

SOUTH YANCHEP LOCAL STRUCTURE PLAN NO. 66  
Statement of Modification to Roberts Day  
Part 2 Explanatory Report (2281Misc54F)

September 2012

The following modification applies to Part 2 of the South Yanchep Local Structure Plan No. 66 (Revision G) dated February 2012 and prepared by Robert's Day which did not include a Liveable Neighbourhoods Public Open Space Schedule. The WAPC has agreed to this form of modification to Parts 2 of the South Yanchep Local Structure Plan No. 66.

1. In the case of any inconsistency between Parts 1, 2 and 3, the Part 1 August 2012 (Revision H) is to prevail and override any inconsistencies.
2. Updated Section 4.3 of Part 2 as follows, to include a Public Open Space (POS) Schedule consistent with Table 11 under Liveable Neighbourhoods:

***Modification No. 2 relates to the WAPC request to include an updated Public Open Space Schedule in accordance with South Yanchep Local Structure Plan Part 1 – Section 6.4 'Strategic Open Space' and requirement for the updating of the Indicative Public Open Space Plan (Figure 6) in Part 2 demonstrating the minimum 10 % public open space will be provided throughout the Local Structure Plan area.***

#### 4.3 ENVIRONMENT AND OPEN SPACE

As a demonstration development, POS within the South Yanchep Development will include a variety of POS types which are purposeful well utilised areas, easily accessible and connected to a network of pedestrians and cycle paths. POS locations have also responded to topography, significant trees and existing areas of graceful sun moth habitat, which require conservation.

The POS schedule below has been included and indicates that the Local Structure Plan would comply with the minimum 10% POS provision required by the WAPC's DC Policy 2.3 – Public Open Space in Residential Areas. The Structure Plan provides approximately 13.7% public open space.

*Public Open Space Schedule (Indicative Public Open Space Plan 2281-58B-01)*

**SOUTH YANCHEP  
INDICATIVE PUBLIC OPEN SPACE SCHEDULE  
BASED ON LIVEABLE NEIGHBOURHOODS JANUARY 2009  
(Based on Plan 2281-58B-01)**

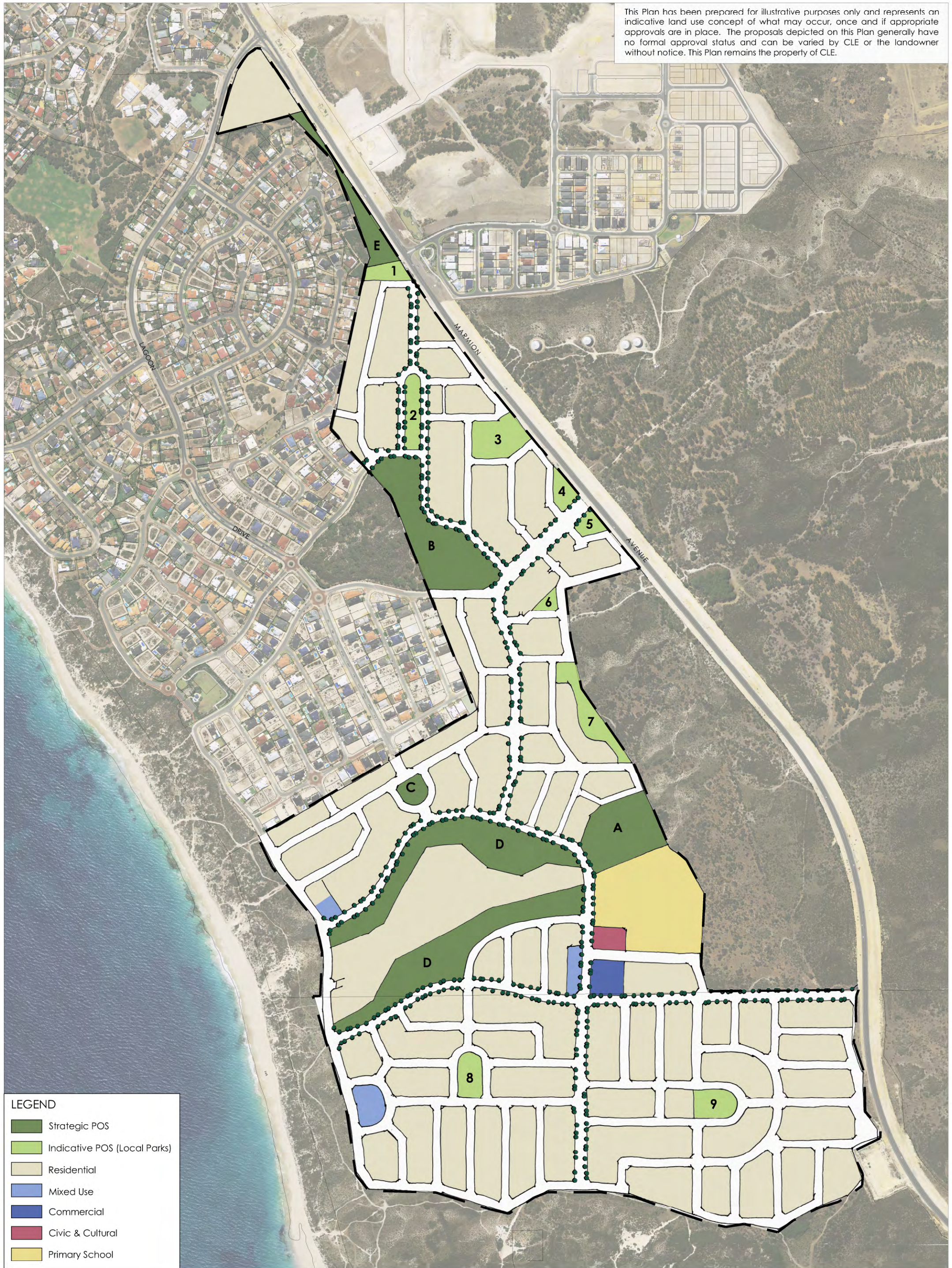


<b>Site Area<sup>1</sup></b>			<b>120.70</b>
<b>Less</b>			
Primary School	4.00		
Neighbourhood Centre	0.50		
<b>Total</b>		<b>4.50</b>	
<b>Net Site Area</b>			<b>116.20</b>
<b>Deductions<sup>2</sup></b>			
Total drainage area up to the 1:1 yr event	0.24		
Deduction - 1:1 - 1:5 total drainage area exceeding 20% of the gross open space area	0.00		
<b>Total</b>		<b>0.24</b>	
<b>Gross Subdivisible Area</b>			<b>115.95</b>
<b>POS @ 10% of Gross Subdivisible Area</b>		<b>11.59</b>	
<b>Public Open Space Contribution (May Comprise)</b>			
Minimum 80% unrestricted POS	9.27		
Maximum 20% restricted POS able to be credited	2.32		
<b>Unrestricted Public Open Space Areas</b>			
Strategic POS Site A	1.50		
Strategic POS Site B	2.90		
Strategic POS Site C	0.54		
Strategic POS Site D	6.76		
Strategic POS Site E	0.60		
Indicative Local Park 1	0.28		
Indicative Local Park 2	0.42		
Indicative Local Park 3	0.86		
Indicative Local Park 4	0.31		
Indicative Local Park 5	0.02		
Indicative Local Park 6	0.10		
Indicative Local Park 7	0.80		
Indicative Local Park 8	0.25		
Indicative Local Park 9	0.25		
<b>Total Unrestricted Use</b>		<b>15.60</b>	
<b>Restricted Open Space<sup>2</sup></b>			
Drainage area between 1:1 and 1:5 year events not exceeding 20% of total open space area	0.34		
<b>Total Restricted Use Open Space</b>		<b>0.34</b>	
<b>Summary</b>			
Minimum Unrestricted POS Required	9.27		
Unrestricted Open Space Provided	15.60		
Maximum Restricted Open Space	2.32		
Restricted Open Space Provided	0.34		
<b>Gross Public Open Space Provision</b>			<b>15.94</b>
<b>Total Public Open Space Provision as a % of Gross Subdivisible Area</b>			<b>13.7%</b>

**Notes:**

1. The site area is the total area of the South Yanchep Local Structure Plan as shown on Plan 2281-21D-01.
2. The 1:1 and 1:5 drainage areas have been sourced from Cosill & Webley for South Yanchep (UWMP Figure 9).
3. Strategic Public Open Space Sites are identified as gross areas and are as required by Roberts Day South Yanchep Structure Plan No. 66 - Part 1 Section 6.4.
4. Local Park areas are in accordance with the Indicative Public Open Space Plan (2281-58B-01).
5. A full Livable Neighbourhoods Public Open Space Schedule will be provided at the time of subdivision identifying areas subject to inundation more frequently than a one year average recurrence interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); referencing areas for the detention of stormwater for a greater than one year average recurrence interval up to the five year recurrence interval is restricted open space up to 20%, the area greater than 20% is a deduction (not applicable in this case) (LN R26 & Table 11); areas for the detention of stormwater for a greater than five year average recurrence interval is within unrestricted open space (LN R25).
6. This schedule depicts Gross Strategic and Indicative Public Open Space areas in accordance with the Indicative Public Open Space Plan 2281-58B-01.

This Plan has been prepared for illustrative purposes only and represents an indicative land use concept of what may occur, once and if appropriate approvals are in place. The proposals depicted on this Plan generally have no formal approval status and can be varied by CLE or the landowner without notice. This Plan remains the property of CLE.



**LEGEND**

- Strategic POS
- Indicative POS (Local Parks)
- Residential
- Mixed Use
- Commercial
- Civic & Cultural
- Primary School



**INDICATIVE PUBLIC OPEN SPACE PLAN**  
Lot 2 & 101 Marmion Avenue, South Yanchep  
City of Wanneroo



**plan no: 2281-58B-01**  
scale: not to scale  
date: 14.09.2012

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This plan is current at the revised date & subject to approval, survey & engineering detail. This plan remains the property of CLE ©

## **PART TWO: STRUCTURE PLAN DESIGN**



# 01 PROJECT OVERVIEW

## 1.1 SITE DESCRIPTION + CONTEXTUAL ANALYSIS

The site is located within the City of Wanneroo approximately 2km south of the Yanchep townsite. The townsite of Two Rocks is located a further 5 km to the north of Yanchep. The locality is often referred to collectively as Yanchep-Two Rocks.

The site has a total area of 120.7552 ha comprised of two lots:

- Lot 101 on Diagram 9007 being the subject of Title Vol 2077 Folio 662 - 72.8827 ha; and
- Part Lot M1503 on Diagram 6815 being the subject of Title Vol 1877 Folio 188 - 559.2659 ha, of which only 47.8725ha is proposed to be included in this development (west of the proposed extension of Marmion Avenue which bisects Part Lot M1503).



FIGURE 1 AERIAL PERSPECTIVE

# O1 PROJECT OVERVIEW

The land is unique in the region as it is framed by a spectacular natural backdrop of regional open space on three sides:

- The site enjoys approximately 1.2 km of ocean frontage and is separated from the Indian Ocean by a narrow strip of foreshore reserve. The site's proximity to the beach makes it ideal for enjoying a diverse range of aquatic recreational activities including swimming, surfing, sailing, fishing and scuba diving;
- The site is located approximately 2km from Yanchep National Park. The 2,842 ha park is one of the state's oldest national parks and is steeped in Aboriginal and European cultural heritage. The unique flora and fauna, caves and Aboriginal heritage make Yanchep National Park a spectacular natural attraction. Activities in the park include horse riding, fishing, bushwalking and caving; and
- The property is nestled between Bush forever Site No. 397 (west) and Bush Forever Site No. 289 (east and south). These sites are reserved for 'Parks and Recreation' under the Metropolitan Region Scheme and offer excellent access to the natural environment for future residents of the site.

The natural setting has informed the preparation of a design that works with the physical environment, creating connections to surrounding open space and retaining high value areas of landform and vegetation.

Contextually, the alignment of the Marmion Avenue extension follows the eastern boundary of the site. Construction is anticipated to occur within the next six months. The Structure Plan details appropriate connections to Marmion Avenue to enable access to the High School, Railway Station and District Centre proposed as part of the Lot 102 Yanchep Beach Road Structure Plan (to the east of the Marmion Ave extension). Access to the regional road network is currently via Yanchep Beach Road to the north of the site. The existing Lagoon and Moonlighter Drives will allow access from the proposed development to the existing neighbourhood of Ocean Lagoon.

The locality is currently serviced by Transperth Bus Service Route No. 490. This provides 6 each way trips on weekdays and less frequent services on weekends and public holidays. The closest Train Station is currently located approximately 16.5km away in the suburb of Clarkson. Transperth Bus Service 490 provides a bus connection from the site to this station.

The site attributes present an ideal opportunity for creating a more progressive and sustainable form of urban development. This Structure Plan describes a design concept and accompanying initiatives to create a unique place - one that celebrates its natural advantages and creates the conditions to give the best possible start to a new community at South Yanchep. However, this Structure Plan also recognises that it is being developed within the context of an existing community at South Yanchep. The residents of South Yanchep have been actively engaged throughout the planning process and the Structure Plan endeavours to capture their aspirations for the future development and management of the land.

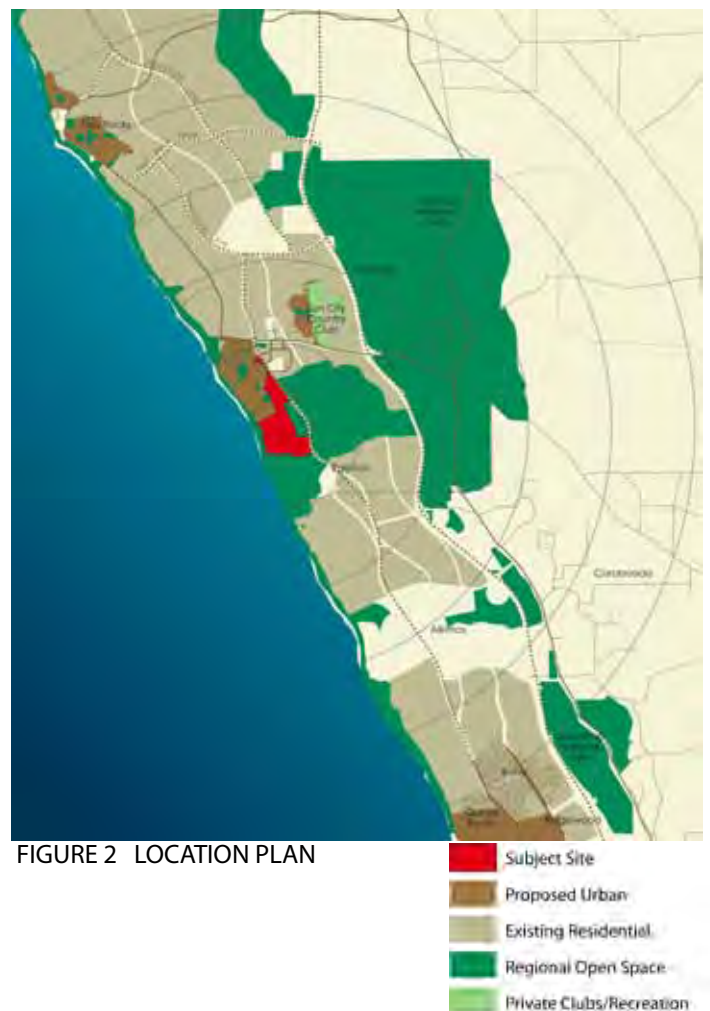


FIGURE 2 LOCATION PLAN

# 01 PROJECT OVERVIEW

## 1.2 REPORT FORMAT

The Structure Plan comprises three core sections described below and appendices containing the detailed technical reports pertinent to the proposal:

### **Part 1 – Statutory Planning Section**

Part 1 details the statutory requirements to guide the future development of the site including the principles and strategies necessary to achieve an inspired planning outcome for the site.

### **Part 2 – Structure Plan Design**

Part 2 describes the Structure Plan and how it achieves the project objectives, principles and strategies identified at Part 1.

### **Part 3 – Technical Overview**

Part 3 provides an overview of the site, its planning context and executive summaries of the detailed technical reports prepared by the project team to inform development of the Structure Plan.

### **Appendices – Detailed Technical Reports**

The Appendices compile the detailed technical reports of the project's consultant team. These reports document the analysis and assessment conducted as a basis for the preparation of the Structure Plan. These reports are as follows:

1. Community Profile + Facilities Audit
2. Environmental Analysis
3. Landscape Analysis
4. Ethnographic Analysis
5. Economic Analysis + Local Employment Strategy
6. Traffic +Transport
7. Engineering + Servicing
8. Smart Growth Assessment

## 1.3 PROJECT TEAM

The project team comprises highly qualified and experienced consultants from a range of disciplines. The teams' collective contributions inform a development concept which provides an outstanding response to the unique opportunities presented by the site. The team comprises:

**Bruce Aulabaugh Traffic Engineering and Transport Planning** Traffic and Transport Analysis

**Cossill and Webley** Civil Engineering

**Creating Communities** Community Needs Assessment/Community Identity Analysis

**Economic Consulting Services** Economic Analysis

**Essential Environmental Services** Sustainability Assessment

**EPCAD** Landscape Architects

**Parsons Brinkerhoff** Environmental Analysis

**RobertsDay** Statutory Planning + Urban Design/Design Forum Facilitation

**R. & E. O'Connor Pty Ltd** Aboriginal Heritage and Ethnographic Assessment

**Syme Marmion & Co** Smart Growth Assessment

## O2 PROJECT VISION

As the landowner, LandCorp developed the following vision statement to inform the development of the South Yanchep Structure Plan and the efforts of the project team:

*"South Yanchep will be a sustainable development with a strong sense of place, serving a diverse community. It will deliver a sustainable urban land development complementing the coastal landform and key environmental features."*

The Urban Form Principles detailed below describe a framework for delivering this vision for a more progressive and sustainable development outcome for the South Yanchep land:

1. To foster the development of a strong local identity and sense of place for South Yanchep;
2. To provide an integrated approach to the protection of key environmental areas, landforms, significant cultural features and the design of open space;
3. To create a vibrant and sustainable community based on walkable neighbourhoods that maximises opportunities in the local economy and has an appropriate mix of residential, commercial, recreation, and education areas;
4. To create an urban form based on the principles of Liveable Neighbourhoods and characterised by a range of climate responsive lot and housing types in a variety of density settings that enhance opportunities for lifestyle and affordability;
5. To provide an efficient movement network that facilitates safe, efficient and pleasant walking, cycling and driving access to public transport, local employment, retail and community facilities;
6. To promote the efficient use of resources, infrastructure and services including water, energy and waste minimisation;
7. To create a sustainable development that aims to achieve triple bottom line outcomes; and
8. To create a broader regional context for South Yanchep that facilitates a sense of regional identity for the development and creates opportunities for local residents to work and extend their employment skills within the North West Corridor.

Part 04 of this section describes how the Structure Plan and subsequent planning process can achieve the successful implementation of these aspirations.

## 03 CONSULTATION PROCESS

An integral part of the development process for South Yanchep has been the pro-active engagement of local residents, community groups and regulatory authorities in the preliminary planning for the site. This involved the formation of a Community Reference Group (CRG) and the hosting of a participatory Planning Design Forum (PDF) over three days in April 2007.

Taken together, these two processes enabled the consultant team to prepare a development concept for the land that incorporates the aspirations of the local community and meets the requirements of the relevant authorities.

### 3.1 COMMUNITY REFERENCE GROUP

The initial phase of public consultation involved the formation of a Community Reference Group (CRG). A public advertising campaign was conducted by LandCorp in March 2007 calling for 'Expressions of Interest' from residents and community groups to nominate for the South Yanchep CRG. This included print advertising, direct mail outs to community groups/organisations and household letter drops in the Yanchep area.

The CRG consists of 24 members, with representation from a wide cross-section of the community and key stakeholders. All those who responded following the public call to represent the community were invited to join the CRG. The 24 members of the CRG represent various interest areas including:

- Interested ratepayers;
- City of Wanneroo;
- Business;
- Education;
- Sport, recreation, culture;
- Environment;
- Community service and local groups; and
- Residents living adjacent to the subject land.

