, smaller class rooms, infant health facilities, consult rooms for service providers and associated amenities and car parking.
- A smaller-scale community space located upon the active public open space in vicinity to the eastern Neighbourhood Centre and school. This would have a gross floor area of approximately 300m², accommodating a community activity space and infant health clinic.

Table 6 demonstrates the likely function of the two neighbourhood/local level community facilities described in further detail below.



PRIMARY SCHOOLS LOCATION PLAN

East Two Rocks Local Structure Plan : Figure16



TABLE 6: Function of Neighbourhood/Local Level Community Facilities

Site/Centre	Functional Inclusion	Size
Northern Neighbourhood Centre	o Medium sized activity spaces	2000m ² site area
	o Class rooms/small activity spaces, wet areas	
	o Infant health consulting room and activity space	
	o Small consulting rooms for service providers, including youth services	
	o Kitchen, small office, amenities, storage, foyer	
	o Car parking, community garden, play area	
South-Eastern Active POS	Medium sized activity space divisible into smaller spaces	300 m ² gross floor area
	Provision for infant health facilities	
	Storage, amenities	

Northern Neighbourhood Community Purpose Facility

A neighbourhood level community purpose facility incorporating child health facilities is proposed within the northern Neighbourhood Centre. The plan allows for the co-location of the required community facilities within the Neighbourhood Centre, creating efficiencies in land use and use of the community facilities. In addition to the designated community purpose site, the northern Neighbourhood Centre is suitably located to incorporate a local community meeting space through provision of a suitable public courtyard, piazza, or landscaped area within the centre.

The neighbourhood level community purpose site will serve a complimentary function to the surrounding public open space by providing an alternative community meeting place to the active and passive public open space located to the east and south of the Neighbourhood Centre.

The community purpose site will be provided in accordance with Liveable Neighbourhoods principles, and given the site's compatible and complimentary relationship with surrounding public open space, the site has been included in the public open space schedule in Section 9.

South-Eastern Community Space

A further local level community purpose space is provided within the public open space adjacent to the south-eastern primary school co-located adjacent to the planned senior oval, to provide local level community services. Given the proximity to the Two Rocks Secondary Centre, it is envisaged that this small facility may not be required until the area is fully developed.

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13.3 Schools

The LSP recognises that local primary schools form an important part of the community infrastructure provision within the LSP area, and provide a focal point for the surrounding residential community.

The LSP makes use of the natural attributes of the site and key road networks of the area to define primary school catchments. The location of the POS 'spine' through the centre of the LSP, and the east-west District Distributor road defines four catchments. Based on the estimated lot yields, state planning requirements, consultation with the Department of Education, and the layout of the LSP, four local primary school sites have been provided within the LSP area – one site within each catchment, refer figure 16.

The northern primary school sites have a catchment of approximately 1500-1650 lots each, which is consistent with the Department of Education's standard of one primary school site per 1,500-1,800 lots. The two southern primary school sites are located within slightly smaller catchments, approximately 1350 lots each, to allow for any residential demand arising from the Two Rocks Secondary Centre in the future.

The proponent has had a number of discussions with Department for Education regarding the size, configuration and location of each of the primary school sites. The Department has indicated support for the size and location of each of the school sites within the LSP catchments.

The primary school sites have been strategically located in the centre of each catchment to ensure maximum efficiency. Three of the school sites abut local or neighbourhood centres, while the fourth school site is within the walkable catchment of the Two Rocks Secondary Centre.

The plan allows for all of the school sites to have road frontage on three sides in accordance with Liveable Neighbourhoods requirements.

On street parking will be provided on access streets surrounding the school, with the cost shared equally between the developer and school provider in accordance with Liveable Neighbourhoods. The Traffic and Transport Report, refer Appendix 2, further addresses traffic management surrounding the school site.

The location of the school sites in the context of the road network ensures that the schools are well connected to other areas via the integrated transport network, including public transport and cycle/pedestrian networks.