The CRG developed a range of key principles that were subsequently used by the consultant team in the preparation of the development concept for the land. These principles are detailed as follows:

- A relaxed lifestyle interacting with the natural environment to be the character of the estate;
- The foreshore must be protected;
- Green space must be a feature of the estate;
- The planning process must reflect the highest standards of environmental practice;
- The planning must support environmentally sustainable lifestyles;
- The site must be able to be used for unstructured recreation, such as walking and cycling;
- There must be ongoing community involvement in the development of the site;
- The development must connect to the neighbouring communities and facilities;
- The estate must be of high quality that can be maintained after the departure of LandCorp;
- Community social needs must be a high priority from the beginning of the estate;
- Neighbourhoods should be liveable, with facilities within walking distance; and
- The planning process must be conducted with high integrity.

## O3 CONSULTATION PROCESS

### 3.2 PLANNING DESIGN FORUM

The Structure Plan builds on a concept prepared at the interactive PDF held between the 17 - 19th of April 2007 at the Mindarie Marina, Mindarie. The PDF involved a wide array of invited representatives from the community and relevant regulatory authorities, including the following:

- Community Reference Group;
- City of Wanneroo elected members and administrative staff;
- Department of Education and Training;
- Department of Environment and Conservation;
- Department for Planning and Infrastructure;
- Department for Water;
- New Metro Rail;
- Transperth – Public Transit Authority;
- Water Corporation.

All delegates were encouraged to actively participate in the PDF in order to develop a concept for the site informed by local knowledge, experience and aspirations. The PDF commenced with an overview of the design principles espoused by RobertsDay and then set out to engage with the stakeholder representatives (as the custodians of local knowledge) to document and understand the opportunities and constraints unique to the site. The process is transparent and participatory. Technical presentations are accompanied by robust discussion and questioning in order to develop an informed development concept. In brief the PDF program included:

- An opening presentation describing the traditional neighbourhood planning and design principles to be applied in the development of the site;
- A site inspection;
- An issues and opportunities identification session;
- Technical presentations by members of the project team;
- A forum for community representatives;
- Design development; and
- Presentation of the proposed concept plan.



PLANNING DESIGN FORUM

## 03 CONSULTATION PROCESS

SOUTH YANCHEP PLANNING DESIGN FORUM		PROGRAMME
		<b>TUESDAY</b> 17 <sup>TH</sup> April 2007
		<b>OPENING PRESENTATION</b> 8.30AM - 9.30AM
		<b>SITE AND CONTEXT TOUR</b> 9.30AM - 1.00PM
		<b>LUNCH</b> 1.00PM - 2.00PM
		<b>ISSUES + OPPORTUNITIES IDENTIFICATION</b> 2.00PM - 5.30PM
		<b>GROUP SESSIONS:</b> 2.30 - 4.30PM
		<ul style="list-style-type: none"> <li>Ecology, Cultural Values + Landscape</li> <li>Engineering + Transport</li> <li>Planning + Urban Design</li> <li>Community</li> </ul>
		<b>SUMMARY OF KEY ISSUES + OPPORTUNITIES:</b> 4.30PM - 5.30 PM
		<b>WEDNESDAY</b> 18 <sup>TH</sup> April 2007
		<b>ECOLOGY + CULTURAL VALUES TECHNICAL SESSION</b> 8.30AM - 9.30AM
		<b>LANDSCAPE TECHNICAL SESSION</b> 9.30AM - 10.30AM
		<b>ENGINEERING TECHNICAL SESSION</b> 10.15AM - 12.00PM
		<b>LUNCH</b> 12.00PM - 1.00PM
		<b>TRANSPORT TECHNICAL SESSION</b> 1.00PM - 2.00PM
		<b>PLANNING + URBAN DESIGN TECHNICAL SESSION</b> 2.00PM - 3.00PM
		<b>COMMUNITY + ECONOMIC DEVELOPMENT SESSION</b> 3.00PM - 4.00PM
		<b>SUMMARY SESSION</b> 5.00PM - 5.30PM
		<b>THURSDAY</b> 19 <sup>TH</sup> April 2007
		<b>INTERNAL DESIGN STUDIO</b> 8.30AM - 3.00PM
		<b>CLOSING PRESENTATION</b> 3.00PM - 5.00PM

PLANNING DESIGN FORUM PROGRAM

# 04 GUIDING PRINCIPLES

## 4.1 SUSTAINABILITY

**Urban Form Principle - To create a sustainable development that aims to achieve triple bottom line outcomes.**

The following table details the objectives and strategies for the Urban Form Element 'Sustainability'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) To deliver triple bottom line sustainability outcomes being: <ul style="list-style-type: none"> <li>• Economic – Opportunity for commercial success for all</li> <li>• Environment – Preservation and response to natural features, energy, water and waste minimisation</li> <li>• Social – A vibrant and safe community</li> </ul>	i) Preparation of a Sustainability Strategy that describes a range of actions and targets to achieve triple bottom line sustainability outcomes including waste minimisation and reductions in energy and water use	Sustainability Strategy submitted as part of Structure Plan report

The City of Wanneroo has recognised the need for development to occur in a more sustainable way. To effect this the City developed its Smart Growth Strategy (and accompanying Local Planning Policy) as a means of promoting a more coordinated approach to managing the growth of new and existing development within its local authority area. The aspirations and initiatives detailed in Smart Growth Strategy are consistent with the Western Australian State Sustainability Strategy, which provides a whole-of-government framework for implementing sustainability in Western Australia.

Although the Structure Plan has been prepared to address all of the elements of the Smart Growth Strategy, a specific Sustainability Strategy has also been prepared that consolidates the specific sustainability initiatives that are proposed during the development. The South Yanchep Sustainability Strategy identifies the following priority areas as a focus for sustainability initiatives:

### Water resource management

- Consider the total water cycle and aim to achieve the principles of water sensitive urban design

### Energy efficiency

- Improve resource conservation through efficient use of energy including energy efficient, passive solar design and sustainable housing layouts as well as renewable energy where appropriate.

### Waste

- Improve resource conservation through effective waste management, avoidance, reuse, recycling and support for sustainable products and services.

### Natural environment

- Protect identified landscapes with geological, geomorphological, ecological, aesthetic, cultural value.
- Improve and protect natural areas including urban bushland, waterways, wetlands, fauna habitats and corridors and landforms

### Community

- Maximise input from the community and stakeholders to inform decision making
- Encourage community equity, social cohesiveness and civic participation.
- Create a distinctive and responsive built form that enhances the sense of neighbourhood and community identity, place and character of South Yanchep.

The Strategy includes an implementation framework that details the relevant stage in the planning and development process when each of initiatives is to be implemented.

The Structure Plan is also accompanied by a Smart Growth Assessment included as an appendix to this report.

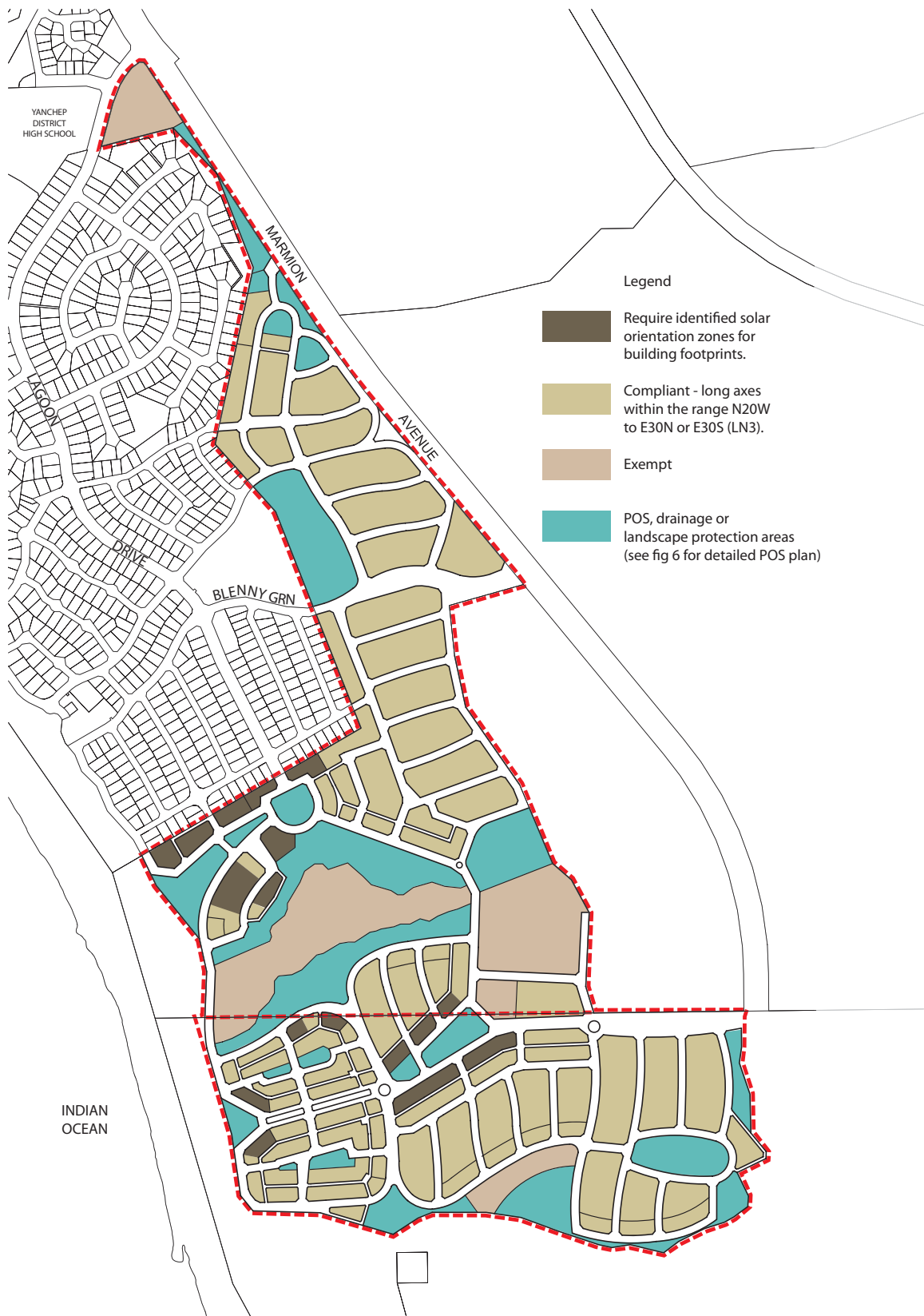


FIGURE 3 SOLAR ORIENTATION PLAN

INDICATIVE PLAN ONLY

# 04 GUIDING PRINCIPLES

## 4.2 COMMUNITY DEVELOPMENT

**Urban Form Principle - To foster the development of a strong local identity and sense of place for South Yanchep.**

The following table details the objectives and strategies for the Urban Form Element 'Community Development'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) Formation of an active and healthy community well connected to each other and the unique natural environment	i) Develop a Community and Economic Development Plan in consultation with the Community Reference Group. This should include: <ul style="list-style-type: none"> <li>Local community actions to encourage adoption of environmental initiatives;</li> <li>Support for local community bushcare and coastcare activities;</li> <li>Development of local residents groups and networking with other residents associations in the region;</li> <li>Recognition and enhancement of cultural and community characteristics via public and community art;</li> <li>Activities and services to respond to the needs of diverse age groups; and</li> <li>A range of options for community enterprises with a focus on environmental management, interpretation and local tourism activities.</li> </ul>	Community and Economic Development Plan to be prepared in consultation with Community Reference Group
b) Provision of community facilities and services (such as retail, education, health, community centre, place of worship, recreation, child care) that facilitate community interaction and leisure activities	ii) Undertake facilities planning and provide community facilities that service local needs (such as community hall, civic buildings, church) with a direct geographic relationship to the Neighbourhood Centre iii) Incorporate interpretation of the environmental and cultural heritage of the site through community and public art in public open space and the community facility	Community facilities to be integrated onto school site adjacent to Neighbourhood Centre. Detail to accompany subdivision application  Public Art program to be developed as joint initiative of proponent, CRG, CW and DET
c) Provision of educational facilities and services that meet the needs of the existing and future community	iv) Provide a public Primary School in a location generally in accordance with that described on the Structure Plan Map. v) Design and locate educational facilities to encourage contemporary urban form outcomes. This includes: <ul style="list-style-type: none"> <li>Setting aside land of a sufficient size, configuration and topography to accommodate the intended use;</li> <li>Buildings addressing adjoining streets; and</li> <li>Promoting safe access by a range of transport modes</li> </ul>	School site identified on LSP Map  4 ha site allocated consistent with DET requirements  DAP  Located on Neighbourhood Connector to be developed to LN standards at DAP stage
d) Promote the co-location of educational facilities and services with community uses and active open space areas	vi) Facilitate multiple use of school infrastructure by the broader community through partnerships with relevant authorities	Agreement to be developed as joint initiative of CW and DET and to accompany relevant subdivision application
e) Promote ongoing community involvement in the development and management of the site	vii) Continue to engage local residents and stakeholders in the creation of the development and future community viii) Implement a community development program with new residents and neighbouring communities	Delivered through Community and Economic Development Plan as joint initiative of proponent, CRG and CW as development progresses  Community and Economic Development Plan to be prepared in consultation with Community Reference Group

## O4 GUIDING PRINCIPLES

f) Ensure that any sites of Aboriginal or European heritage significance are identified and appropriately respected	ix) Conduct a series of consultative on-site meetings with relevant aboriginal people x) Conduct an archaeological survey of the site to test for Aboriginal heritage	Prior to commencement of works associated with first subdivision application
g) Provide opportunities for residents to access employment and training within the North West Corridor	xi) LandCorp as a major land developer in the North West Corridor to develop a collective approach to generating employment opportunities across their land holdings to maximise synergies and create cross development outcomes xii) The proposed South Yanchep Neighbourhood Centre to be included in the Alkimos Eglinton Economic Development Strategy currently being compiled, as a condition of the Alkimos Eglinton District Structure Plan's approval by the City of Wanneroo (29 July 2008).	Local Employment Strategy submitted as part of Structure Plan report. Implementation plan to be developed in consultation with City of Wanneroo.

## 04 GUIDING PRINCIPLES

Places do not automatically transform into functioning communities unless both the spatial and social dynamics of projects are developed in unison. So while well planned neighbourhoods can provide essential raw materials for community, the planning of robust communities also requires a thorough sociological response. Urban planning and the planning of neighbourhoods conceive the spatial dimensions of place and the social constructs of communities are best supported through social planning and community activation.

LandCorp established a Community Reference Group to provide a local perspective on what the development of South Yanchep should achieve and to have input throughout the urban planning and social planning process. The CRG members wanted to see the project deliver the following:

- A vibrant community life;
- Good links and interaction with neighbouring communities;
- Early provision of community facilities;
- Recognition of the natural and cultural heritage of the area particularly via community and public art;
- A range of recreational options to explore the natural environment including: cycle ways; boardwalks; fishing; and dog exercise beach;
- A diverse community through the provision of a range of affordable block sizes and housing options;
- An above average allocation of Public Open Space (POS); and
- Local employment and community enterprises.

The Structure Plan aims to provide the urban framework to deliver these aspirations. This includes provision of an appropriate level of community facilities to service the anticipated demand in South Yanchep.

A brief audit of the facilities available in the neighbouring areas highlighted that active open space will be well catered for in the town centres north of the site, but that there will be a need for:

- Walkways, boardwalks and cycle ways that provide access to the natural environment as well as connectivity through out the estate;
- Conservation areas and informal recreation areas such as playgrounds and pocket parks;
- One local active open space shared with the local primary school; and
- One basic local community centre, including a hall and kitchen as existing community facilities in the area are at capacity. It is proposed that this could be housed within the village centre and be multi functional to accommodate an environmental interpretive facility as well as community spaces. Alternatively it could be a shared use facility with the primary school to provide community spaces and change rooms for local sports clubs.



## 04 GUIDING PRINCIPLES

The Structure Plan Map identifies a future Primary School immediately to the north of the Neighbourhood Centre. Its close proximity to the Neighbourhood Centre makes it an ideal location to co-locate community facilities and maximise the opportunities for the use of this infrastructure by different members of the community. To reinforce the relationship with the Neighbourhood Centre and these facilities, a DAP is likely to be required to ensure that future school and community buildings are designed to address adjoining streets and contribute positively to the public domain.

The development of a robust civic heart where people can shop and access services as well as interact in a aesthetically pleasing environment will also be critical to the formation of a viable civic heart. This is enabled in the Structure Plan through a series of walkable neighbourhoods radiating from a Neighbourhood Centre. The northern portion of the development area has a relationship to an existing Local Centre node in the Ocean Lagoon Estate, and further to the West, the District Centre located in the proposed Lot 102 Yanchep Beach Road Structure Plan.

The Neighbourhood Centre fulfils a number of roles in the urban framework of South Yanchep. It provides a centre for commercial activity servicing local needs (including retail, office and medical), assists with employment self sufficiency and creates a civic focal point for other services and activities. In this latter role the Neighbourhood Centre becomes the logical place for locating community facilities such as landscaped POS, civic buildings, a community hall and the proposed primary school. The location of the Neighbourhood Centre on the Neighbourhood Connector servicing South Yanchep provides additional opportunities for improving access to these facilities for residents, workers and visitors.

The incorporation of public art that interprets the natural and human history of the site is another important means of creating a unique sense of place within the estate. A key mechanism is the State Government's 'Percent for Art' program, although complementary initiatives will be developed to encourage private developers to contribute to the public domain as part of their developments.

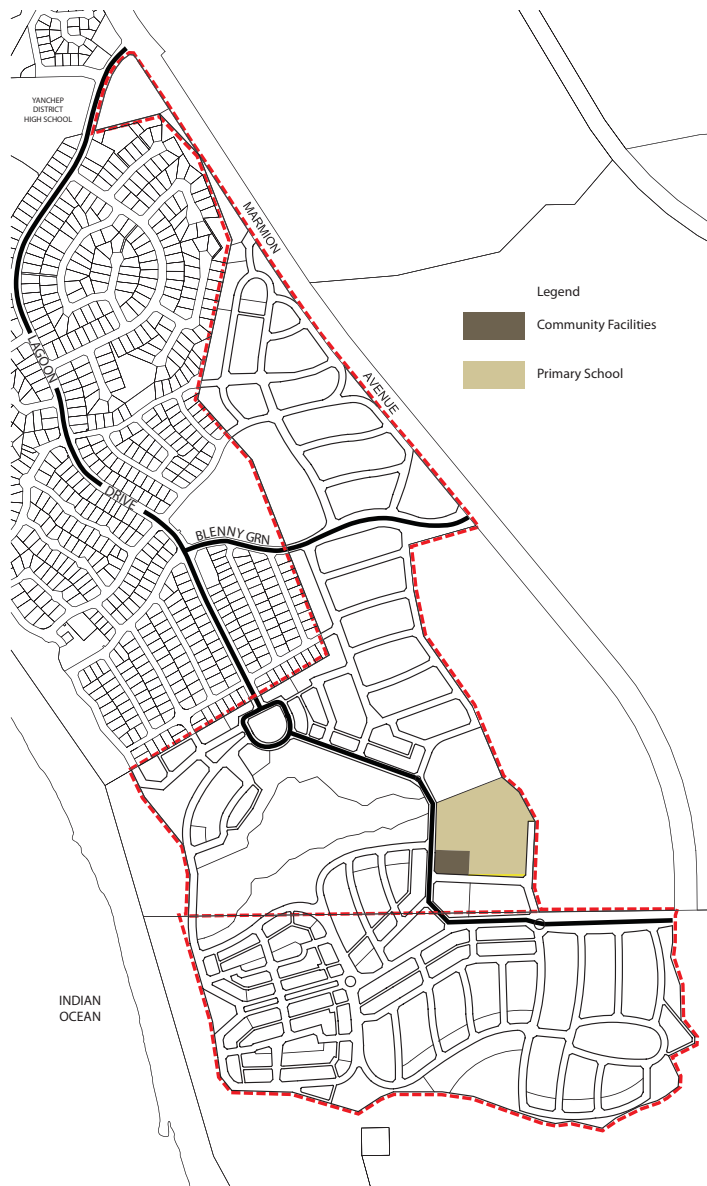


FIGURE 4 PRIMARY SCHOOL & COMMUNITY FACILITIES  
INDICATIVE PLAN ONLY



## 04 GUIDING PRINCIPLES

A safe traffic environment around the Primary School will be facilitated by a variety of mechanisms including:

- Establishing a 40 km/hr school speed zone on the adjacent Neighbourhood Connector roads;
- Use of medians or median islands to assist pedestrian/cyclists crossing movements;
- Construction of a roundabout on the school Access Street (south east side) to slow vehicle speeds, reduce delays to school traffic and provide controlled U-turns opportunities; and
- Undertake a traffic management study for the Primary School at the relevant stage of the planning process.