Co-location with Public Open Space

The LSP recognises the opportunities to maximise land efficiencies through the co-location of public open space with primary schools in strategic locations. Three of the four school sites have been located adjacent to areas of public open space, creating an opportunity for greater land use efficiencies through the shared use of the public open space. The key principles underlying the co-location of schools and public open space within the LSP area are:

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- The public open space will provide the playing fields for the adjacent primary school, allowing for maximum land efficiency.
- The public open space will be vested in the City of Wanneroo, thereby reducing the complexities of management and maintenance of the public open space.
- The north-eastern and south-western school sites have a combined school site/ POS area of 5ha each, allowing for a 3ha school site, and an additional 2ha of public open space, which is sufficient area to accommodate a junior sized oval.
- The south-eastern school has a combined area of 6.5ha, allowing for a 3ha school site, and 3.5ha to provide a senior sized oval located entirely within the open space and managed by the City.
- The split between school site and POS is likely to be 3ha/2ha respectively, or 3ha/3.5ha for the south-eastern site. The plan allows for 5ha and 6.5ha total POS/ school sites, with the details of the separation between school site and POS to be confirmed at subdivision stage, subject to the ongoing agreement of the City of Wanneroo and the Department of Education.
- The north-west primary school site is 4ha, and does not share public open space. Instead, this school site has the potential to be integrated into the Neighbourhood Centre, creating opportunities for the school to contribute to the mainstreet design of the centre. The Department of Education has agreed in principle that the built form design of the school will be responsive to its location, and will address the Neighbourhood Centre by locating buildings up to the northern and eastern boundaries.
- The plan recognises the Department of Education's requirements in relation to universal access by locating all of the school sites and adjoining active public open space in areas that have been identified for extensive earthworks. This will allow the sites to satisfy the universal access requirements in what is an otherwise challenging topographical environment.

Secondary and Tertiary Education

The LSP area is well serviced with secondary and tertiary education facilities in close proximity. Indicative high school locations are shown on the DSP to the west of the LSP area adjacent to the transit corridor, and to the south of the Secondary Centre. The DSP also provides an indicative 'Tertiary' facility to the south-east of the Secondary Centre, and adjacent to the regional open space.

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14.0 RESOURCES, INFRASTRUCTURE AND SERVICES

14.1 Yanchep – Two Rocks District Structure Plan Objectives and Strategies

RESOURCES, INFRASTRUCTURE AND SERVICES		
Objectives		
<p>O1. To maximise the efficiency of energy, water and materials use through innovative technology and appropriate management.</p> <p>O2. To ensure infrastructure is designed with flexibility to cater for a range of future development growth rates and patterns and emerging technologies.</p> <p>O3. To ensure development and infrastructure utilises best practice water sensitive urban design including, localised rainwater and stormwater harvesting, localised wastewater treatment and re-use, demand management and infiltration/re-charge at source.</p>		
Strategies		
S.	DSP Strategy	LSP Response
S1	LSPs shall include a Local Water Management Strategy that incorporates best practice water sensitive urban design principles is consistent with the district water management design objectives and standards in Part 2 - Explanatory Report.	Local Water Management Strategy included in Appendix 6 and discussed in Section 14.3
S2	LSPs shall explore opportunities and initiatives for energy efficiency, including demand management measures, co-generation and trigeneration systems and the potential for either on-site or off-site generation of renewable energy;	Discussed in Section 14.2.1
S3	LSPs shall investigate opportunities for effective waste management (reduction, reuse and recycling) in construction and domestic/ commercial consumption through alternative technologies, products and services;	Discussed in Section 14.5
S4	LSPs shall demonstrate how funding arrangements, including the agreed Yanchep – Two Rocks Developer Contribution Plan, are to be implemented in order to provide for the efficient and equitable delivery of infrastructure and services; and	Landowner to enter into relevant Development Contribution Plans in accordance with SPP 3.6
S5	LSPs and servicing plans shall provide for high capacity telecommunications infrastructure to maximise future economic prosperity.	Refer Section 14.2.5

14.2 Servicing Strategy

Serling Consulting Engineers have prepared a detailed servicing strategy demonstrating the availability of service infrastructure to the LSP area. The strategy is summarised below, and is provided in full as Appendix 9.