The preparation of a DAP to guide development of the primary school/civic centre will be a key means of ensuring integrated delivery of these commitments.

The community via the CRG will play a key role in the development of social capital in the area and as such will continue to be actively engaged throughout the project. They will have input into the preparation of a Community and Economic Development Plan (CEDP) and will also be involved in its implementation.

The following requirements are the result of a preliminary assessment by Creating Communities and will be further expanded in the CEDP:

- Facilities and services for young families;
- Facilities and services for 'empty nesters' and singles households;
- Employment and recreational links with the surrounding areas
- The creation and support of employment possibilities within a neighbourhood centre;
- Promotion and provision of informal outdoor leisure and recreation activities;
- Environmental education and employment projects;
- Recognition and enhancement of cultural and community characteristics via public and community art
- Activities and services to respond to the needs of diverse age groups
- A range of options for community enterprises with a focus on environmental management, interpretation and local tourism activities
- Integration of new residents with the existing Yanchep Community;
- Community heritage project to connect with pastoral history of the area
- Local and regional transport initiatives;
- Community self-governance and leadership programs; and
- Programs and initiatives to develop social cohesion.

Taken together these urban design and community initiatives will establish a robust basis for the development of a strong local identity and sense of place for the future South Yanchep community.

# O4 GUIDING PRINCIPLES

## 4.3 ENVIRONMENT + OPEN SPACE

**Urban Form Principle - To provide an integrated approach to the protection of key environmental areas, landforms, significant cultural features and the design of open space.**

The following table details the objectives and strategies for the Urban Form Element 'Environment + Open Space'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) To create a range of recreation opportunities in South Yanchep that includes active and passive recreation spaces and the integration of bushland and conservation areas within open space	i) A minimum of 10% of the total site at full development is to be set aside as POS in accordance with Liveable Neighbourhoods requirements and the following: <ul style="list-style-type: none"> <li>• Achieve a practical balance between the protection of local vegetation and the provision of active and passive POS areas;</li> <li>• Provide a range of passive 'pocket parks' with a high amenity focus; and</li> <li>• Ensure most residents are no more than 400 metres from a POS area.</li> </ul>	10.2% POS identified.  Balance of POS types detailed on LSP Map  Detail to accompany relevant subdivision application  Detail on LSP Map
b) Retain and protect the key parabolic east-west dune through a combination of POS and the creation of a special design precinct	ii) Provide a primary east-west open space corridor, primarily for conservation purposes, as indicated on the Structure Plan Map. The use, management and development of this open space will be finalised in accordance with an approved Bushland and Landform Management Strategy  iii) Develop a special design precinct, including investigating alternative tenure arrangements to optimise design and conservation opportunities within the east-west dune	East-west POS corridor for conservation detailed on LSP Plan.  Landscaping Plan to accompany relevant subdivision application  Special Design Precinct identified on LSP Plan. Design controls to be developed via DAP to accompany relevant subdivision application
c) Develop linkages with adjacent Foreshore and Regional Open Space areas and ensure the inter face with development is appropriately managed	iv) Prepare a Coastal Foreshore Management Plan in accordance with the requirements of SPP 2.6 – State Coastal Planning Policy.  v) Provide a continuous path network throughout South Yanchep. This will incorporate POS areas within the estate and provide connections to adjacent foreshore and regional open space areas and the existing path networks of adjacent development and reserves	To accompany relevant subdivision application  Preliminary POS and path network detailed on LSP Map
d) Locate open spaces to enhance pedestrian movement opportunities and ensure good pedestrian accessibility throughout South Yanchep	vi) Set aside a civic open space area within the Neighbourhood Centre	Civic open space area detailed on LSP Map
e) Retention and protection of natural landscape character and bushland through the retention of local vegetation and the use of native vegetation and landscape themes	vii) Develop a Bushland and Landform Management Strategy that identifies the key values to be protected and addresses the selective retention of native vegetation (in road reserves, public parkland and lower density lots), the use of native landscape themes (for parkland, street trees and private landscape packages) and the possibility for reuse of cleared native vegetation	Landscaping Plan to accompany first subdivision application
f) Minimise water use required for landscaping throughout the estate	viii) Develop a Landscape Masterplan for landscaped POS areas to achieve water use efficiency through minimisation of turfed areas and planting with local native species  ix) Integrate drainage into open space areas to promote best practice water sensitive urban design	Landscaping Plan to accompany first subdivision application  Detail to accompany first subdivision application

## O4 GUIDING PRINCIPLES

g) Promote the co-location of educational facilities and services with community uses and active open space areas	xi) Provide for the co-location, integration and sharing of public open space (POS) areas and recreation facilities with schools	Opportunity for co-location of public POS areas and recreation facilities with school detailed on LSP Map. Management agreement to be developed as joint initiative of CW and DET
h) Ensure surveillance of POS areas to enhance security	xii) Orient development to front POS areas, including a proportion of direct frontage lots where contextually appropriate, to promote passive surveillance and enhance amenity	Detail to accompany relevant subdivision application and elaborated through DAP as required

The site is uniquely located within a spectacular natural backdrop of regional open space on three sides, including 1.2 km of ocean frontage. This location provides numerous opportunities, but also requires sensitivity in the design response to ensure that the development responds appropriately to its environmental setting.

The Structure Plan provides a framework for structuring the provision of Public Open Space (POS) across the site and for managing the relationship of the land to surrounding open space areas and reserves. A key goal of the landscaping will be to capture the east-west transect across the site in its transition from tuart woodland to coastal heath. The development concept delivers approximately 11% POS across the site. The provision of surplus POS reflects the higher order level of planning contained in the Structure Plan and is anticipated to be refined as more detailed planning progresses.

## O4 GUIDING PRINCIPLES



FIGURE 5 PATH NETWORK

INDICATIVE PLAN ONLY

## O4 GUIDING PRINCIPLES

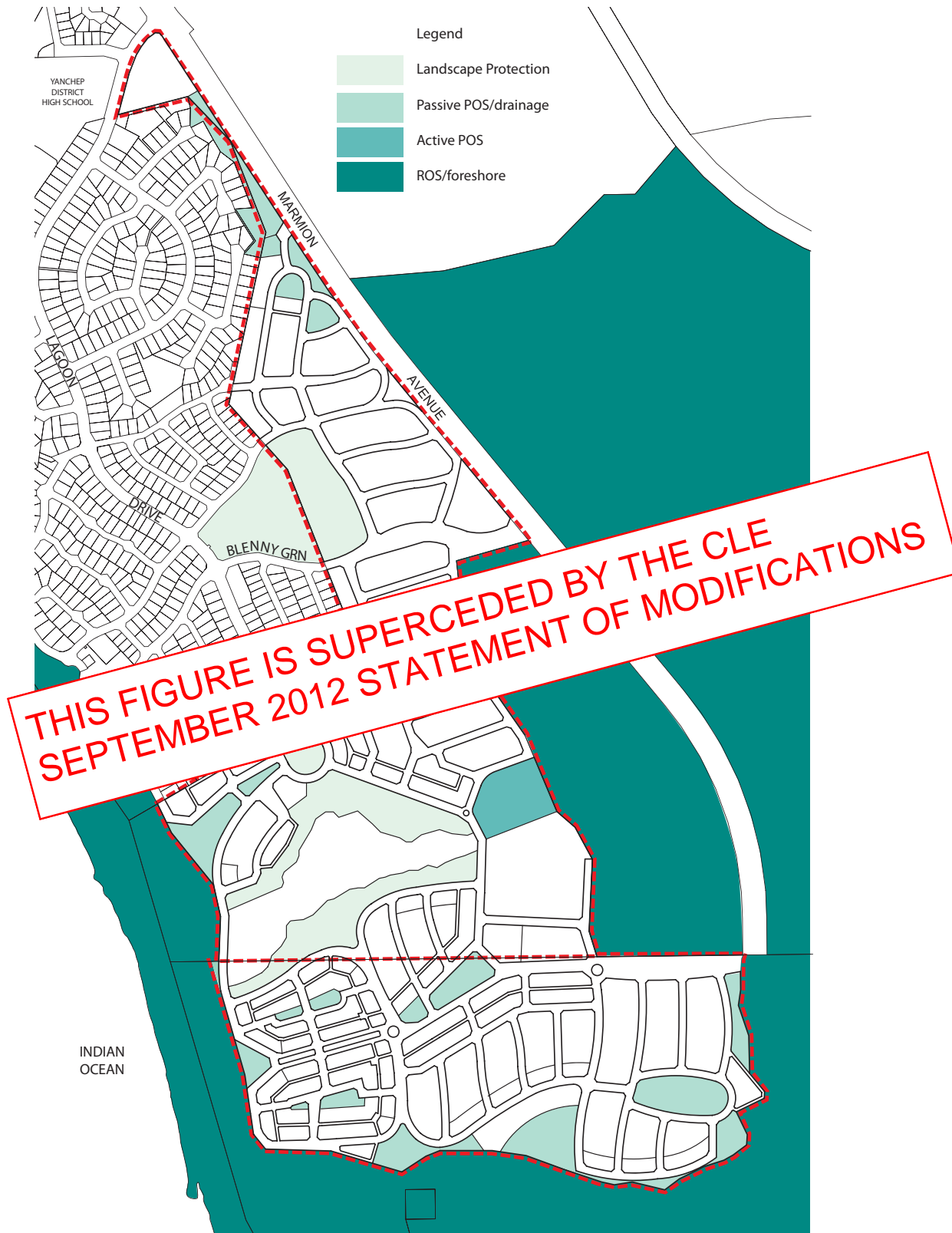


FIGURE 6 PUBLIC OPEN SPACE INDICATIVE PLAN

INDICATIVE PLAN ONLY

## O4 GUIDING PRINCIPLES

Open space plays in structuring the neighbourhood cells and delivering a variety of recreational and conservation experiences to future residents and visitors. The POS areas identified on the Structure Plan map serve a range of functions, including:

- Areas for active recreation (Primary School ovals);
- Areas for more low key recreation and passive enjoyment (pocket parks and linear parks) ; and
- The allocation of key areas of environmental and topographical value for landscape protection (east-west parabolic dune, hillock terminating Ocean Lagoon Drive and prominent dune adjacent to northern portion of Ocean Lagoon Estate).

A defining aspect of the development concept is the retention of a key parabolic dune formation connecting the Coastal Foreshore Reserve and the Yanchep National Park. This represents a natural east/west cross section of the site and includes representation of the respective Quindalup dunal phases and associated vegetation associations. In addition, the retained dune provides a natural corridor linkage across the site and preserves a strong coastal landscape element within the future estate. The retention of this feature was strongly supported at both the Planning Design Forum and during the CRG workshops.

Design concepts for the future development of the parabolic dune will be prepared as more detailed planning for the site progresses. It is anticipated that the built form will be tailored to suit the unique dunal environment and will incorporate medium to high density product that conserves the landform, retains vegetation and provide quality public space and amenity. Subsequent detailed planning design will ensure the sensitive integration of services and urban form elements that make the most of the unique environmental opportunities afforded by this area. Appropriate tenure arrangements will also be required to facilitate the long term retention of the dune (such as retaining the dune as common property within a strata scheme applicable to the dunal node). The careful management of civil works will also contribute to the delivery of a superior landscape retention outcome.



FIGURE 7 SPECIAL DESIGN PRECINCT INDICATIVE PLAN



FIGURE 8 SPECIAL DESIGN PRECINCT INDICATIVE PLAN ONLY

FIGURE 9 STRATEGIC PUBLIC OPEN SPACE SCHEDULE

STRATEGIC POS SITE	SIZE (HA)
A	1.5ha (minimum)
B	2.9ha
C	0.54ha
D	6.76ha
E	0.60ha

## O4 GUIDING PRINCIPLES

POS also provides a unifying element for the establishment of a continuous path network throughout the estate and its connections to Ocean Lagoon Estate (north) and the adjacent bushland. Lineal POS areas frame up the residential cells and the vehicle movement network to create a leisured and pleasurable experience for pedestrians travelling throughout the site. The POS network connects key areas of high amenity, including the foreshore reserve, Neighbourhood Centre, conservation areas and significant view-sheds. Importantly the path network also establishes connections with the adjacent bushland areas and established path networks, in particular to the east of the site, connecting to the Yanchep National Park and the Yaberoo-Budjara Heritage Trail.

As detailed in the Landscape Analysis accompanying the Structure Plan, the final urban landscape should reflect the constraints imposed on the environment by an urban population. In creating a liveable urban landscape in this coastal context, it is not appropriate or feasible to try and replicate what is there. The new landscape needs to provide a predominantly urban response to a pattern of urban habitation. The corresponding landscape elements must therefore reflect their role in an urban environment. Notwithstanding, this treatment will reflect a 'natural' landscape of retained and re-established coastal vegetation and local species suited to their respective roles in the urban environment.

To ensure the best practice management of environmental values (flora, fauna and topography) on the site a Bushland and Landform Management Strategy (primarily for conservation and bushland areas) and a Landscape Masterplan (for landscaped POS areas) respectively will be prepared and implemented. Collectively the Strategy and Masterplan will address such measures as:

- Identifying the key environmental and topographical values to be protected;
- Retention of native vegetation and vegetation links (in road reserves, public parkland and lower density lots) and reuse of cleared native vegetation;
- Seeding program;
- Brushing program to prevent erosion;
- Protection of retained landform through pedestrian management and selective planting;
- Use of native species as dominant species in POS;
- Improving water use efficiency (through minimising turfed areas and planting with local native species), water management and passive irrigation; and
- Provision of private landscape packages.

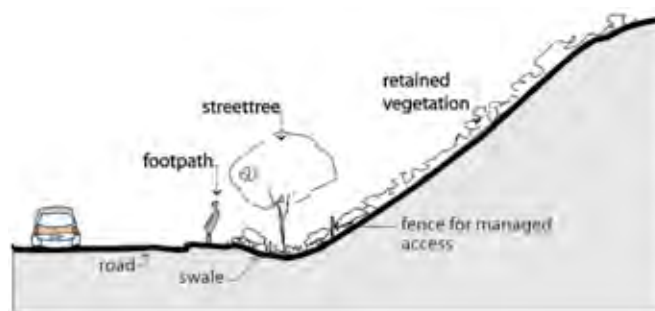


FIGURE 10 INDICATIVE POS INTERFACE TREATMENT

## O4 GUIDING PRINCIPLES

If required by the City of Wanneroo, the Structure Plan identifies an area where a senior sized oval can be accommodated. This is intended to be provided (along with associated recreational facilities) as part of a shared use arrangement with the primary school. This arrangement will optimise use of these amenities by the community and minimise the extent of clearing and modification to the existing topography required for delivery. Relevant management arrangements will need to be developed as joint initiatives of the City of Wanneroo and the Department for Education and Training.

An alternative proposal for the delivery of a senior school oval is also possible that involves locating the oval in the adjacent ROS area (BushForever site 289) on Lot 105 Marmion Ave. This alternative recognises that the area currently identified in the Structure Plan has recognised landform value and may contain significant, good quality vegetation - whereas large areas within the adjacent ROS are quite degraded. The viability of this approach is strengthened by DPI advice that the ROS area was originally purchased by the WAPC to be set aside for Parks and Recreation, but not necessarily for Conservation purposes. Investigating this option would require the City of Wanneroo to enter into negotiations with the Department for Planning and Infrastructure (DPI) Bush Forever Office.

Before this alternative could be pursued, vegetation surveys of the area and an offsets package would need to be submitted for review. The offsets package should detail the environmental values of both sites, based on a detailed survey of vegetation types and locating any priority species. A fauna survey will also be required. The surveys should be conducted consistent with EPA Guidance Statement No.s 51 and 56, with at least 1 quadrat per vegetation type. Care should be taken to propose an appropriate management boundary for the remaining ROS.

Consideration of this alternative should not delay the assessment and approval of the Structure Plan and is presented in good faith. If deemed desirable by the relevant authorities this alternative proposal can be developed as detailed planning for the site is progressed.



FIGURE 11 ACTIVE RECREATION ASSOCIATED WITH PRIMARY SCHOOL & COMMUNITY FACILITIES

INDICATIVE PLAN ONLY

# 04 GUIDING PRINCIPLES

## 4.4 NEIGHBOURHOOD CENTRE, ECONOMY + EMPLOYMENT

**Urban Form Principle - To create a vibrant and sustainable community based on walkable neighbourhoods that maximises opportunities in the local economy and has an appropriate mix of residential, commercial, recreation, and education areas.**

The following table details the objectives and strategies for the Urban Form Element 'Activity Centres, Economy + Employment'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) To establish an accessible, high quality Neighbourhood Centre based on place-making principles that acts as a focal point for community activity and interaction	i) Designate a Neighbourhood Centre (up to 3,000m <sup>2</sup> ) in a location generally in accordance with that described on the Structure Plan Map ii) Prepare a DAP detailing design controls and public domain treatments to ensure a high quality Neighbourhood Centre constructed in accordance with 'Main Street' principles iii) Promote access to the Neighbourhood Centre by all transport modes. This may be achieved by a range of mechanisms including: <ul style="list-style-type: none"> <li>Locating the Neighbourhood Centre on a neighbourhood connector serviced by public transport, pedestrian and cycle routes;</li> <li>The provision of relevant infrastructure for all transport modes; and</li> <li>Design requirements that ensure high amenity and functionality for all modes, particularly pedestrians.</li> </ul> iv) Maximise on-street parking at the Neighbourhood Centre to enable appropriately reduced levels of on-site private parking, encourage the use of alternative modes of transport and make the best use of urban land	Neighbourhood Centre detailed on LSP Map  DAP  Neighbourhood Centre located on Neighbourhood Connector with public transport route  Detail to accompany first subdivision application  DAP  Detail to accompany relevant subdivision application and elaborated through DAP as required
b) Create a robust urban framework that enhances the opportunity for mixed use activities, locally based employment and work from home opportunities	v) Incorporate a diversity of land uses within the Neighbourhood Centre consistent with its function under the City of Wanneroo's Centres Strategy vi) Concentrate higher residential densities around the Neighbourhood Centre to maximise the catchment, improve access and promote after-hours surveillance and use vii) Make sufficient provision for telecommunications infrastructure throughout South Yanchep to promote employment and work from home opportunities	'Mixed use' area at Neighbourhood Centre detailed on LSP Plan  Higher density areas detailed on LSP Plan  Detail to accompany relevant subdivision application
c) Facilitate local economic development	viii) Prepare a Local Employment Strategy for South Yanchep detailing a range of programs and initiatives to facilitate local economic development and employment	Local Employment Strategy submitted as part of Structure Plan report. Implementation plan to be developed in consultation with City of Wanneroo.
d) Participate in regional economic development programs and initiatives	ix) Work with City of Wanneroo to develop and implement regional initiatives that will create opportunities for local residents to work within the region	Key initiatives listed at Part 3 of Local Employment Strategy submitted as part of Structure Plan report. Implementation plan to be developed in consultation with City of Wanneroo.

## 04 GUIDING PRINCIPLES

The key functions of the Neighbourhood Centre are to provide for the convenience shopping needs of future South Yanchep residents, as well as to provide a focus for neighbourhood services and community facilities. The proposed 'Mixed Use' zoning enables a flexible approach to land use to facilitate the development of activities appropriate to the area's life cycle and to accommodate an expanded role for the Centre as the needs of the locality grow over time. The Neighbourhood Centre is complemented by a surrounding area of higher residential density to maximise the catchment and promote after-hours surveillance of the area.

It is anticipated that in the first few years residential uses (including a modest retail component) are likely to predominate, evolving over time to more intensive retail and general commercial activities (including offices and community facilities) as the Centre is strengthened through use by the surrounding community. This ultimate pattern of use is envisaged by identifying the centre as a 'Neighbourhood Centre' pursuant to the designations detailed in the City of Wanneroo's Centres Strategy.