14.2.1 Power

Western Power has confirmed that the existing aerial network along Breakwater Drive has sufficient capacity to provide the initial stage of the development with a high voltage point of supply.

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In order to provide power to service the development of the entire landholding beyond the spare capacity in the network Western Power has undertaken a broader servicing planning study which requires extending 132kV power lines northwards from Alkimos to service the Yanchep/Two Rocks area. Upgrading of the existing high voltage lines and components within the substation located in Romeo Road and extension of the HV cable to Yanchep Beach Road has already been undertaken by Western Power, in addition to other system reinforcements to increase the capacity in the Two Rocks area.

Power supply to the development will be via an underground network comprising of high voltage lines to ring main units and transformers that reticulate electricity to individual lots via a low voltage underground cable system.

The developer will encourage home owners to select one of the Green Energy Options provided by Synergy, providing an information kit to purchasers on energy efficiency. The developer will also investigate off peak power management strategies for irrigation bores, to maximise energy efficiency.

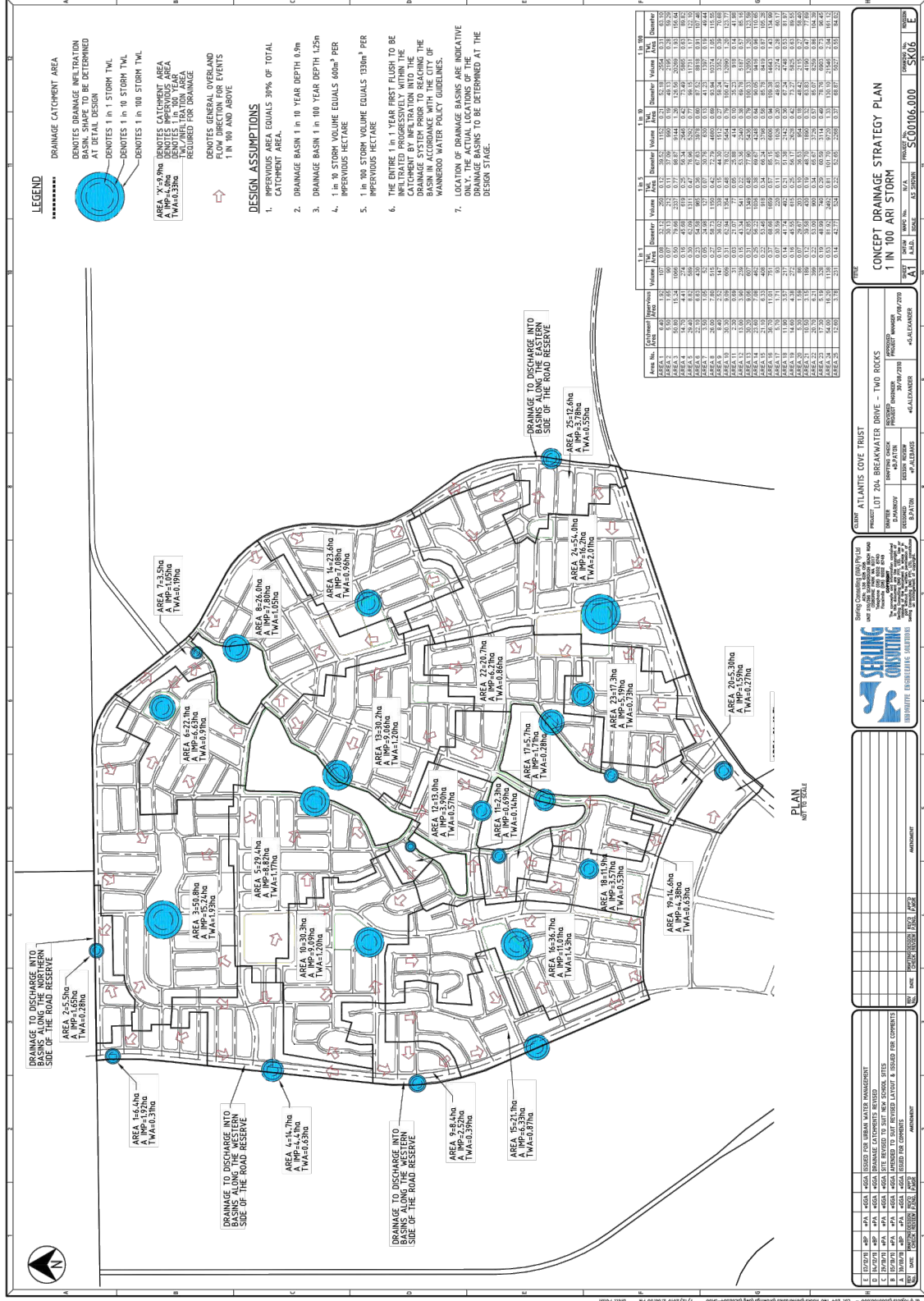
14.2.2 Sewer

The Water Corporation has planning in place to replace the existing interim Two Rocks WWTP with a major pumping station that will most likely be located within the POS at the intersection of Lisford and Charnwood Avenues with a pressure main outlet southwards to Yanchep. This pump station will ultimately have sufficient capacity for both the existing Two Rocks Township as well as the adjoining structure plan areas.

The Water Corporation is undertaking necessary temporary upgrade works for the existing WWTP to ensure that there is no delay to the programmed release of lots within the Yanchep and Two Rocks areas to accommodate the development until funding is available for the permanent infrastructure.

Within the LSP area itself, the topography and size of the subject landholding dictates that there will need to be a series of waste water pumping stations and pressure mains (WWPSs and PMs) constructed to provide a sewerage service. The sewage would gravitate to these WWPSs located in the strategic lower areas of the LSP area, and then be progressively pumped southwards via the WWPSs and PMs into the proposed WWPS planned to be located within the POS area at the intersection of Lisford and Charnwood Avenues. The sewerage would then be pumped southwards to a DN1200mm gravity main sewer proposed to be built on the eastern side of Marmion Avenue to discharge into an interim WWPS located adjacent to lot 102 Yanchep Beach Road. From there, (at least in the short term prior to 2011/2012), the sewerage would be pumped to the existing WWTP located approximately 150m north of Yanchep Beach Road. In the medium term this sewerage would be pumped southwards to the proposed Alkimos WWTP.

Currently this work is not planned for the short-medium term. Any servicing is to be established through the coastal system at Two Rocks.



14.2.3 Water

The site can be readily connected to the existing reticulated water system in the locality. The Water Corporation has confirmed that the Yanchep townsite and the Capricorn Village JV developments are currently serviced by the Water Corporation via a series of ground bores, distribution mains, ground mounted storage tanks and chlorination facilities generally in the south eastern corner of Lot 102 located south of Yanchep Beach Road and east of the newly constructed extension of Marmion Avenue.

The current capacity of the bores and the water treatment plant is adequate for the initial stages of the development. The Water Corporation will install additional bores and expand the treatment facility in the future to cater for the increase in demand as developments proceed.

The Water Corporation's Scheme Plan for the Yanchep/Two Rocks Water Supply in the longer term has recently been revised. The implementation of the ultimate scheme has Yanchep and Two Rocks being served from one scheme with the construction of an extended bore field, water treatment facilities, a reservoir or ground storage tanks and a high level system. Currently this work is not planned for the short to medium term. Any servicing is to be established through the coastal system at Two Rocks. The ultimate conveyance system for the water, once finalised by the Water Corporation, will determine the routes for the major infrastructure required through the development. The location of infrastructure corridors can be determined at subdivision stage.