As required in the Centres Strategy the Neighbourhood Centre will be developed according to 'Main Street' principles with a proposed 'shopping' floorspace of 3,000m<sup>2</sup>. The intention is to create a high quality urban space that has its own unique vitality and sense of place. The Structure Plan commits the proponent to the preparation of a DAP to guide the future development of this key urban place and to achieve high quality outcomes in both the public and the private domain. Critical elements of the proposed methodology will include:

- A continuous streetscape - active street frontages with minimal front setbacks;
- A range of land uses that promote activity and surveillance during both the day and night;
- Provision of awnings to provide all weather protection for pedestrians;
- On-street parking complemented by private carparking areas at the rear of buildings;
- Integrating the Neighbourhood Centre with public transport opportunities;
- High quality footpath and road pavement treatments;
- Incorporation of public art and amenities for visitors (such as water fountains and seating); and
- Landscaping and planting treatments that identify the Neighbourhood Centre as an urban place.

The Neighbourhood Centre is located on the primary Neighbourhood Connector servicing South Yanchep and forms the gateway to the south-western residential node adjacent to the beach. Subsequent planning and design will ensure that critical urban form elements (including sheltered bus stops, seating and footpaths) are included to take advantage of the public transport and pedestrian opportunities afforded by this location.

A key element of South Yanchep's future success will be the capacity to accommodate home based business activities, particularly as a complement to formalised activities in the Neighbourhood Centre. The provision of state of the art telecommunications infrastructure will be an important means of realising this opportunity and capitalising on the evolving nature of the workplace. This is recognised within the Local Employment Strategy prepared as an accompaniment to the Structure Plan. This Strategy identifies the key initiatives that can be implemented at South Yanchep to improve employment self sufficiency, consistent with the scale of the development and the requirements of the City of Wanneroo's Employment Policy. The key recommendations of the Strategy include:



FIGURE 12 INDICATIVE MIXED USE AREAS  
INDICATIVE PLAN ONLY



FIGURE 13 NEIGHBOURHOOD CENTRE  
INDICATIVE PLAN ONLY

## O4 GUIDING PRINCIPLES

### 1. Support for a greater level of at-home and from-home job opportunities.

- 1.1 A diversity of block sizes, with some offering terrace houses with residential accommodation over shop fronts or home/work commercial areas;
- 1.2 Opportunities for studio space above garages/ancillary accommodation;
- 1.3 Display homes that represent many of the employment supportive design features, listed above, in a variety of settings;
- 1.4 Broadband technology offering high speed internet access to all properties; and
- 1.5 Participation in City of Wanneroo and other programs to stimulate demand for and support work from home and work at home opportunities within the development.



FIGURE 14 NEIGHBOURHOOD CENTRE INDICATIVE PLAN

## O4 GUIDING PRINCIPLES

### **2. Job and learning opportunities within the development**

- 2.1 Construction of a primary school to service the local area and provide whole-of-life learning opportunities for all residents (outside of normal school hours);
- 2.2 Partner with the local aboriginal community to build boardwalks/path network connecting to adjacent regional open space areas;
- 2.3 Incubation of local small business through lettable floorspace arrangements, opportunities for shared business facilities and access to mentoring and other training and support services;
- 2.4 Provision for and construction of a local area shopping precinct; and
- 2.5 Encouraging local employment practices both within construction phase of development and by businesses operating from the Neighbourhood Centre.

### **3. Creating regional employment links and partnerships**

- 3.1 LandCorp as a major land developer in the North West Corridor to develop a collective approach to generating employment opportunities across their land holdings (Neerabup, Alkimos and South Yanchep) to maximize synergies and create cross development outcomes;
- 3.2 Working with developers and industries based in Yanchep and St Andrews to create opportunities for South Yanchep residents to seek employment within the Corridor;
- 3.3 Create opportunities for South Yanchep residents to access rapid transport links planned between Alkimos and Neerabup;
- 3.4 Extend promotion of employment and learning opportunities and initiatives generated for Alkimos Eglinton residents to South Yanchep; and
- 3.5 Participate in appropriate City of Wanneroo and Corridor wide initiatives that will generate local employment and business development opportunities for South Yanchep.

# O4 GUIDING PRINCIPLES

## 4.5 HOUSING

**Urban Form Principle - To create an urban form based on the principles of Liveable Neighbourhoods and characterised by a range of climate responsive lot and housing types in a variety of density settings that enhance opportunities for lifestyle and affordability.**

The following table details the objectives and strategies for the Urban Form Element 'Housing'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) Develop a variety of housing choices within a legible street network that facilitates community interaction and supports different needs and lifestyles, including affordability	i) Preparation of a Housing Plan that describes a wide range of housing and lot types in a variety of density settings consistent with the targets outlined in the City of Wanneroo Housing Strategy	Housing Plan submitted as part of Structure Plan report
b) Promote the efficient use of land through the appropriate spatial allocation of residential densities	ii) Allocate higher residential densities consistent with the Zoning/ Residential Density Code Map and in accordance with the criteria below: <ul style="list-style-type: none"> <li>Along neighbourhood connectors supporting public transport routes and opportunities;</li> <li>Within 400 metres of the Neighbourhood Centre and other local neighbourhood centres;</li> <li>Adjacent to POS;</li> <li>Where necessary to enable the retention of landform; and</li> <li>Other suitable locations as contextually relevant and/or in response to the need to promote housing diversity.</li> </ul>	Identified on LSP Plan. Detail to accompany relevant subdivision application
c) Minimise changes to the landform and topography in the design of the development	iii) Develop residential design standards that are responsive to site and lot attributes and that promote energy efficient, affordable and flexible dwelling design	Design Guidelines (DG) to be prepared to submit concurrently with relevant subdivision application
d) Achieve innovative design and site planning solutions that achieve climate responsive outcomes	iv) Promote housing layouts that incorporate passive solar design, and energy and water efficiency principles through variations to conventional residential standards and purchaser information	DAP
e) Create a distinctive and responsive built form that enhances the sense of place and community identity of South Yanchep	v) Allow for 'aging in place' through the provision of a range of dwelling types including those suitable for older residents vi) Implement strategies to provide suitable affordable housing product and to facilitate increased opportunities for home ownership for lower income and disadvantaged community members vii) Apply outcomes of research and planning into housing affordability being prepared for Alkimos Local Structure Plan to South Yanchep development	DAP/DG Detail to accompany relevant subdivision application Detail to accompany relevant subdivision application

## O4 GUIDING PRINCIPLES

The Structure Plan represents a considered effort to deliver a new form of urban development in a coastal setting. The design concept aims to create an authentic place that celebrates both its natural setting and the new urban form that will be created.

The design incorporates the principles of Traditional Neighbourhood Design which also inform Liveable Neighbourhoods. Critical elements of this methodology include:

- A neighbourhood with a discernable centre;
- Most dwellings being located within a 5 minute walk (400 metres) of the centre;
- A variety of dwelling types within the neighbourhood;
- A connected road network with streets shaded by rows of trees; and
- Every dwelling being within walking distance of a small park and a primary school.

Another structuring element of the design concept is the use of the transect model which captures the morphology of human settlements from urban to wilderness environments. It interprets the orderly and combined association and transition of built form and landscape elements (such as open space, roads and buildings) from one zone to another. This is delivered at South Yanchep by the transition from a bushland experience at the edge of the site, through a band of lower density residential lots, to a more intensive urban configuration, including selected areas of medium to high residential density and commercial activity at the Neighbourhood Centre. The use of the transect model in this context also facilitates the retention of the site's unique landform and topography. Larger lots at the periphery of the development provide opportunities to minimise the need for civil works in association with housing development. As the urban form intensifies towards the centre the landscape is expected to become more uniform, reflecting the transition from a bushland to an urban environment.

The anticipated housing yield for South Yanchep is 1,500 lots (assuming maximum residential density codes are applied where a range exists) with density ranges from R20 - R100. The Structure Plan proposes increases in the proportion of medium density residential lots (R30 +) relative to the lower residential densities (<R20) that currently characterise the Yanchep-Two Rocks locality. This responds to a recognised need for an alternative to traditional suburban models in order to deliver more opportunities for housing affordability and 'aging in place'. This also enables the development of a correspondingly broad range of building typologies applicable to the respective areas of residential density that will also contribute towards these aspirations.

Residential densities are allocated in accordance with the transect methodology and in response to specific opportunities presented by the site and surrounding development. This translates into areas of higher density being located:



FIGURE 15 PEDSHED PLAN

INDICATIVE PLAN ONLY

- Adjacent to the Neighbourhood Connector and public transport opportunities (including the catchment of the proposed rail station at Yanchep Beach Road);
- Within the walkable catchment of the District Centre described in the Lot 102 Yanchep Beach Road Structure Plan;
- Adjacent to POS and areas of high amenity such as the coast; and
- As a means of enabling the retention of landform i.e. adjacent to the parabolic dune.

O4 GUIDING PRINCIPLES

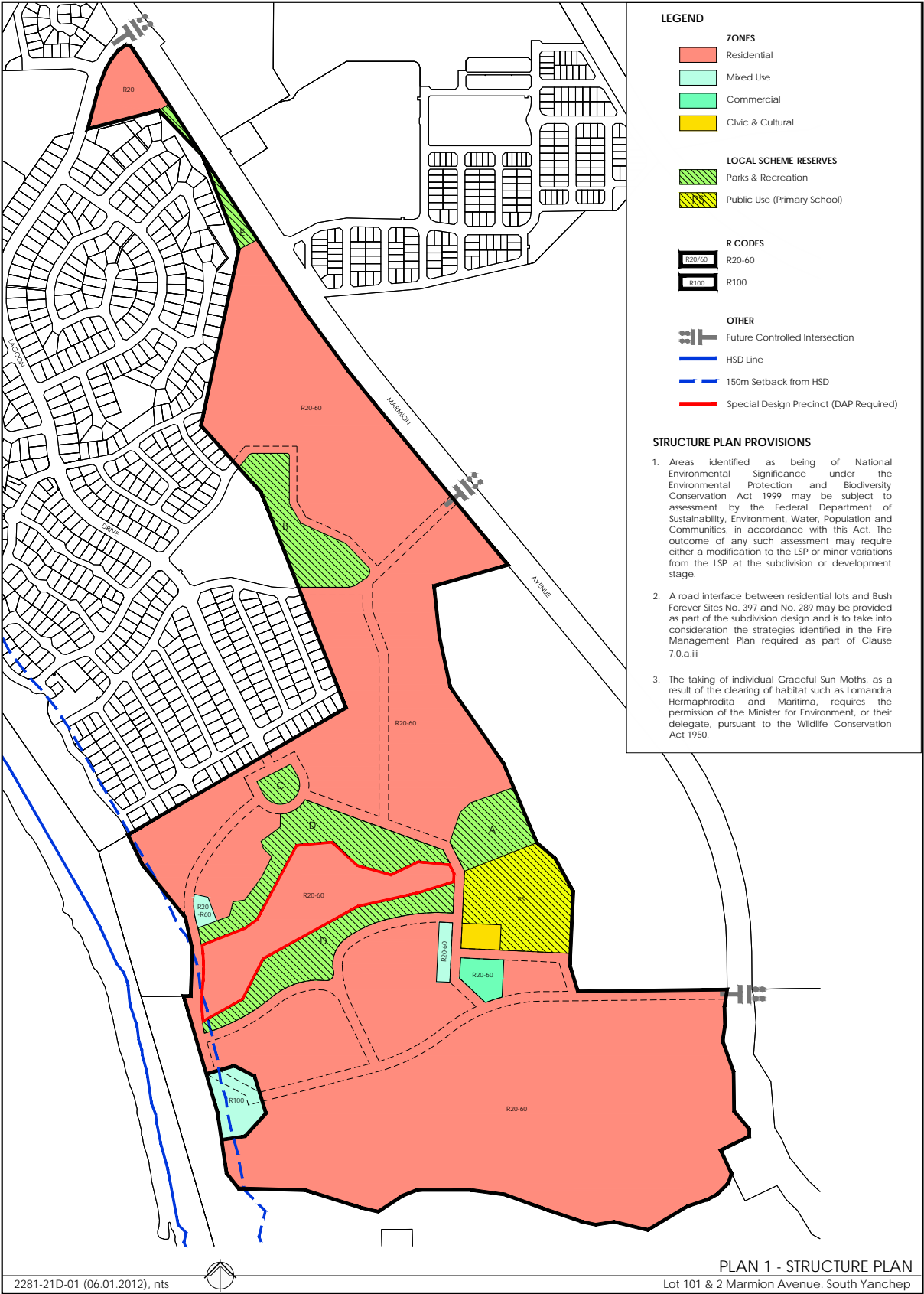


FIGURE 16 STRUCTURE PLAN

## 04 GUIDING PRINCIPLES

There is a growing appreciation of the importance of retaining existing vegetation and topography to provide a 'sense of place' within development areas and to meet broader sustainability objectives. To a large extent, this has been a basis for the establishment of the Regional Open Space reserves in the locality of Yanchep-Two Rocks. These ROS areas protect a range of existing natural attributes including the coastal foreshore dunes, inland sand dunes and vegetation. The Structure Plan has also taken account of the existing topography. It endeavours to strike a balance that facilitates an urban outcome whilst minimising the need for large scale reworking of the landscape. To achieve this key areas of landform have been selected for retention, such as the primary east/west parabolic dune - to be complemented by the development of built form controls for specific areas to minimise the impact of development – and a prominent sand hillock at the southern termination of the existing Ocean Lagoon Drive.

Elsewhere within the site a more conventional approach to earthworks is proposed. This includes the terracing of development areas to maximise the elevation of finished lots and the grading of roads up from the foreshore to provide vistas along the roads to the coast. This latter approach ensures such views remain available for all residents and visitors rather than being privatised

The built form response will be an integral component of the success of South Yanchep. This will be addressed by the development of Design Guidelines to promote innovation and environmentally sustainable design outcomes for both the residential and the commercial sector. Built form requirements will aspire to a high standard that respects and preserves the landscape and that contribute to a distinctive experience for residents and visitors to South Yanchep. Key elements to be addressed will include:

- Promoting house designs that minimise the need for changes to landform and topography;
- Innovative design and site planning solutions to achieve climate responsive outcomes and optimise opportunities for solar orientation;
- Development of site responsive built form outcomes rather than a 'one-size-fits-all' housing model;
- Incorporation of environmentally sustainable design principles including passive solar design and measures for house water reduction; and
- Adaptable housing models that enable 'aging in place' and facilitate opportunities to work from home.

This suite of design aspirations will need to be carefully calibrated to achieve appropriate outcomes that respond to the particular circumstances of different areas on the site and in some cases individual lots.

LandCorp is a member of the State Government's inter-agency working group addressing and developing whole-of-government responses to housing affordability. Any strategies and actions coming from this group will be applied to LandCorp developments.

LandCorp is also in the process of preparing an agency level response and set of guidelines for addressing:

- Housing diversity;
- Housing affordability; and
- Affordability within a community wellbeing context

These guidelines will be applied to South Yanchep when preparing subdivision plans for the development.

On a more localised scale, as the developer of the neighbouring Alkimos land holding, LandCorp and its landowner partners have built a strong affordability component into the planning for the first Alkimos Local Structure Plan area. This includes both a design response and innovation in the use of tenure, materials, and community attraction to address both affordability and diversification. This research and planning work will be available to be applied to South Yanchep and is one of the value-adding advantages LandCorp as a major developer in the corridor is able to bring to South Yanchep.

# O4 GUIDING PRINCIPLES

## 4.6 MOVEMENT NETWORK

**Urban Form Principle - To provide an efficient movement network that facilitates safe, efficient and pleasant walking, cycling and driving access to public transport, local employment, retail and community facilities.**

The following table details the objectives and strategies for the Urban Form Element 'Movement Network'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) To provide an interconnected movement network with convenient and safe linkages for vehicles, cyclists and pedestrians to and throughout the residential areas, Neighbourhood Centre, open space and other areas of interest within or adjoining South Yanchep	i) Locate neighbourhood connectors and major intersection points in locations generally in accordance with that described on the Structure Plan Map ii) Develop an interconnected street network with strong links both within and external to South Yanchep, that maximises safety, encourages walking and cycling, supports public transport and minimises the impact of through traffic iii) Identification of a conveniently positioned bus route(s) that provides maximum accessibility in accordance with PTA policy iv) Location of a public transport node and access points within the Neighbourhood Centre as requested by the PTA	Detailed on LSP Map  Preliminary street network detailed on LSP Map. Detail to accompany relevant subdivision application Proposed bus route detailed on LSP Map PTA
b) To provide a street network that creates a pleasant public realm and encourages walking, decreases reliance on the private car and enhances public transport use c) To ensure efficient use of land through the application of Liveable Neighbourhoods road design principles and standards	v) The design and character of major roads should provide an environment amenable to pedestrian, cyclists, homes and businesses vi) Design the street network to provide for development to be oriented toward major roads vii) Design local streets to create safe low vehicle speed environments consistent with Liveable Neighbourhood standards for widths, cross sections, truncations, street trees and other matters viii) Provision of a road network that promotes opportunities for solar orientation of lots	Detail to accompany relevant subdivision application and elaborated through DAP as required  Preliminary street network detailed on LSP Map. Lot orientation detailed on Solar Orientation Plan accompanying Structure Plan report

## O4 GUIDING PRINCIPLES

The subject site forms the 'gateway' to Yanchep for traffic approaching from the South along Marmion Avenue. Two new T-junctions are proposed along Marmion Avenue to service South Yanchep. These are appropriately spaced to provide good connectivity between the communities on either side of the road and to facilitate ease of movement to the future rail station and District Centre identified in the Lot 102 Yanchep Beach Road Structure Plan.

The internal road network within South Yanchep has been designed to accommodate four key elements:

- Providing a logical continuation of the existing Neighbourhood Connector in Ocean Lagoon (Lagoon Drive) through the estate and concluding with a connection to Marmion Avenue;
- Ensuring an appropriate road interface is provided to all POS areas and adjacent ROS reservations;
- Providing a safe and highly permeable local street network that enables a high degree of accessibility to key destinations both within the site and the locality; and
- Aligning roads to optimise solar orientation and (where appropriate) facilitate views.

Liveable Neighbourhoods standards have been used in the planning for the South Yanchep street reservations. These designs provide a flexible range of options to suit the different traffic, parking, pedestrian and cycling needs for the proposed road network. These standards will be complemented by a landscape response that promotes tree selection and planting to achieve street level micro-climates that are conducive to the active enjoyment and amenity of these areas by pedestrians and other users. Further examination of relevant typologies will be undertaken as detailed planning for the estate progresses.

As detailed at Part 4.3 – Environment + Open Space of this section, a comprehensive network of dual use paths is proposed as part of the road network. Once connected to the broader local/regional path network the complete system of paths will provide good access to parks, schools, commercial sites, the coast and neighbouring communities such as the Yanchep Townsite. On-road cycle space will also be provided along all arterial roads and along new local distributor roads carrying relevant traffic volumes.

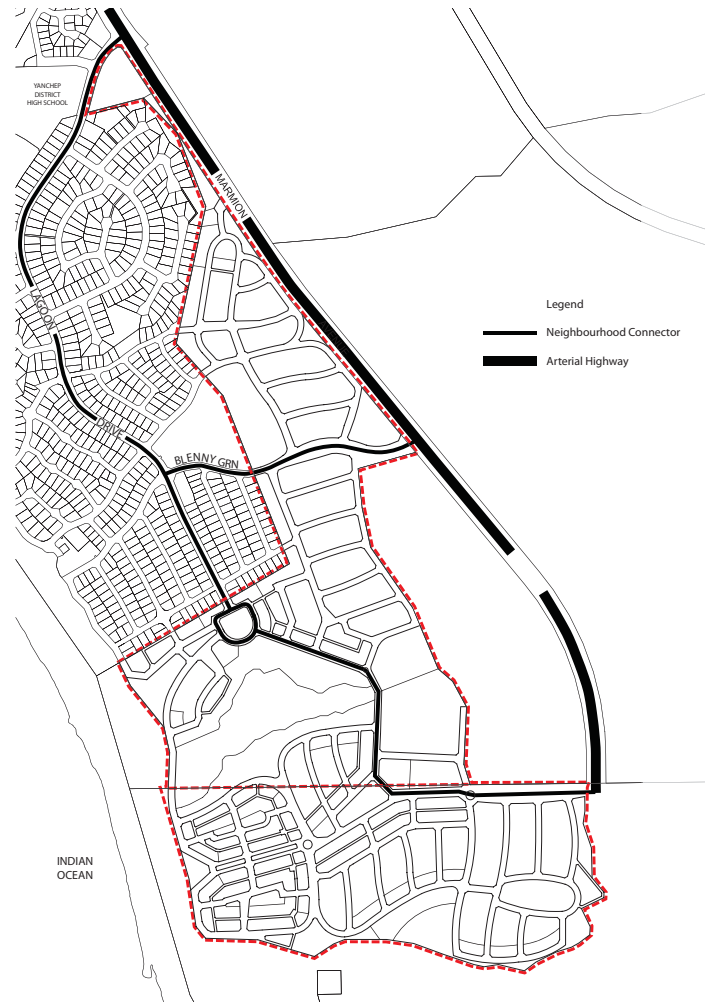


FIGURE 17 PRIMARY MOVEMENT NETWORK  
INDICATIVE PLAN ONLY

## O4 GUIDING PRINCIPLES

Promoting access to public transport opportunities is a key deliverable of the movement network. Combined with a highly permeable, pedestrian friendly and destination oriented street network, good access to public transport should minimise the need for reliance on private vehicle use, particularly for local trips. The Structure Plan makes provision for a bus route to be provided along the primary neighbourhood Connector. Importantly the design of the road network also facilitates good access to the proposed Yanchep Beach Road station within identified in the Lot 102 Yanchep Beach Road Structure Plan.

Transperth indicate that the existing Route 490 will continue to travel between Two Rocks and Yanchep en-route to the northernmost train station (e.g. Clarkson Station at present). When Marmion Avenue is extended to Yanchep Beach Road, Transperth would have the option of sending the Route 490 buses via Marmion Avenue instead of via Yanchep Beach Road and Wanneroo Road, thereby directly servicing South Yanchep. Transperth have identified the following longer term bus service possibilities:

- Service between Yanchep Beach Road Station and Eglinton Station
- When the Yanchep Beach Road rail station is operational, a service would operate to the Eglinton Station via South Yanchep. Target service levels would be 10-15min in the peak and 20minutes in the off-peak during weekdays.
- Service between St. Andrews and Yanchep Beach Road Rail Station
- When the rail service is operational, a service would operate between the St. Andrews Southern Town centre and the Yanchep Beach Road station. The route would travel west from the Town Centre to Two Rocks Road, then through existing Yanchep. Target service levels would be 10-15min in the peak and 20minutes in the off-peak during weekdays.

To achieve effective rail service to the Yanchep area, it will be important that adequate provision is made for kiss n' ride and park n' ride facilities at the Yanchep Beach Road Station. A preliminary concept (prepared by GHD) shows a total of approximately 700 park n' ride bays in two locations servicing this facility. The Transport Analysis for South Yanchep identifies that further study is needed to better define the park n' ride facilities required at the Yanchep Beach Road Station and what measures should be taken by the appropriate authorities to reserve the necessary land for these facilities.

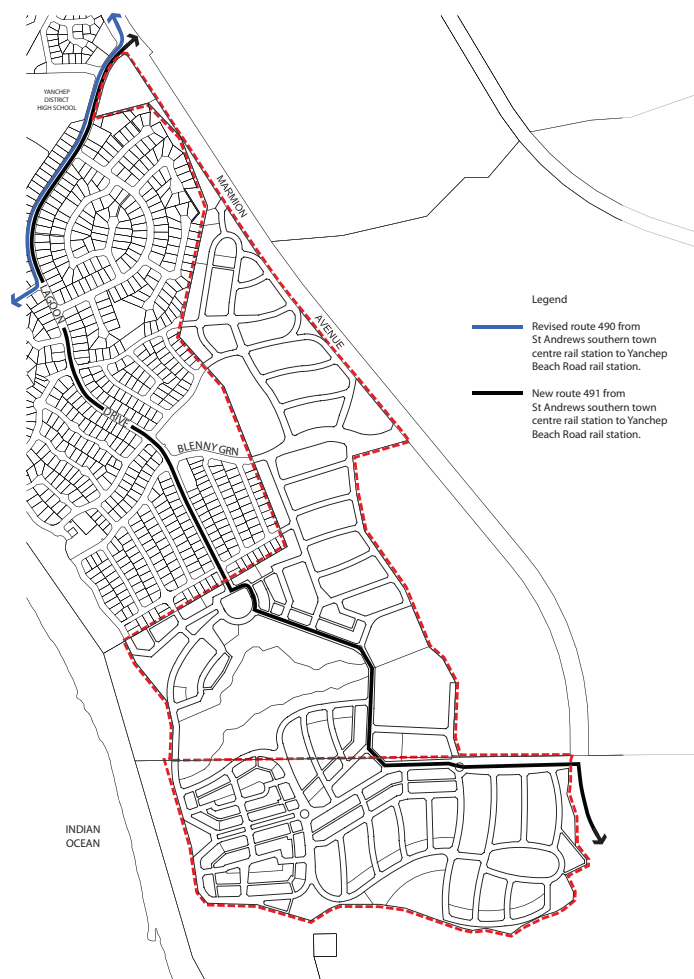


FIGURE 18 PUBLIC TRANSPORT ROUTES  
INDICATIVE PLAN ONLY

# 04 GUIDING PRINCIPLES

## 4.7 RESOURCES, INFRASTRUCTURE AND SERVICES

**Urban Form Principle - To promote the efficient use of resources, infrastructure and services including water, energy and waste minimisation.**

The following table details the objectives and strategies for the Urban Form Element 'Resources, Infrastructure and Services'. The table provides a brief synopsis of how the strategies have been, or will be, met, through the planning process for South Yanchep.

Primary Objectives	Strategies	Compliance
a) To optimise the use of existing resources including water and energy, infrastructure and assets within and surrounding South Yanchep	i) Prepare and implement a Community and Economic Development Plan to investigate maximising the potential of community facilities and urban services	Community and Economic Development Plan to be prepared in consultation with Community Reference Group
b) To ensure that all desired services, facilities and infrastructure are provided in an appropriately staged manner as development proceeds	ii) Provision of communications infrastructure, including broadband services, within South Yanchep to improve local employment opportunities and establish a community portal	Detail to accompany relevant subdivision application
c) To achieve land use, resource and infrastructure efficiency and sustainability through integrated urban water management consistent with Liveable Neighbourhoods and Statement of Planning Policy 2.9	iii) Prepare and implement a Local Water Management Strategy consistent with Statement of Planning Policy 2.9, Liveable Neighbourhoods and the Department of Water's Stormwater Management Manual for Western Australia, to incorporate best practice urban water management techniques including infiltration of rainwater at source, management of groundwater and surface water quantity and quality, achievement of water conservation (including landscaping and public open space) and the investigation of the feasibility of stormwater harvesting, wastewater treatment and reuse (including 3rd pipe technologies) and water demand management techniques  iv) Prepare an Urban Water Management Plan to accompany any application for subdivision, which implements the approved Local Water Management Strategy	Local Water Management Strategy submitted as part of Structure Plan report  Urban Water Management Plan to accompany relevant subdivision application
d) Improve resource conservation through the efficient use of energy including renewable energy (where appropriate) and effective waste management via avoidance, reuse, recycling and support for the use of sustainable products and services	v) Identify initiatives to minimise community energy and water use as part of the South Yanchep Sustainability Strategy  vi) Investigate the feasibility of generating, obtaining or promoting a source of renewable energy as part of the South Yanchep Sustainability Strategy  vii) Identify objectives for waste management as part of the South Yanchep Sustainability Strategy	Energy and water use initiatives detailed in Sustainability Strategy submitted as part of Structure Plan report  Requirement for renewable energy feasibility analysis detailed in Sustainability Strategy submitted as part of Structure Plan report  Waste management initiatives detailed in Sustainability Strategy submitted as part of Structure Plan report

## O4 GUIDING PRINCIPLES

The Structure Plan aspires to achieve a more sustainable form of urban development, particularly in terms of the design response to the site and consideration of the future role of infrastructure and services.

In planning for the development, the proponent has embraced a community development approach that facilitates the development of social capital and integrates the new development within the broader Yanchep community. The early provision of well planned community facilities is a key element to this approach. The Community Facilities Needs Assessment that accompanies the Structure Plan details a range of facilities that are anticipated to be required by the new South Yanchep community. As development proceeds these will be provided in accordance with a Community and Economic Development Plan prepared in conjunction with the CRG. This will ensure an appropriate level of services is provided to complement other existing and proposed facilities in the locality.

The site has good access to essential services for residential and commercial development, including reticulated water and sewer, underground power and telecommunications. Consistent with the recommendations of the City of Wanneroo's Employment Policy the provision of appropriate communications infrastructure is considered to be a key means of delivering substantial benefits, including employment and educational improvements, for the future South Yanchep community. The provision of these services by the proponent will be consistent with agreed strategies developed in conjunction with the relevant service authorities.

Stormwater drainage across the site will be undertaken in accordance with a Local Water Management Strategy that accompanies the Structure Plan. The Strategy details the incorporation of an integrated suite of Water Sensitive Urban Design (WSUD) techniques during the planning, design and construction of the project. Key objectives of WSUD include the detention of stormwater rather than its rapid conveyance, the use of stormwater to conserve potable water, the use of vegetation for filtering purposes and water efficient landscaping. The Strategy will be implemented as more detailed planning progresses through the preparation and delivery of Urban Water Management Plans prior to subdivision.

Initiatives to minimise waste and to reduce energy and water consumption form part of the South Yanchep Sustainability Strategy discussed at Part 4.1 – Sustainability of this section.



FIGURE 19 MODELLING OF HILLOCK AT EXISTING TERMINATION OF OCEAN LAGOON DRIVE





## **PART THREE: TECHNICAL OVERVIEW**

# O5 PLANNING CONTEXT

## 5.1 METROPOLITAN REGION SCHEME

Lot 101 is zoned 'Urban' under the MRS. The portion of Pt Lot M1503 included in the South Yanchep Structure Plan is zoned 'Urban'. The remainder of the lot is reserved for 'Parks and Recreation', 'Other Regional Road' (Marmion Avenue – unconstructed), 'Primary Regional Road' (Mitchell Freeway) and 'Railway'.

The land is abutted to the West by Bush Forever site No. 397 and to the South and East by Bush Forever site No. 289. Both of these areas are reserved for 'Parks and Recreation' under the MRS and are subject to further environmental investigation.

The land adjacent to the coast is subject to Clause 32 (Resolution 62) of the MRS. Clause 32 requires that all development applications for buildings greater than 5 stories or 21 metres and within 300 metres of the horizontal setback datum (HSD) to be referred to the Western Australian Planning Commission (WAPC) for determination.



FIGURE 20 METROPOLITAN REGION SCHEME MAP

# O5 PLANNING CONTEXT

## 5.2 CITY OF WANNEROO DISTRICT PLANNING SCHEME NO. 2

Lot 101 is zoned 'Urban Development' under the City of Wanneroo District Planning Scheme No.2 (DPS 2). The objectives for the zone are to:

1. Designate land for future urban development;
2. Provide for the orderly planning of large areas of land for residential and associated purposes through a comprehensive Structure Planning process; and
3. Enable planning to be flexible and responsive to changing circumstances throughout the developmental stages of the area.

Lot 101 is identified as being located within 'Environmental Condition Area 2. Prior to any development taking place a range of Environmental Management Plans need to be produced and endorsed. These include:

- Stygofauna and/or Troglitic 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.

The portion of Pt Lot 1503 included in the South Yanchep Structure Plan is zoned 'Urban Development'. The remainder of the lot is reserved for 'Parks and Recreation', 'Other Regional Road', 'Primary Regional Road' and 'Railway' under DPS 2.

Other information relevant to the preparation of the Structure Plan and subsequent planning for the site detailed in DPS 2 includes:

- The subject land is not currently identified as accommodating any level of retail centre in DPS 2 (as detailed in Schedule 3 of the Scheme);
- Any 'commercial' uses proposed shall specify a maximum retail net lettable area (NLA) to be included within Schedule 3 of Scheme;
- Retail floor space shall comply with Schedule 3 except where a provision to the contrary is made in an agreed Structure Plan (approved by Council and endorsed by WAPC);
- There is a 'mixed use' zone under DPS 2 which is intended to accommodate a mixture of residential development with small scale businesses in a primarily residential scale environment i.e. office, consulting, café etc and limited retail uses; and
- DPS 2 allows for a 'corner store' within a 'Residential' zoned area (maximum Gross Floor Area of 100m<sup>2</sup>).



FIGURE 21 CITY OF WANNEROO DISTRICT PLANNING SCHEME No. 2 MAP

## O5 PLANNING CONTEXT

The Structure Plan proposes a 3,000m<sup>2</sup> Neighbourhood Centre consistent with the requirements detailed above. The Centre has been located to:

- Maximise its 800 metre walkable catchment - which extends to the majority of the site;
- Complement the location of proposed centres at Ocean Lagoon and Lot 102 Yanchep Beach Road;
- Enable co-location of the Centre with the Primary School and proposed community facilities; and
- Take advantage of the natural and topographic assets of its location.

Detailed consideration of the attributes of the proposed Neighbourhood Centre is provided at part 5.4.5 below.

This proposal satisfies the requirements of DPS 2 for the preparation of a Local Structure Plan prior to development being undertaken in the 'Urban Development' zone.

### 5.3 STATE STRATEGIES, POLICIES + STRUCTURE PLANS

#### 5.3.1 State Sustainability Strategy (Government of Western Australia, 2003)

The objective of the State Sustainability Strategy is to provide a framework that encompasses the necessary actions for implementing sustainability in Western Australia. The Strategy is based on seven foundation principles from which are derived six goals each complemented by a series of priority action areas and initiatives. The six goals are detailed as follows:

- Goal 1: Governance – ensure that the way we govern is driving the transition towards a sustainable future
- Goal 2: Global Contribution – play our part in solving the global challenges of sustainability
- Goal 3: Natural Resources – value and protect our environment and ensure the sustainable management and use of natural resources
- Goal 4: Settlements – plan and provide settlements that reduce the ecological footprint and enhance quality of life at the same time
- Goal 5: Community – support communities to fully participate in achieving a sustainable future
- Goal 6: Business – assist business to benefit from and contribute to sustainability

The objectives of the State Sustainability Strategy have since been incorporated into the various planning instruments that inform the South Yanchep Structure Plan. Most notably these include Liveable Neighbourhoods Edition and the City of Wanneroo's Smart Growth Strategy. The Urban Form Principles and Elements detailed at Part 1 of this report are derived from these two instruments and will be used to ensure that the development of South Yanchep is undertaken in a sustainable way.

## 05 PLANNING CONTEXT

### 5.3.2 State Planning Strategy (WAPC, 1997)

The State Planning Strategy (SPS) represents a whole of Government approach to sustainable land use planning and development in Western Australia until 2029. The Strategy identifies a series of key goals as the basis of a robust land use planning framework. These include generating wealth, conserving and enhancing the environment and building vibrant and safe communities for the enjoyment of current and future generations of Western Australians.

The Strategy was last audited in 2000-2001. The planning that has occurred for South Yanchep, including the content of this Structure Plan report, is consistent with the goals and objectives of the State Planning Strategy.

### 5.3.3 Network City: Community Planning Strategy (WAPC)

Network City provides an overarching development strategy for the metropolitan regions of Perth and Peel. The vision is that by 2030, the people of Perth will have created a world class, sustainable city that is more vibrant, compact and accessible and that offers a unique sense of place. A key objective of the Strategy is to direct urban expansion into designated growth areas, which are, or will be, well serviced by employment and public transport. The key objectives of the Strategy are detailed as follows:

- Deliver urban growth management
- Accommodate urban growth primarily within a Network city pattern, incorporating communities
- Align transport systems and land use to optimise accessibility and amenity
- Deliver a safe, reliable and energy-efficient transport system that provides travel choice
- Protect and enhance the natural environment, open spaces and heritage
- Deliver for all a better quality of life, building on our existing strengths
- Plan with the communities
- Ensure employment is created in centres
- Deliver a city with 'urban' energy, creativity and cultural vitality
- Provide a city plan that will be implemented, provide certainty and deliver results

A key component of Network City is the integration of transport and land use by creating (and reinforcing) a network of 'Activity centres' connected by 'activity corridors'. The site forms part of the Yanchep Activity centre located on a secondary Activity corridor with excellent public transport opportunities. This designation evidently responds to proposals for future rail transit and the extension of Marmion Avenue to this locality.

The area is also identified as being one "where there are fewer opportunities for urban consolidation outside of activity centres and corridors." It is notable that the Network City plan dates from 2004 and therefore its recommendations are based on the MRS zonings and forward planning that was progressed for this area at that time, rather than on more recently advanced planning initiatives, such as the St Andrews District Structure Plan.

The future development of South Yanchep will demonstrate the practical delivery of Network City initiatives. The design of the Structure Plan responds to its Network City context and represents a robust and coherent urban form based on Network City principles. This is achieved by capitalising on local opportunities for linking development with transport initiatives (proposed railway station at Lot 102 and the Marmion Avenue extension) and the effective integration of the development into its local context. These two elements will ensure the delivery of a coordinated project that is well placed to achieve more sustainable community development outcomes.

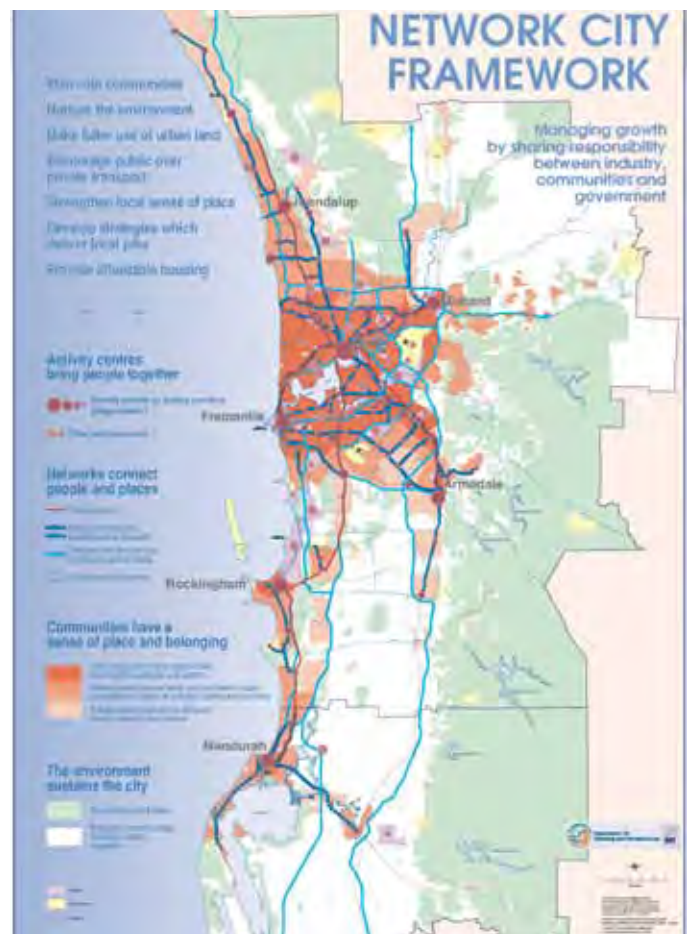


FIGURE 22 NETWORK CITY PLAN

## O5 PLANNING CONTEXT

### 5.3.4 Liveable Neighbourhoods (WAPC, 2007)

LN was prepared by the WAPC to implement the objectives of the State Planning Strategy and to deliver the strategies and actions of Network City. Unlike Edition 2 of LN, which was a voluntary code, LN is an operational policy of the WAPC. As an operational policy LN guides the design and assessment of structure plans and the subdivision and development of new urban areas. Its aims include:

- Promoting the design of walkable neighbourhoods;
- Creating places that foster community and a sense of place;
- Developing mixed use areas and active streets;
- Constructing accessible and sustainable parkland areas;
- Facilitating energy efficient design; and
- Creating a variety of lot sizes and housing types.

The key initiatives of LN are coordinated by eight principal Design Elements. These have a strong correlation with the Urban Form Elements applicable to the South Yanchep Structure Plan, which has been developed in response to the requirements of LN and the City of Wanneroo's Smart Growth Strategy. The application of LN principles has guided the structure planning for South Yanchep and will continue to inform subsequent stages of planning including detailed lot and building design. The proposal meets the requirements of LN and the implementation of these principles will ensure that future development of the site occurs in a thoughtful and sustainable manner for the benefit of current and future generations.