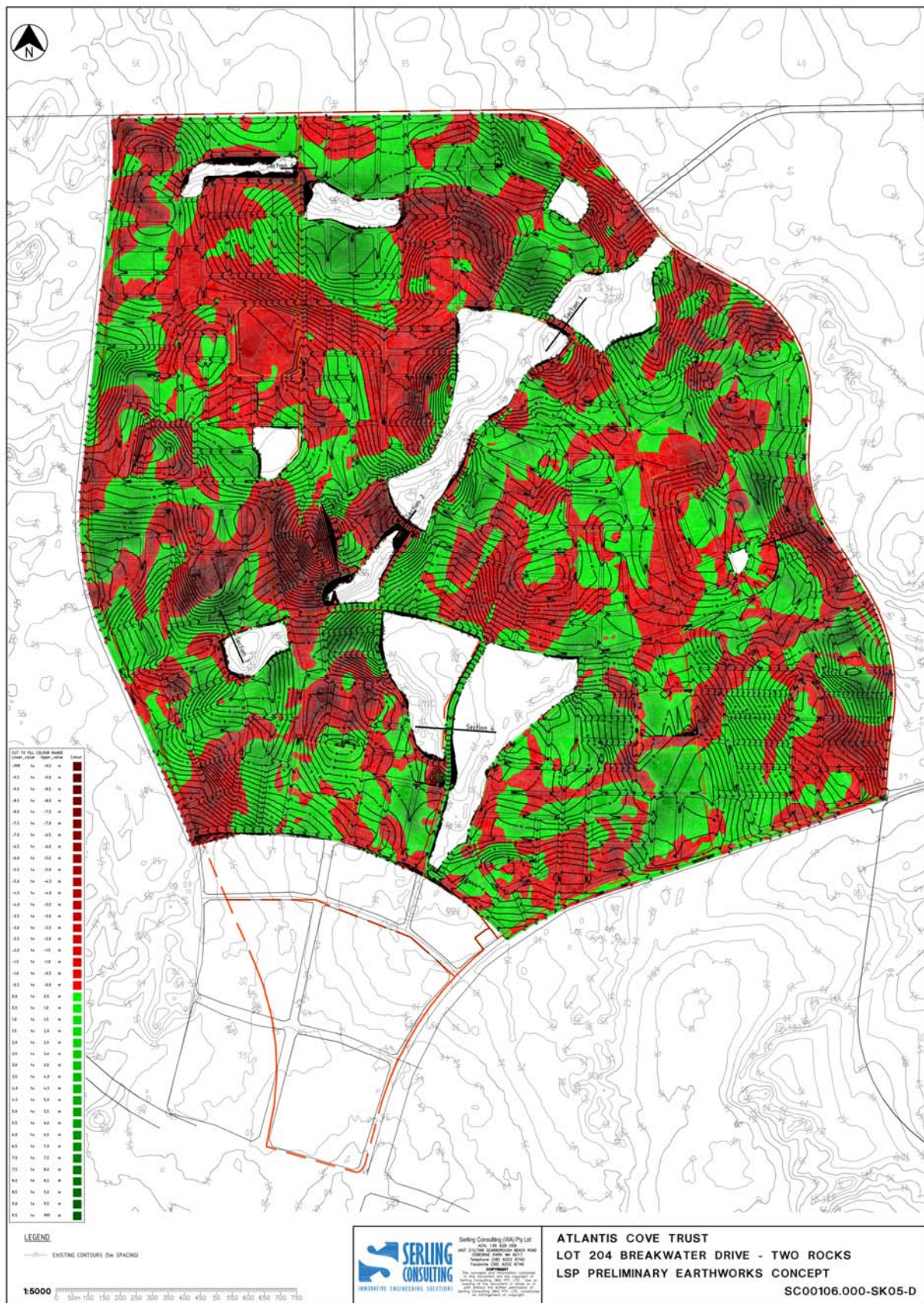
14.2.4 Gas

There are currently no Alinta Gas services in the area. However, it is anticipated that gas will be available at the time of development, and if so, will be installed in the normal way, as part of the common servicing.