## 5.3.5 Statements of Planning Policy (WAPC)

Development of the land must be generally consistent with any relevant Statements of Planning Policy (SPP) prepared and adopted by the WAPC under Part 3, Section 25 of the Planning and Development Act 2005. The WAPC and local governments must have 'due regard' to the provisions of SPP's when preparing or amending District Planning Schemes and when making decisions on planning matters. Statements of Planning Policy of particular relevance to the project include:

### 5.3.5.1 SPP 2 - Environment and Natural Resources Policy

SPP 2 sets out a planning response to environment and natural resource management issues within the framework of the State Planning Strategy. Specific policy areas of relevance to South Yanchep include those relating to water resource management, air quality, soil and land quality, biodiversity, marine resources, landscapes, greenhouse gas emissions and energy efficiency.

The Structure Plan responds to the objectives of SPP 2 by:

- Ensuring that the management of the environment and natural resources within the site has been integrated into the development of the Structure Plan;
- Giving a high priority to the protection and conservation of the natural environment through the proposed design; and
- Establishing measures for the incorporation of best practice solutions to environmental issues and the sustainable use and management of natural resources.

SPP 2 is supplemented by more detailed planning policies, which provide specific guidelines for the development and protection of the environment and resources, including SPP No 2.6 Coastal Planning Policy, which is discussed below.

### 5.3.5.2 SPP 2.6 – State Coastal Planning Policy

SPP 2.6 identifies a range of pressures and anticipated threats to Western Australian coastline and coastal locations and describes a suite of strategies to address them. SPP 2.6 applies to all planning proposals from broad Structure Planning through to detailed development proposals.

With respect to South Yanchep SPP 2.6 requires the following measures to be considered where development is proposed adjacent to the coastline:

- Coastal Foreshore Reserve – The policy requires that coastal land be set aside for public ownership for conservation, management, public access and recreation. The required Coastal Foreshore Reserve is already identified and reserved under the MRS for 'Parks and Recreation';
- Coastal Strategies and Management Plans – At the appropriate time, a Coastal Foreshore Management Plan or strategy should be prepared and implemented for the Coastal Foreshore Reserve and any abutting freehold land with conservation value. The Structure Plan commits to the preparation of a Coastal Foreshore Management Plan at the Development Plan stage.
- Physical Processes Setback – To avoid risk of damage from coastal processes setbacks to buildings and infrastructure on the coast need to be determined using the guidelines contained within SPP 2.6. The cadastral boundary of the subject site is setback approximately 150 metres from the shoreline.

## 5.3.5.3 Draft SPP 2.8 - Bushland Policy for the Perth Metropolitan Region

Draft SPP 2.8 has been prepared to give statutory effect to Bush Forever (Government of Western Australia, 2000). Bush Forever identifies 51,200 ha of regionally significant bushland for protection and covers 26 vegetation complexes on the Swan Coastal Plain of the Perth Metropolitan Region. One of the key aims of Bush Forever is to conserve, where practical, a target of at least 10 percent of each vegetation complex in the metropolitan context. The document outlines a framework for implementation as well as individual recommendations for each of the 287 individual Bush Forever Sites identified.

The two Bush Forever sites listed below are adjacent to the South Yanchep Structure Plan area:

- #289 Ningana Bushland, Yanchep/Eglinton - The 'Ningana' Regional Open Space provides an ecological corridor between the coast at Eglinton and Yanchep National Park.
- #397 Coastal Strip from Wilbinga to Mindarie - This site corresponds to the existing MRS Coastal Foreshore Reserve between Mindarie and Wilbinga. The foreshore reserve boundary was determined in 1996 as part of MRS Amendment 975/33 and is based on the Coastal Planning Strategy prepared for the Yanchep-Two Rocks area.

The South Yanchep Structure Plan makes provision for the ongoing conservation and management of each of these areas. The particular interface treatments applied to the Bush Forever areas will be further articulated and defined as detailed planning for the site progresses.

## 5.3.5.4 SPP 3 - Urban Growth and Settlement

SPP 3 was gazetted in February 2006 and applies to the whole of the State. SPP 3 is a mechanism for promoting sustainable and well planned settlement patterns that have regard to community needs and are responsive to environmental conditions. The policy incorporates the objectives and principles of Network City and Liveable Neighbourhoods.

SPP 3 recognises that much of the new development in metropolitan Perth has been in the form of low density suburban growth. This form of development intensifies pressure on valuable land and water resources, imposes additional costs for the provision of infrastructure and services, increases the dependence on private cars and creates potential inequalities for those living in the outer suburbs where job opportunities and services are limited. To promote growth that is sustainable, equitable and liveable SPP 3 encourages a more consolidated urban form. The development concept for South Yanchep is consistent with the urban growth principles detailed in SPP 3, in particular:

- Excellent access to public transport, including the provision of a dedicated transit corridor flanked by mixed use development extending through the centre of the entire study area and provision of a comprehensive bus system;
- Significant and wide-ranging employment opportunities within activity centres, enterprise parks, industrial areas, community centres, educational and recreational facilities;
- Provision of quality and accessible local and regional recreation facilities, both active and passive;
- Protection of significant environmental areas in generous reservations;
- The creation of cohesive and walkable communities through the application of traditional neighbourhood design principles; and
- A diversity of land uses, housing types and lot sizes.



FIGURE 23 BUSH FOREVER PLAN

## 5.3.6 Regional Structure Plans

### 5.3.6.1 North West Corridor Structure Plan (WAPC, 1992)

The North West Corridor Structure Plan (NWCSP) provides a basis for co-ordinate development by establishing a framework for the application of broader regional plans and policies. The subject site was excluded from the overall North West Corridor Structure Plan at the request of the landowners. The excluded portion of land was considered under the Yanchep Structure Plan which was later added to the NWCSP as an addendum. The current zonings of the site under the MRS are a reflection of the final NWCSP. The NWCSP is currently being reviewed within the context of Network City and is scheduled to be re-advertised in 2007.

The NWCSP has implications for the land in terms of the broader provision of local community facilities and services, infrastructure and development. Key objectives relevant to the current proposal include:

- Timely provision of residential land to meet future housing needs,
- The creation of distinctive communities;
- Provision of local employment opportunities;
- Creation of a hierarchy of retail centres;
- Development of an efficient public transport system;
- Protection of the coastline and other important environmental and cultural sites;
- Provision of public and private infrastructure in a cost effective manner; and
- Achievement of good quality urban and natural environments.

Matters of particular relevance to South Yanchep include:

- Major Industrial/Mixed Business area located between Two Rocks and Yanchep;
- Commercial centres in the locality include 'Yanchep Regional – unrestricted size' and 'Yanchep South – 20,000m<sup>2</sup> of NLA; and
- Marmion Avenue to be extended to Two Rocks past the subject site.

The Structure Plan is consistent with the objectives identified in the NWCSP.

# O5 PLANNING CONTEXT

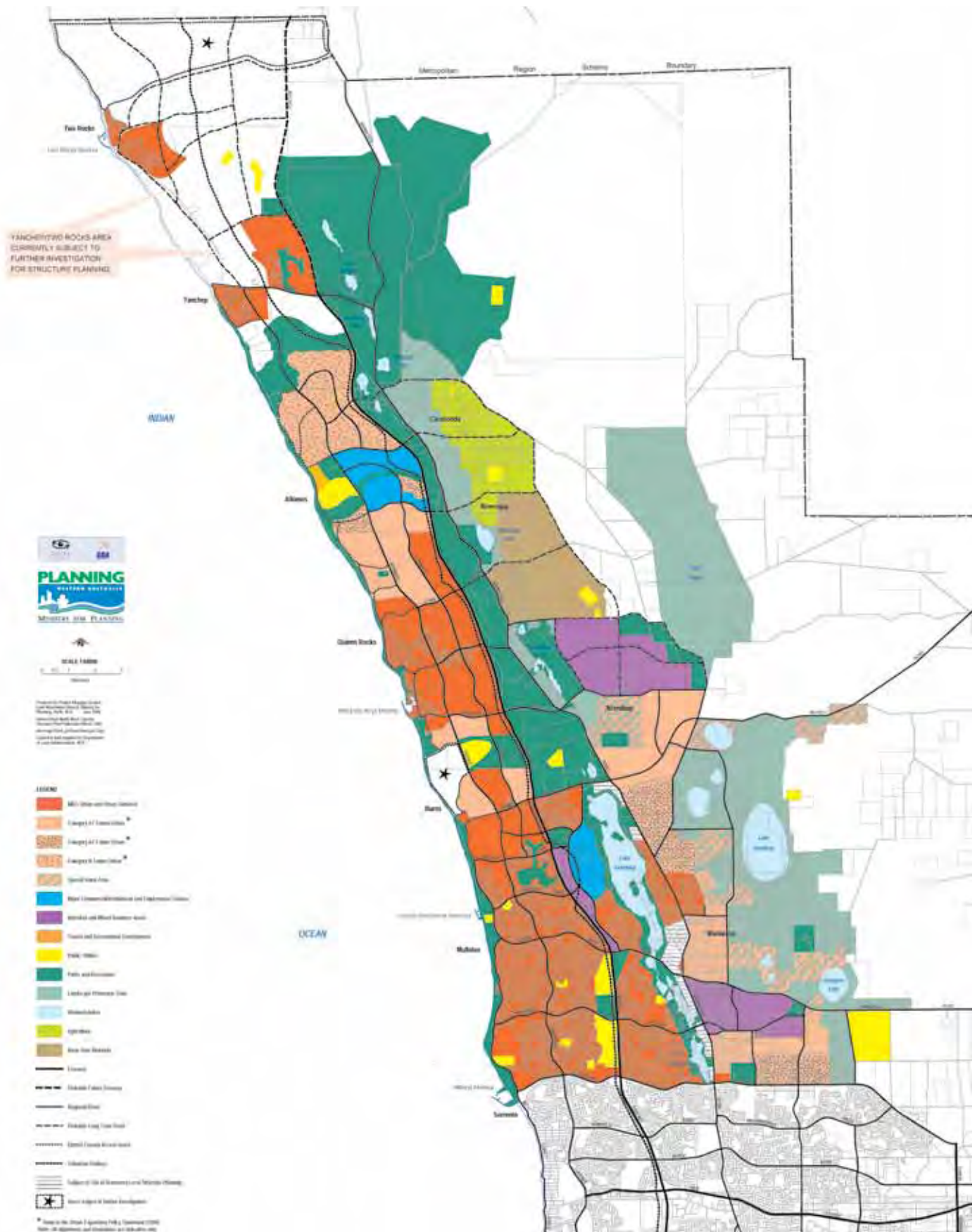


FIGURE 24 NORTH WEST CORRIDOR STRUCTURE PLAN

## 5.4 CITY OF WANNEROO STRATEGIES, POLICIES + STRUCTURE PLANS

### 5.4.1 Smart Growth Strategy (City of Wanneroo, 2005)

The Smart Growth Strategy (Smart Growth) recognises that the City of Wanneroo's population will continue to grow as a result of natural population growth, immigration, regional population shifts and people's desire to live in the area. Smart Growth seeks to manage this growth by balancing economic, environmental and social principles to improve the outcomes of development for new and existing communities. Smart Growth is based on the following key principles:

- Lifestyle and housing choice - provision of a variety of housing types and enhanced lifestyle options.
- Effective use of land and infrastructure - effective use and development of land and buildings for the benefit of the local area.
- Long term health of the environment - development that has minimum environmental impact and practices that conserve and enhance natural areas.
- Identity, equity and inclusiveness – growing the local identities of the City's places and its people.
- Long term economic health - industry growth and job creation within the region.
- People and government - citizen and stakeholder participation in governance and development decisions.

The Smart Growth principles and accompanying detailed actions have guided the preparation of the South Yanchep Structure Plan, informing in particular the development of the objectives and strategies detailed at Part 1 of the Structure Plan Report.

The proposal has also been assessed using the Smart Growth Assessment Tool, achieving an overall score of 73%. This would ordinarily be the equivalent of a 3/4 star rating. However, the circumstances of the development site are such that the economic indicator is too low to result in a score and accordingly the proposal cannot be allocated a star rating. This does not reflect an inherent deficiency in the Structure Plan proposal but recognises the reality of trying to achieve an economically "sustainable" development on a site of this kind. The site is not identified within the City's Centres Strategy as incorporating a significant quantum of retail or commercial floorspace. Nor are there viable opportunities to pursue significant tourist development on this site given the geographic and natural advantages and scale of facilities proposed at surrounding locations. Although the site will ultimately benefit from the substantial economic development proposed at nearby centres, including Alkimos/Eglinton and St. Andrews, the SGAT does not factor in these multipliers into the assessment of the economic viability of this proposal.

The detailed results of this analysis are provided as an appendix to this report.

### 5.4.2 Local Housing Strategy (City of Wanneroo, 2005)

Between now and the year 2021, the City of Wanneroo's population is expected to double to approximately 220,000 people. This growth combined with an emerging and significant shift in demographic and household profiles will represent a significant challenge for the provision of appropriate housing. Single detached dwellings currently make up 90% of the City's housing stock, resulting in a relatively low gross dwelling density per hectare. If the future housing demand within the City is to be met in a sustainable manner then these trends cannot continue.

The Local Housing Strategy (LHS) seeks to address the current imbalance between housing form/density and household types by setting targets for housing mix and gross housing densities. These targets are broadly consistent with those recommended in Element 1 of LN. The targets from the LHS are detailed as follows:

#### *House Types*

- Single Detached Dwelling - 76%
- Semi Detached, row/terrace, townhouse etc - 14%
- Flat/ units/ apartment /other - 10%

#### *Gross Densities*

- Standard - 10 dwellings/gross ha
- Within 400m coastal node or Neighbourhood Centre - 20 dwellings/gross ha
- Within 800m train station, bus station, Town Centre - 25 dwellings/gross ha
- Rural - 0.5 dwellings/gross ha

The Structure Plan proposes describes a design concept that delivers substantially more product within the medium density range. Areas of increased density have been located to take advantage of public transport opportunities (bus and future rail), co-located with areas of commercial activity (Neighbourhood Centre and District Activity Centre) and adjacent to areas of high amenity (including landscaped POS areas, bushland, the coast and areas with opportunities for views). The provision of a greater proportion of medium density lots complements the existing lower density product that characterises the current Yanchep housing profile. The Structure Plan response is detailed in the Housing Plan that accompanies this report.

## 5.4.3 Economic Development Strategy 2004-2007 (City of Wanneroo)

The City's Economic Development Strategy aims to decrease the number of people having to travel outside of the region to access suitable employment opportunities. The Strategy is designed to build upon existing initiatives and to introduce new initiatives in line with the City's Strategic Plan. The Strategy accepts that the promotion of the City as an investment and employment destination demands participation from all relevant stakeholders.

The key actions of the City's Economic Development Strategy include:

- Redressing the balance so that Wanneroo has desirable centres of employment;
- Investing for the future by increasing collaboration with the State government and other key stakeholders to map the strategic activities for the North West metropolitan economic region;
- Generating wealth through jobs to create a new economic base, which integrates the community into the wider regional economy; and
- Basic Infrastructure has to be in place to allow businesses to prosper and grow.

The Strategy details an extensive range of initiatives to achieve these goals, focusing in particular on improving access to broadband, developing small business, encouraging home-based business, tourism and the consideration of economic development within the planning context. The latter initiative is effected by the City's Employment Policy, which is discussed in more detail below.

The objectives and initiatives detailed in the South Yanchep Structure Plan are consistent with range of measures described in the Economic Development Strategy for a project of this size.

## 5.4.4 Employment Policy (City of Wanneroo, 2004)

The City of Wanneroo's Employment Policy is designed to encourage and retain local employment within the City and the North West Corridor. A key driver is the City's low employment self-containment, which has resulted in the creation of many 'dormitory suburbs'. The Policy contains a schedule of strategies targeted at the district, local and subdivision level to indicate the type and scale of initiatives expected for development at these various scales. It is anticipated that these initiatives will produce broad results that have flow on benefits to the wider community. The policy aims to contribute to the creation of employment opportunities over and above those inherent employment levels created as a result of development.

The Policy requires the consideration of employment as a component of residential structure plans. This is to be in the form of an employment strategy tailored to the specific requirements of the particular development. A Local Employment Strategy has been prepared as part of the South Yanchep Structure Plan. This details the proponent's commitments to the provision of employment for future residents consistent with the targets detailed in the City's Employment Policy.

## 5.4.5 Centres Strategy (City of Wanneroo, 2005)

The specific objective of the Centres Strategy is to “promote retailing and commercial development throughout the City of Wanneroo, and particularly to encourage more diverse centres based on ‘main street’ planning principles.” The Strategy promotes the development and reinforcement of a hierarchy of commercial centres throughout the City. The Strategy does not identify a commercial centre in the subject site, but does identify a ‘Neighbourhood Centre’ located on Lagoon Drive to the north of the site in the Ocean Lagoon Estate. This location reflects the fact that the subject site was undeveloped at the time the Strategy was prepared. It is also noted that the proposed Neighbourhood Centre in Ocean Lagoon remains unconstructed, notwithstanding the practical completion of the majority of the residential component of that estate.

Given the anticipated scale of development now proposed for South Yanchep it is appropriate to make provision for a suitably scaled commercial centre intended “to meet the weekly shopping and service needs of the community, including the provision of offices and community facilities.” The Strategy envisages this form of iterative planning, noting that Council will “consider any proposals for expansion of a centre or the establishment of mixed business in peripheral areas in the context of an approved structure plan based on ‘main street’ principles.

It is considered that the a ‘Neighbourhood Centre’ (nominal ‘shopping’ floorspace 3,000m<sup>2</sup>) represents the most appropriate scale of commercial node applicable to South Yanchep as identified in the Centres Strategy. This is consistent with the General Principles for Neighbourhood Centres detailed in the Strategy which state that “each residential neighbourhood should have direct and convenient access to a neighbourhood centre”. This designation provides sufficient flexibility in terms of land use and ultimate retail floorspace to accommodate the needs of the future community at South Yanchep and to ensure an appropriate level of employment self sufficiency within the development. However, it is noted that a designation of ‘Neighbourhood Centre’ is likely to represent the ultimate scale of the South Yanchep centre and that in the short to medium term a lower level of commercial/business activity would be expected. It is notable too that the Strategy contains built in capacity to review the amount of retail floorspace allocated to individual commercial centres, noting that where “there will ultimately be enough trade potential, theoretically, to support and even expand, the amount of floor area allocated to existing and planned neighbourhood and local centres, more thought is needed on their role and its effect on their composition, size and location.”

The allocation of a ‘Neighbourhood Centre’ in the Structure Plan is therefore consistent with the Centres Strategy, providing a level of retail convenience for local needs and generating a level of employment relevant to the scale of proposed and existing development in this locality.

## 5.4.6 Local Environmental Strategy (City of Wanneroo, 2002)

The City’s Local Environmental Strategy (LES) provides strategic direction and focus for the City in its approach to conserve the natural environment. The LES states that the capacity of a landscape to absorb new activity needs to be determined prior to development. The proponents are committed to ensuring that all relevant environmental assessments are undertaken to demonstrate that development can be accommodated without compromising the environmental and conservation values attributed to the study area. Part 1 of this report details a comprehensive suite of studies, strategies and management plans to be finalised and implemented as part of the planning process and subsequent development of the site.

## 5.4.7 District Structure Plans

### 5.4.7.1 Alkimos Eglinton District Structure Plan

Alkimos is a coastal site located 40 km north of Perth's CBD, jointly owned by Eglinton Estates, WR Carpenter, Landcorp and the Water Corporation. Since 1996, extensive planning and consultation between owners and stakeholders has been carried out to ensure that over the next 20 - 25 years, Alkimos will become the next major regional coastal development in WA. As a leading example of sustainable development, Alkimos is proposed as a carbon neutral development ultimately housing around 60,000 people. The town will also incorporate more than 500 ha of regional open space. Alkimos will include a new regional centre, an integrated transport network, schools and jobs, providing the opportunity for residents to work and play in their own neighbourhood. Alkimos is expected to achieve 47% local employment self sufficiency.

Information from the Alkimos Eglinton District Structure Plan (AEDSP) relevant to the current proposal includes:

- Pt Lot M1503 is located within the area covered by the northern portion of the AEDSP;
- Pt Lot M1503 is partially identified as 'Urban' under the AEDSP with the balance identified for 'Parks and Recreation';
- The AEDSP does not provide any specific recommendations or detail to guide future planning and development of Pt Lot M1503; and
- The AEDSP does not identify any significant community facilities being located on the subject site.

Despite being identified in the AEDSP, the site is effectively separated from the main area by Regional Open Space dedicated as BushForever. This results in the landholding forming a discrete unit for planning purposes, with its contextual links more naturally gravitating to the land to the immediate east of Marmion Avenue (Yanchep Estates). Nevertheless the Structure Plan acknowledges the key role that Alkimos-Eglinton will play in the future development of this locality.



FIGURE 25 ALKIMOS EGLINTON DISTRICT STRUCTURE PLAN

## O5 PLANNING CONTEXT

### 5.4.7.2 Draft St Andrews District Structure Plan

The Draft St Andrews District Structure Plan (SADSP) comprises 7,550 ha of land in the vicinity of the existing Yanchep and Two Rocks settlements, encompassing the northern extent of the rapidly growing North West Corridor of the Perth Metropolitan Region.

The subject site is located to the South and outside of the area covered by the SADSP. Notwithstanding, there remain a number of relevant contextual issues that have been considered in the preparation of the South Yanchep Structure Plan. These include:

- A District Activity Centre (DAC) is identified to the east of Lot 101;
- The alignment of the northern rail line is located to the east of the site in close proximity to Lot 101, with a transit station identified at Lot 102; and
- A high school site (existing) is located to the north and west of Lot 101.

Detailed planning for the DAC is being provided under the aegis of the 'Lot 102 Yanchep Beach Road Structure Plan' which is discussed in more detail in the following section.

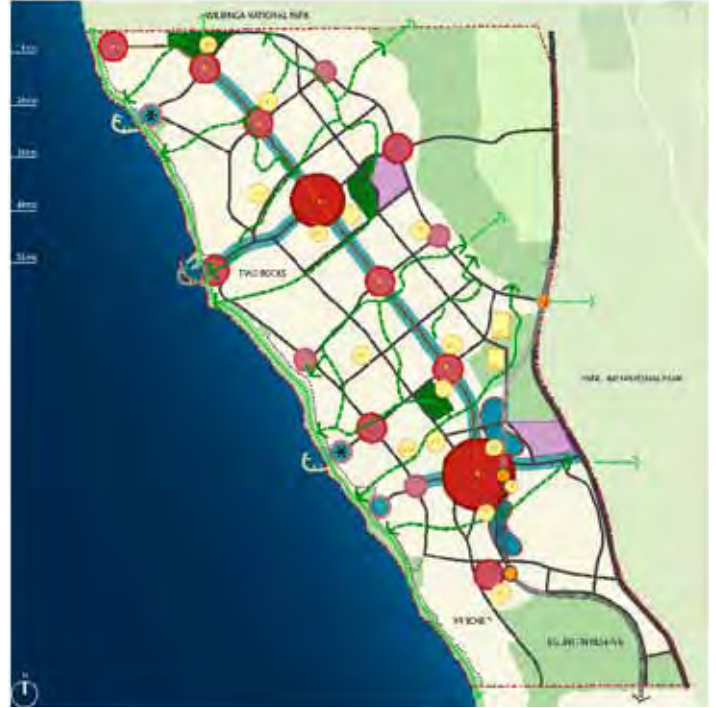


FIGURE 26 DRAFT ST ANDREWS DISTRICT STRUCTURE PLAN

# O5 PLANNING CONTEXT

## 5.4.8 Local Structure Plans

### 5.4.8.1 Lot 102 Yanchep Beach Road Structure Plan

The adopted Lot 102 Yanchep Beach Road Structure Plan (YBRSP) covers Lot 1 Yanchep Beach Road and Lot 102 Marmion Avenue, Yanchep. The YBRSP provides more detailed planning and design for the area included in the SADSP discussed above. Evidently there is a strong contextual relationship between the area covered by the YBRSP and the subject site. Critical elements include:

- A District Centre located at the junction of Yanchep Beach Road and Marmion Avenue. This location is consistent with SPP 9 - Metropolitan Centres Policy Statement for the Perth Metropolitan Region and the SADSP;
- A 'Business' zone located adjacent to Yanchep Beach Road;
- A site for a public High School. The location of the school is currently subject to review; and
- The balance of the estate being identified for 'mixed use/residential' and 'residential' purposes.

These opportunities have been considered and addressed in the design of the Structure Plan for South Yanchep. The design takes advantage of the sites proximity to the District Centre to enable a level of services and convenience to be provided to future residents beyond the local convenience level proposed at the local Neighbourhood Centre. The Structure Plan also ensures excellent connectivity to the future transit station and high school both for both pedestrians and vehicles.

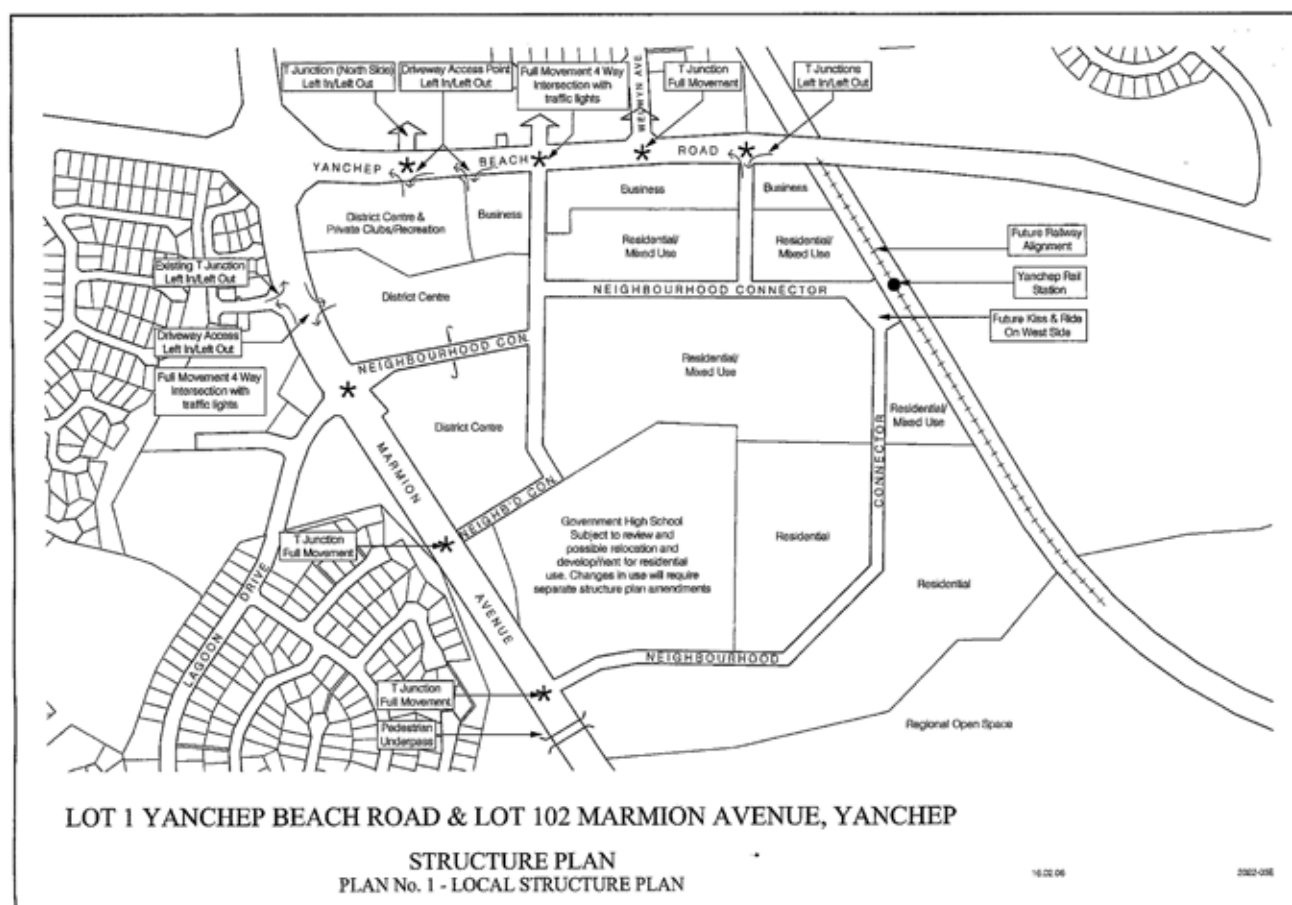


FIGURE 27 LOT 102 YANCHEP BEACH ROAD

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

The South Yanchep project team completed a range of site analyses and technical investigations to inform the preparation of the Structure Plan. This included detailed investigation of the site and its influences in regard to:

- Community facilities and services;
- Environmental values;
- Landscape and views;
- Aboriginal and European heritage;
- Economic context;
- Traffic and transport; and
- Engineering and servicing.

The following summary provides an overview of the technical findings of each investigation and how these have informed the preparation of the Structure Plan. The complete series of technical documents accompany this report.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

### 6.1 COMMUNITY PROFILE AND FACILITIES AUDIT

Local community facilities, be they sports ovals, parks, community centres or cycle paths, are community development tools. They provide the built and open spaces for people to collectively participate in activities and access services. And it is through this collective participation that people connect with others, make friends and socialise, undertake physical activity, learn new skills, make a contribution to the local community and gain a sense of communal identity. It is these intangible outcomes that are known as social capital.

In planning for the development, LandCorp has embraced a community development approach that facilitates the development of social capital and integrates the new development within the broader Yanchep community. The early provision of well planned community facilities is a key element to this approach. The City of Wanneroo is experiencing high population growth rates, particularly in the Yanchep area. Consequently, Council is collaborating with a number of land developers to progress strategic planning initiatives that ensure the adequate future provision of community services and facilities.

LandCorp is committed to providing local community facilities that add value to existing and planned facilities within Yanchep. To determine the best mix of facilities for South Yanchep the developers have commissioned a preliminary investigation into the need for local community facilities within the project area to inform the structure planning process.

This Preliminary Community Facilities Needs Assessment is based on the results of an audit of existing and planned facilities and a local and district level standards analysis. The results support the following identified needs for community infrastructure within the project area:

- 1 x local active open space to accommodate local sporting activity. The preferred option is for a shared-use oval with the planned primary school.
- 2 x outdoor sport courts for casual/ informal use by local residents. The preferred option is for community use of the future primary school facilities.
- 2 x landscaped local parks with amenities for passive recreation and family activities (such as playground equipment, BBQ/picnic area, shade, seats, water fountain and kick about spaces). These parks should be a minimum size of one hectare each.
- 1 x multi-purpose community centre and sports pavilion (combined). Ideally, this facility should be sited on a 2,500m<sup>2</sup> community purpose site adjacent to the shared-use oval and the primary school. This will maximise the opportunity for shared use and management with the school. Typically, this type of facility would include a hall, kitchen/kiosk and a couple of multi-purpose meeting and activity spaces for community groups and activities. The facility should also include toilet change room facilities to enable it to double as a sports pavilion/club room for local junior and senior sporting clubs.
- The diverse natural environment surrounding the project area provides an opportunity to include an environmental workshop/ interpretive facility within the community centre. This could also be a shared use facility with the primary school.
- 1 x child care centre site (typically 2,500m<sup>2</sup>) within close proximity to the primary school to enable parents to “park once” when dropping off children. Given the limitations of the methodology applied to this preliminary needs assessment, further research and community/stakeholder consultation will be required to confirm community facility requirements. This additional investigative work should be undertaken as part of a comprehensive facility planning process following structure plan approval.

# 06 SITE ANALYSIS & TECHNICAL OVERVIEW

## 6.2 ENVIRONMENTAL ANALYSIS

### 6.2.1 Flora and Vegetation

The northern part of the Structure Plan area (Lot 101 to Marmion Ave boundary) makes up about two thirds of the total area and had not been recently surveyed. The southern part of the survey area comprises Lot M1503 (Southern Area) which makes up approximately the lower one third of the survey area and had been part of an ATA Environmental survey (ATA Environmental, 2005) which involved review of past survey work and additional survey work in particular areas as required. As a result of this survey, there was a vegetation map for the Southern Area, but not a discrete flora list for the area.

Spring flora and vegetation surveys for the site were conducted between 22<sup>nd</sup> September and 12<sup>th</sup> October 2007 in accordance with the EPA Guidance for the Assessment of Environmental Factors No. 51 - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia (EPA, 2004). The detailed results of these surveys were submitted as supplementary information to the Structure Plan in December 2007.

Vegetation and flora surveys of the Alkimos-Eglinton area, which is comparable to that of the Structure Plan area, were previously undertaken by Trudgen and Keighery (1990a and b) and Armstrong (1996). The surveys conducted by Trudgen and Keighery (1990) were carried out in late spring and early summer in 1989 and included an area of overlap being the southern portion of the South Yanchep Structure Plan area (immediately north of Pippidinn Road). This overlapping area has been used to provide consistency between the earlier vegetation association surveys by Trudgen and Keighery (1990), Armstrong (1996) and ATA vegetation mapping (2005) and more recent detailed vegetation mapping undertaken during spring 2007 for the entire Structure Plan area.

The following key factors have been considered during planning of this area:

- Four Priority taxa were recorded during the survey, being one Priority 1 species (*Leucopogon* sp. Perth Coastal) and three Priority 3 species (*Hibbertia spicata* subspecies *leptotheca*, *Stylidium maritimum* and *Conostylis pauciflora* subspecies *euryrhipis*);
- No Declared Rare Flora (DRF) were identified as a result of the 2007 flora and vegetation survey, however, *Leucopogon* sp. Perth Coastal is currently a Priority 1 species and has a very restricted geographical distribution and is expected to be reviewed for DRF status (Rob Davis, WA Herbarium, pers. comm.);
- Four other species recorded in the Structure Plan area were listed as significant flora in BushForever: *Eucalyptus petrensis*, *Melaleuca cardiophylla*, *Leschenaultia linarioides* and *Allocasuarina lehmanniana* subspecies *lehmanniana*;
- No Threatened Ecological Communities (TECs) were identified following PATN statistical analysis, however, one Floristic Community Type (sites SYQ5 and SYQ8) found at the site showed affinity with FCT 26a – a Threatened Ecological Community (Category 3, Endangered) (DEC, 2000). FCT 26a has the description 'Melaleuca huegelii – Melaleuca acerosa shrublands on limestone ridges' and has generally been found to be a Spearwood dunes vegetation unit (Gibson et al., 1994);
- Tuart open woodland in Very Good condition occurs in swales in two locations in the Structure Plan area, but are relatively small in area (sites SYQ4 and SYR8). Consistent with the conclusions of the Tuart Response Group (2002), areas of Tuart dominated vegetation in very good condition should be retained and protected where practicable;
- Some 256 hectares of comparable Quindalup vegetation complex is to be protected within the Alkimos-Eglinton area immediately south of Pippidinn Road. This, coupled with reservations associated with the Coastal Foreshore Reserve and BushForever Site 397 to the west and BushForever Site 289 (617ha total) to the east and south of the site suggests that there is a high prospect that vegetation complexes in the area will be adequately represented in reserves (nominally >10% under BushForever policy);
- A large parabolic dune feature is located within the Structure Plan area and is to be retained. The dune represents a natural east/west cross section of the site and as such is likely to embody a degree of representativeness of both the Quindalup dunal phases (Q1-4) and associated vegetation associations. In addition, the feature provides a natural corridor linkage across the site and permits retention of a strong coastal landscape element within the future estate (a notion strongly supported at both the Planning Design Forum and workshops with the Community Reference Group).
- Vegetation condition in the area is variable, with some areas that have been subjected to grazing in very poor to completely degraded condition while other areas remain in very good condition. Much of the site comprises vegetation typical of the Quindalup Dune System (of various phases).
- 147 species of native flowering plants were recorded from the Structure Plan area which is a moderate number for the size and location of the site. In addition, a high number of weed species (36) were also recorded reflecting the variable vegetation condition of the area;

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

### 6.2.1.1 Bush Forever Site 289

According to Bush Forever (Government of WA, 2000) the current values of BushForever Site 289 include:

- Site protects vegetation of the Quindalup Dunes mostly Q2 or Q3 in age, Q4 limited to area close to coastline, associated blowouts; well separated dunes perched on undulating Spearwood (Tamala) Limestone surface;
- Provides for the continuation of natural processes comprising 196ha of vegetation of the Quindalup Dunes extending 3.9km inland and linking the coast and other regionally significant vegetation in Yanchep National Park;
- Protects the Quindalup/ Spearwood Dune interface;
- Protects vegetation and fauna habitat typical of the Quindalup / Spearwood units;
- Protects the Alkimos Dune Complex, a system of parabolic beach dunes of Holocene age containing a chronological sequence (Lemmon et al. 1979 in Government of WA, 2000); and
- Protects populations of Priority 3 Flora.

### 6.2.1.2 Bush Forever Site 397

According to BushForever (Government of WA, 2000) the current values of BushForever Site 397 (i.e. the coastal strip and area of vegetation) are constrained in meeting specific coastal reserve criteria. In summary the values of this Site are as follows:

- The Site protects vegetation of the younger Quindalup Dune types;
- Provides for the protection of continuing natural processes by protecting 302ha of bushland of the Quindalup Dunes extending to a maximum of 0.8km inland but generally less;
- Forms a semi-contiguous north-south vegetated linkage along the coast;
- Protects the only wetland in the Quindalup Dunes north of Perth in the Perth Metropolitan Region, i.e. Karli Spring within the Alkimos-Eglinton District Structure Plan; and
- Protects populations of Priority 3 Flora.

### 6.2.2 Fauna Survey

A Habitat and Fauna Survey was undertaken during December 2007. The results of this survey were submitted as an addendum to accompany the Structure Plan in August 2008. The fauna assessment was based on a detailed site survey and a desktop review and encompassed rare and endangered fauna. Detailed fauna survey areas within the project area will be chosen as being representative of major habitats and vegetation associations and areas of conservation value or ecological sensitivity.

Assessment of vertebrate fauna was carried out utilising a variety of trapping, searching and observation techniques. During the field work all fauna and secondary evidence of

fauna, such as tracks, diggings and scats were recorded. In addition, the significance of the project area as part of a wildlife corridor were appraised. The fauna assessment identified three fauna habitats of particular significance which are:

- Allocasuarina lehmanniana Tall Closed Shrub (wrongly identified in the fauna report as Allocasuarina humilis) – this vegetation contains a number of conservation significant species including the Quenda, Bush Rat and several bird species with local significance;
- Lepidosperma gladiatum Closed Sedgeland – This vegetation contains the Bush Rat and a conservation significant spider; and
- Limestone ridges with outcropping supporting Melaleuca systema – This vegetation type may support fauna of conservation significance.

A vertebrate fauna survey of the Alkimos-Eglinton area was also undertaken in October, 1996 (Alan Tingay & Associates, 1996). This survey included a trapping program using Elliott, pit fall and cage traps as well as bird transect surveys, active searching and opportunistic records. It was concluded that the Alkimos-Eglinton area is expected to support relatively high species diversity due to areal extent, range of habitats and general quality of the habitats within the Alkimos-Eglinton area, combined with the connectivity of the area to other extensive vegetated areas to the north, south and east of similar and different habitat types.

Potentially, the habitats within the South Yanchep Structure Plan area could support at least 3 species of frog, more than 40 reptiles, over 80 birds and about 14 mammals, many of which are bat species.

The list of recorded and expected species includes 35 species that have been identified as having special conservation significance by being listed under provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and Wildlife Conservation Act 1950, on CALM's Priority Fauna list or identified as Significant Bird Species in Bush Forever.

The primary objective of the environmental approach to the Structure Plan is the preservation of representative biodiversity within the future area. Biodiversity is interpreted as the major vegetation types or communities together with their respective flora and indigenous vertebrate fauna. The emphasis, therefore, has been to retain representative areas of major vegetation types but to include larger areas of those types of vegetation which survey data suggest support the most diverse fauna communities.

The distribution of vertebrate fauna according to major habitat types indicates that, in order to maximise biodiversity, it will be necessary to protect representative samples of the vegetation and habitats within the area. This suggests that relatively large areas of Quindalup dune heath vegetation should be the priority for retention as these provide habitats that support the greatest species diversity in the broader Alkimos-Eglinton area.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

Protection of fauna habitat should also consider the interface and transitional areas between major vegetation types (and hence habitats) as often fauna are not solely reliant on one habitat type but will use or require resources from adjoining habitats. Maintaining biodiversity of vertebrate fauna in the area also relates to connectivity and linkages to other areas of habitat to enable seasonal movement and migration of fauna, and increase the likelihood of regional populations being sustainable.