14.2.5 Telecommunications Infrastructure

Telstra have confirmed that there is existing infrastructure located within Breakwater Drive that is capable of servicing the initial stage(s) of the landholding. Optic fibre services are being progressively extended northwards along the western side of Marmion Avenue as the development face progresses north from Alkimos to link into the existing Telstra infrastructure exchange located within the light industrial area immediately north of Yanchep Beach Road to further reinforce the capacity of the telecommunications system within the Yanchep area.

Services to the development would be via underground cable connections that would be progressively extended as part of development of the landholding.



14.3 Local Water Management Strategy Overview

A Local Water Management Strategy (LWMS) has been prepared in accordance with the WAPC's Better Urban Water Management (BUWM) Guidelines and the City of Wanneroo's draft Local Planning Policy 4.4: Urban Water Management and the associated City Water Management Strategy. The purpose of the LWMS is to guide urban water management at a catchment level, and to provide a framework for the preparation of Urban Water Management Plans at subdivision. Figure 17 demonstrates the drainage catchment areas within the LSP area.

The LWMS demonstrates that stormwater runoff and groundwater quality can be easily managed as part of the urban development of the LSP area through the application of best practice urban water management principles.

The key elements of the LWMS are summarised below, and a full copy is provided as Appendix 6.

14.3.1 Stormwater Management Strategy

The LWMS proposes to manage stormwater through the LSP area using the following measures:

- Consistent with the WAPC's BUWM guidelines, treatment and infiltration of the 1 in 1 year ARI rainfall event will occur within lots and road reserves, as close to the source as practicable. Treatment will include a mix of on-site soakwells, and the use of grassed swales / bio-retention swales (rain gardens) in appropriately located road verges and median strips. A StormTech and underground storage system will assist the treatment of these events on steeper sites or where there is insufficient room for swales.
- Events greater than 1 in 1 year will be detained and infiltrated within areas of public open space aligned with the low points of each drainage catchment. The drainage areas within public open space form less than 20% of the overall public open space contribution, and as such achieve a full credit in accordance with Liveable Neighbourhoods principles and the City's Public Open Space policy LPP3.3.
- The sandy soils in the area will enable all stormwater entering public open space areas to be infiltrated through grassed or landscaped basins. Where insufficient room is available in POS areas for 100% infiltration due to other requirements such as retention of landform or native vegetation, underground storage structures will be used. These areas of open space will be landscaped and designed so that they are fully integrated with the surrounding open space, and will form part of the useable area of the open space.
- For catchments with low points on the western, northern and eastern boundaries of the site, the 1 in 10 year event will be retained in swales and/or sub-surface storage structures located in the road reserve to prevent discharge into adjoining lots or reserves.

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- Capture and re-use of stormwater in the commercial areas will be encouraged by the developer through the use of permeable paving in carparks and underground storage to capture large volumes of water that can then be re-used within the commercial buildings or for irrigation nearby.

The LWMS outlines the operation of this approach in principle; however, the Urban Water Management Plan (UWMP) to be prepared in conjunction with each subdivision application area will include detailed design, location and management of stormwater management infrastructure. This logical refinement in detail is an important part of moving from the LSP to subdivision design stage. The UWMP will be prepared in accordance with Department of Water and Department for Planning and Infrastructure Better Urban Water Management Guidelines, and the City's draft Local Planning Policy 4.4: Urban Water Management.

14.3.2 Water Sustainability Initiatives

The LWMS includes water sustainability initiatives at both the estate, and individual lot level.

Due to the high proportion of passive open space that recognises landform and native vegetation within the LSP area, irrigation and fertilizer use within open space areas will be minimal, and limited to turf areas. Irrigation of active public spaces will be managed to minimize extraction in accordance with Department of Water requirements and used at appropriate times of the day and intervals. The irrigation system should be maintained and checked regularly to ensure it continues to operate at maximum efficiency.

At the lot level water conservation will be encouraged by the developer through the promotion of native, water wise gardens, rain water tanks and water efficient household devices and appliances. The developer will provide information packages to all lot purchasers encouraging the implementation of these strategies.

14.3.3 Groundwater Management Strategy

The depth to maximum groundwater levels under the LSP area ranges from a low of around 19-20m under the small depressions up to 59-60m under the parabolic dunes. The depth of groundwater ensures that any nutrients that might enter the soil from stormwater will be filtered and removed prior to reaching the groundwater.

Groundwater monitoring post development, if required, can occur for the first stage of development to further demonstrate that water quality is maintained during and post development.

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14.4 Earthworks Strategy

An indicative earthworks strategy has been prepared by Serling Engineering for LSP purposes. The key components of the strategy are summarised below:

- A preliminary earthworks cut to fill model has been undertaken, refer figure 18, to achieve a balanced cut to fill scenario. This model will be refined at the detailed design stage during the subdivision of the LSP area to take into consideration development detail such as retention of existing vegetation and natural topography where applicable.
- The plan recognises significant landforms within strategic areas of public open space throughout the LSP area. The LSP area is characterised by undulating coastal dunes with a number of ridge lines with slopes in excess of 15%.
- Character of landform will be recognised in strategic POS, however, earthworks will be required to ensure a workable interface between urban areas and POS.
- Whilst every effort has been made to retain key landforms, the extent of the earthworks within the LSP area is affected by environmental constraints and objectives, servicing issues, drainage, the need to avoid earthworks in adjoining nature reserves, and suitable road and lot grades to conform to the City of Wanneroo and Department of Education requirements.
- In general the LSP area will need to be extensively earthworked to accommodate housing construction. The use of retaining walls will be minimised, however, walls will be required to develop blocks that allow for economic housing construction. Within the Two Rocks Secondary Centre the road longitudinal grades could be restricted to between 1% and 3%, whilst the balance of the site could be restricted around 7% to a maximum of up to 10% in isolated areas.
- The final levels of the development would be constrained by the requirement to match the current levels of Breakwater Drive, existing and proposed developments on the western boundary, the need to retain sections of the existing ridge lines within the LSP area, and the interface treatments along the northern and eastern boundaries especially where they abut the bush reserves.
- The plan allows for other strategies to be investigated at detailed subdivision stage to deal with steep grades such as slope on lots, alternate housing construction/materials, and split level lots.
- The water table is at depth (in the order of RL 2.0 AHD) and will not be a constraint for drainage design nor finished earthworks levels.

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14.5 Waste Management

The LSP provides opportunities for the following waste management initiatives during the construction phase:

- Cleared vegetation is planned to be mulched for re-use on site for stabilisation and landscaping purposes.
- Topsoil is planned to be used, where suitable, for public open space adding nutrient value.
- There is generally a cut to fill balance across the site, with no fill anticipated to be carted off site for disposal.

An Environmental Management Plan is to be prepared by contractors for approval by Council, demonstrating responsible waste management during the construction process. This is discussed in further detail in the Local Water Management Strategy, refer Appendix 6.

In addition to this, the developer will encourage contractors to prepare and initiate Waste Minimisation Plans aimed at reducing the quantum of waste to landfill. The basis for a sound waste minimisation strategy should incorporate the 3R principle: Reduce, Reuse and Recycle.

Post construction the developer will provide home owners with education material outlining strategies to manage and minimise household waste.

14.6 Development Staging

There are a number of critical factors which will determine the timing and staging of development for the LSP area, which is a substantial long term project. Based on current projections, the likely timing and staging is as follows:

- Atlantis Cove, the current landowner, expects that initial development of the first stages will commence within 5 years of approval of the LSP.
- The first stages of development will most likely front Breakwater Drive, and will advance to the north and north-west as development progresses.
- With an assumed sales rate of approximately 250 lots per year over 5500 residential lots, it is expected that the LSP area will reach ultimate development within approximately 20-25 years, though this will largely be determined by the market demand at the time.