The proposed Plan and provisions for retention of significant east-west and north-south linkages (including Bush Forever Sites) are therefore not likely to significantly alter the existing connectivity for faunal movement and seasonal migration. The corridor for east-west movement through the centre of the site is to be maintained through the retention of the large parabolic dune which provides direct linkage and connectivity between the Coastal Foreshore Reserve and the Yanchep National Park. The proposed POS corridor continues to provide continuous linkage from the Q1 Quindalup Heath habitat in the coastal foreshore through the Q4 Quindalup Heath, Limestone Heath and limited Tuart Woodland habitats.

Although the proposed Structure Plan will alter the proportions of major habitat types, the changes are not expected to significantly affect the faunal diversity that will be supported by the current Regional Open Space reservations in the broader area.

Planning controls will be used to encourage the retention of remnant vegetation within the Structure Plan area and the retention of vegetated corridors and links between areas of regionally significant vegetation and locally significant vegetation (e.g. pockets of Tuart). These links and corridors will provide habitat for some terrestrial species and also provide cover for birds and other species moving between the larger areas of preserved vegetation and seasonally migrating to alternative habitats.

### 6.2.3 Planning Design Response

The initial Structure Plan design was prepared prior to the results of the detailed spring 2007 flora and vegetation surveys becoming available. Accordingly, the Plan was prepared in order to retain significant tracts of native vegetation in good to very good condition and to maximise representativeness of the various vegetation/soil types within appropriate reservations within the study area. In addition, a significant east-west corridor linkage in the form of a large parabolic dune complex located centrally on the site has also been retained within the Plan.

The key outcomes from the Flora and Vegetation Report and Fauna Assessment have been incorporated within subsequent design changes within the Structure Plan area. Specifically, this included:

- The two identified populations of Priority 1 species (*Leucopogon* sp. Perth Coastal) are to be conserved and protected within suitably zoned and managed lands as detailed design progresses;
- Vegetation in good to very good condition and which exhibit affinities for Threatened Ecological Community type 26a (DEC, 2000) are to be retained and protected within suitably zoned and managed reserves. A high percentage of populations of *Stylidium maritimum* (Priority 3 taxa) found within the study area also within this floristic community type and hence will also thus be afforded protection. This will also have the added benefit of ensuring the retention of prominent limestone outcrops within the southern portion of the site, thus fulfilling the community's desire to see important coastal landscape features retained within the area. This will be taken into consideration as detailed design progress;
- Tuart woodland found to be in good to very good condition will be retained and managed within suitably zoned and managed lands;
- Stands of *Allocasuarina lehmanniana* that support significant fauna species have been retained in several POS areas;
- A portion of the *Lepidosperma gladiatum* Closed Sedgeland has been retained in POS;
- Portions of limestone ridges containing *Melaleuca systena* have been retained in POS in the southern part; and
- Opportunities to optimise vegetated corridors and links between areas of regionally significant vegetation and locally significant vegetation are identified and remnants are consolidated where practicable.

It is noted that the retention of habitat suitable for foraging (and possibly breeding) of Carnaby's Cockatoo across the broader region is a significant issue. Carnaby's Cockatoo is a protected species under provisions of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999; Wildlife Conservation Act 1950 and is on DEC's Priority Fauna list. In addition to the habitats protected within adjacent Bush Forever sites, the retention of the abovementioned vegetation (in particular Dryandra, Banksia and Tuart) will likely ensure that foraging and movement of individuals between the larger areas of preserved vegetation on the site and alternative habitats is not significantly impacted within the region.

The management of fauna in areas to be cleared will be addressed through the preparation of a Native Fauna Management Plan to be prepared at the subdivision stage.

In addition to the above, it will be necessary to ensure that servicing (and in particular drainage provisions) are adequately addressed and integrated within future subdivision design and staging plans. This will inevitably mean a reiterative process of design and planning, however, the above provides the environmental priorities and objectives to be achieved as a result of this detailed subdivision design.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

### 6.3 LANDSCAPE ANALYSIS

This site has a broad landscape made up of five distinct landscape characters. The undulating coastal heath land forms the area to the south east encompassed by 'Cypress Paddock' and Tuart Groves. The distinctive parabolic dunes to the west are boarded by the chaotic foredunes and Indian Ocean.

Primary views into the site are obtained from the adjacent township. The views south from this location present seemingly endless dunal landscapes. Views over the tuart groves and 'Cypress Paddock' character area can be obtained from the eastern side of Ocean Lagoon Estate. Easterly views extend over the coastal plain to landmarks on the horizon such as water tanks and pine trees. Views to the ocean are achieved from the top of the parabolic dunes. The chaotic dunes within the coastal foreshore reserve combined with vegetation restrict ocean views from all lower areas.

The existing landscape qualities will be transformed by urbanisation and comprehensive retention of existing topographic features and vegetative structure within this new urban context is not practical. The new urban landscape will have to reflect the environmental constraints of the site and also the requirements of an urban population. A new landscape that is responsive to the environment but meets the demands of contemporary living has to be created.

Objectives for the new landscape:

- Create a liveable place;
- Create a sustainable lasting landscape (principal issues - water and management);
- Create new diverse urban landscapes that reflect the site's unique characteristics;
- Conserve representative landscapes of the area;
- Retain vegetation wherever practical; and
- Promote the use of native, low water demanding plants.

Strategies for the new landscape:

- Preserve topographic features and associated vegetation assemblages in open space;
- Establish landscape corridors, links and greenways;
- Establish primary landscape character area;
- Establish primary infrastructure and development levels that maximise the potential retention of vegetation at more detailed planning;
- Pursue water harvesting, passive irrigation and integrated urban irrigation;
- Use of natives as a dominant species in Public Open Space and public realm infrastructure; and
- Encourage built forms that limit the impact of retaining structures.

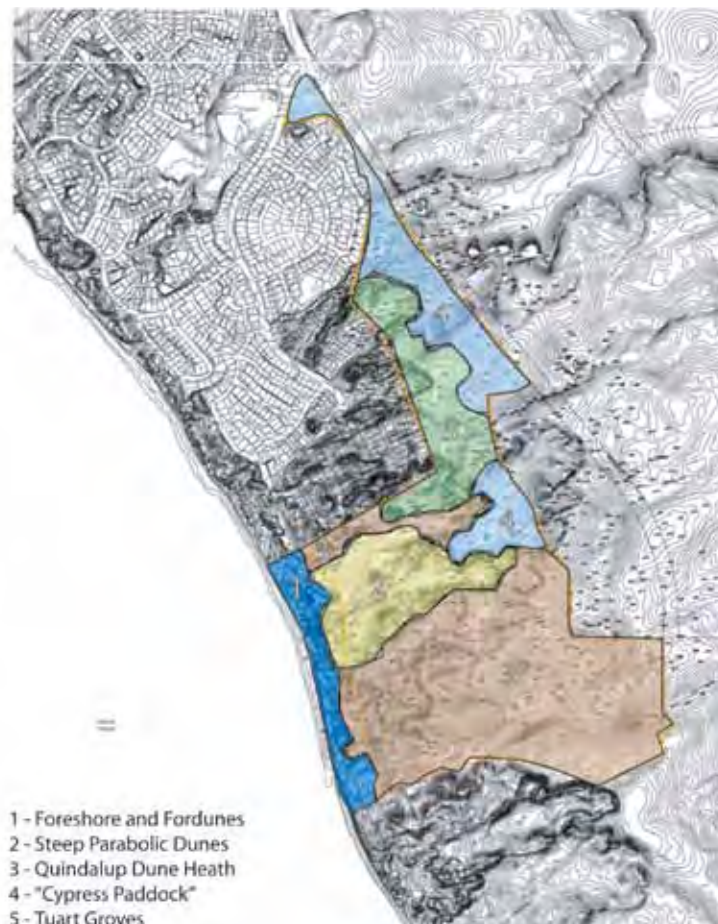


FIGURE 28 LANDSCAPE CHARACTER AREAS

### 6.4 ETHNOGRAPHIC ANALYSIS

In October 2006, LandCorp, the Western Australian Land Authority, commissioned R. & E.O'Connor Pty Ltd to conduct an Aboriginal heritage analysis of Lot 101, Yanchep and Part Lot 1503, Eglinton ("the Project Area"). The purpose of the analysis was to establish whether there are any currently known Aboriginal heritage, European heritage or native title constraints which need to be taken into consideration in advance of further development of the Project Area.

In the first instance aboriginal native title has been extinguished as regards the Project Area. Although an Aboriginal heritage survey report deals with lands that include the Project Area, there are no sites or areas of Aboriginal significance previously recorded within it. Likewise, no Aboriginal named places or Aboriginal sites in its vicinity are listed in the archival records inspected by the author. In addition, in view of its environmental condition and the fact that it does not appear to contain water-sources or rocky outcrops of any type, in the author's opinion, it is extremely unlikely to be or to contain an Aboriginal site(s). Notwithstanding these conclusions it is recommended that these outcomes be tested by carrying out a series of consultative on-site meetings with relevant Aboriginal people and a full archaeological field survey of the target area.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

The proponent has decided to undertake this further work and anticipates that the outcomes of the recommended ethnographic field survey and aboriginal consultation will be available in November 2007. Consultation will include relevant aboriginal people regarding the aboriginal heritage value of the Project Area, including:

- The Ballaruk Aboriginal group, on the basis of their expressed interest in the Wanneroo area and because some of the group are local residents; and
- Mr Ken Colbung, as a resident of Two Rocks and the major participant in the survey that led to production of Report Number 101370.

These further investigations are being conducted in good faith and should not prejudice the consideration of the Structure Plan for South Yanchep.

### 6.5 ECONOMIC ANALYSIS + LOCAL EMPLOYMENT STRATEGY

LandCorp is committed to best practice structure planning and implementation. This includes a commitment to best practice in the adoption of sustainability principles and practice. The economic analysis undertaken as part of the structure plan process suggests that the residents of South Yanchep could be seeking 1,100 jobs. However, initiatives to facilitate home-based forms of employment such as access to high speed broadband and homes tailored to dual residential and commercial use is expected to stimulate home based employment and business numbers to figures well in excess of the national average. This will, as a flow on, reduce the non-home based job numbers to well below 1000.

The City of Wanneroo's Employment Policy requires proponents of any large-scale residential development to prepare a strategy to encourage local employment self-sufficiency and maximise resultant local containment of the workforce, this strategy has been drafted and is appended to the Structure Plan. In addition as a major developer of industrial, commercial and residential land holdings in the North West Corridor, LandCorp is currently developing a cross-development approach to generating employment. This will develop synergies and employment opportunities across developments including Neerabup, Alkimos and South Yanchep and see a range of initiatives implemented to link residents in Alkimos and South Yanchep with employment opportunities in both Neerabup and the Alkimos regional centre.

In addition, the draft Structure Plan offers the creation of job opportunities within the development. Provision for and construction of a primary school to service the local area will provide ongoing jobs for 80 people. Provision of a local area shopping precinct will generate a further 35 jobs.

The draft Structure Plan prepared by LandCorp for the South Yanchep development conforms to policy requirements of the State Government and the City of Wanneroo. Specifically in response to the economic dimensions of the State and City policy standards, the South Yanchep development offers the following by way of a Local Employment Strategy:

1. Support for a greater level of at-home and from-home job opportunities.
  - 1.1 A diversity of block sizes, with some offering terrace houses with residential accommodation over shop fronts or home/work commercial areas;
  - 1.2 Opportunities for studio space above garages/ancillary accommodation;
  - 1.3 Display homes that represent many of the employment supportive design features, listed above, in a variety of settings;
  - 1.4 Broadband technology offering high speed internet access to all properties; and
  - 1.5 Participation in City of Wanneroo and other programs to stimulate demand for and support work from home and work at home opportunities within the development.
2. Job and learning opportunities within the development
  - 2.1 Construction of a primary school to service the local area and provide whole-of-life learning opportunities for all residents (outside of normal school hours);
  - 2.2 Partner with the local aboriginal community to build boardwalks/path network connecting to adjacent regional open space areas;
  - 2.3 Incubation of local small business through lettable floorspace arrangements, opportunities for shared business facilities and access to mentoring and other training and support services;
  - 2.4 Provision for and construction of a local area shopping precinct; and
  - 2.5 Encouraging local employment practices both within construction phase of development and by businesses operating from the Neighbourhood Centre.
3. Creating regional employment links and partnerships
  - 3.1 LandCorp as a major land developer in the North West Corridor to develop a collective approach to generating employment opportunities across their land holdings (Neerabup, Alkimos and South Yanchep) to maximize synergies and create cross development outcomes;
  - 3.2 Working with developers and industries based in Yanchep and St Andrews to create opportunities for South Yanchep residents to seek employment within the Corridor;
  - 3.3 Create opportunities for South Yanchep residents to access rapid transport links planned between Alkimos and Neerabup;
  - 3.4 Extend promotion of employment and learning opportunities and initiatives generated for Alkimos Eglinton residents to South Yanchep; and
  - 3.5 Participate in appropriate City of Wanneroo and Corridor wide initiatives that will generate local employment and business development opportunities for South Yanchep.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

### 6.6 TRAFFIC + TRANSPORT

#### 6.6.1 Regional Road & Rail System

Regional road access to the Yanchep/Two Rocks area is currently via Wanneroo Road, Yanchep Beach Road and Two Rocks Road. In future Marmion Avenue will be required as will the Mitchell Freeway.

Marmion Avenue Stage 1 (two lane single carriageway design) is expected to be completed to Yanchep Beach Road in late 2007 or early 2008. The timing of the Mitchell Freeway extension and Northern Suburbs Railway extension is unknown but the State Government and key stakeholders in the NW Corridor have indicated that passenger rail extension is to precede the freeway extension. The State Government recently announced funding had been provided for the rail master planning for the 7.5km extension from Clarkson to Jindalee.

The current MRS road & rail reservations are included in Appendix A of the Traffic + Transport technical report because the MRS provides the statutory framework within which this local structure plan is to be assessed. Notwithstanding this, the St. Andrews District Structure Plan and the Alkimos-Eglinton District Structure Plan have been submitted for consideration by the Western Australian Planning Commission (WAPC). Transport planning information from the St. Andrews DSP and the Alkimos-Eglinton DSP are included in Appendix B & C of the Traffic + Transport technical report respectively.

#### 6.6.2 Local Street Accesses along Marmion Avenue

Two new T-junctions are proposed along Marmion Avenue to serve the South Yanchep LSP area (Figure 2 and 3 of the Traffic + Transport technical report). These junctions are located at appropriate spacing relative to each other and to the road access points serving other subdivisions. In particular, the Lot 102 Local Structure Plan (Appendix D of the Traffic + Transport technical report) proposes new intersections to the north. These include the creation of a new 4-way junction from the existing T-junction at existing Lagoon Drive.

The Lagoon Drive intersection will initially be controlled by a moderate sized single lane roundabout suited to the Stage 1 Marmion Avenue Design (Appendix E of the Traffic + Transport technical report). The roundabout will initially provide some traffic calming benefits along Marmion Avenue and will provide good connectivity between the communities on either side of the road.

As indicated in the Lot 102 LSP, it would be beneficial if this intersection converted to signal control when Marmion Avenue is constructed to Stage 2 standard (i.e. 4-lane divided carriageway). At that stage traffic will be greater, commercial and residential development will have taken place on Lot 102 and pedestrian/ cyclists would benefit from push button activated traffic signals.

#### 6.6.3 Cross-sections for local streets within South Yanchep

The Access Streets and Neighbourhood Connectors (Local Distributors) of Liveable Neighbourhoods have been used in planning the South Yanchep street reservations (Figures 4-8 of the Traffic + Transport technical report). These designs provide a flexible range of options to suit the different traffic, parking, pedestrian and cycling needs for the proposed South Yanchep road network and land use.

#### 6.6.4 Bus Transport

Transperth indicate that existing Route 490 will continue to travel between Two Rocks and Yanchep en-route to the northern most train station (e.g. Clarkson Station at present).

When Marmion Avenue is extended to Yanchep Beach Road, Transperth would have the option of sending the Route 490 buses via Marmion Avenue instead of via Yanchep Beach Road and Wanneroo Road.

Transperth have identified the following longer term bus service possibilities:

- Service between Yanchep Beach Road Station and Eglinton Station When the Yanchep Beach Road rail station is operational, a service would operate to the Eglinton Station via South Yanchep (Figure 10 of the Traffic + Transport technical report). Target service levels would be 10-15min in the peak and 20minutes in the off-peak during weekdays.
- Service between St. Andrews and Yanchep Beach Road Rail Station When the rail service is operational, a service would operate between the St. Andrews Southern Town centre and the Yanchep Beach Road station. The route would travel via west from the Town Centre to Two Rocks Road, then through existing Yanchep as shown in Figure 10. Target service levels would be 10-15min in the peak and 20minutes in the off-peak during weekdays.

#### 6.6.5 Park n' Ride Facilities at Yanchep Beach Road Rail Station

To achieve effective rail service to the Yanchep area, it is imperative that adequate provision is made for kiss n' ride and park n' ride facilities at the Yanchep Beach Road Station. The GHD report on the rail alignment in the NW Corridor includes a preliminary concept showing approximately 200 park n' ride bays on the Lot 102 property (west side) and 500 bays on the Lot 103 property (east side) - refer to Appendix D of the Traffic + Transport technical report.

Further study is needed to better define the park n' ride facilities required at the Yanchep Beach Road Station and measures need to be taken by the appropriate government authorities (e.g. WAPC) to reserve the necessary land for these facilities.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

### 6.6.6 Pedestrian & Cyclist Facilities

Figure 12 of the Traffic + Transport technical report shows the network of shared paths proposed for the Yanchep area. The information is compiled from the Capricorn Village LSP, the Lot 102 LSP and the St. Andrews DSP. The complete system of paths provides good access to parks, schools, commercial sites, the coast and neighbouring communities such as the Yanchep Townsite. When South Yanchep is developed it will be necessary to construct a shared path on the west side of Marmion Avenue for the length of the South Yanchep property frontage and along the Regional Open Space frontage. Ideally, other developers or the City of Wanneroo will ensure that the path is extended north from the Lot 102 northern boundary up to the existing pedestrian underpass and beyond to the Yanchep Beach Road path system.

All at-grade road crossings in South Yanchep (including on Marmion Avenue) are to have kerb ramps and median gaps or paths for use by pedestrians/ cyclists. In addition to the shared path network, and consistent with current Liveable Neighbourhoods and Austroads Guide To Traffic Engineering: Part 14 Cyclists, on-road cycle space (via cycle lane or paved shoulder) will be provided along all arterial roads and along new local distributor roads carrying traffic above 3000 veh/day.

### 6.6.7 Road Network Traffic Capacity and Traffic Modelling

The local traffic modelling uses district level traffic modelling information provided by Main Roads and district land use and road network information from the St. Andrews DSP. RobertsDay provided the detailed land use information for the South Yanchep LSP area. Traffic forecasts for key roads are given below.

- Marmion Avenue: Approximately 32,000 veh/day in the south and 39,000- 40,000 vehicles per day between Lagoon Drive and Yanchep Beach Road. These are heavy traffic levels and the implication for South Yanchep traffic is that one or both of the proposed accesses will require signals or roundabout control in the longer term.
- Lagoon Drive: Approximately 3000 vehicles per day at the entry point into South Yanchep. Further north (near Marmion Avenue) traffic is forecast to be approximately 6,000 veh/day at ultimate development stage.
- South Yanchep North Access: Approximately 1,000-1,500 veh/day near Lagoon Drive but at Marmion Avenue it is expected to carry approximately 4,000 veh/day.
- South Yanchep South Access. Approximately 3,000 veh/day at ultimate development.
- Brazier Road. Approximately 2,200-2,800 veh/day.

### 6.6.8 Intersection Treatments & Traffic Management at the Primary School

Figure 14 of the Traffic + Transport technical report shows some traffic management treatments that will require further investigation at the subdivision application and detailed design stage. Some of the treatments may require minor adjustments to property boundaries near these intersections. These details will be finalised by Cossill & Webley Consulting Engineers, RobertsDay and the City of Wanneroo at the development stage.

At the proposed Primary School, a 40 km/hr school speed zone should be established on each of the local distributor roads (Neighbourhood Connectors) located adjacent to the school. Medians or median islands should also be incorporated into the design of these roads to assist pedestrian/ cyclists crossing movements. A roundabout is proposed on the school Access Street (south east side) to slow vehicle speeds on the local distributor road, reduce delays to school traffic and provide controlled U-turns opportunities.

Finally, a traffic management study for the Primary School should be undertaken at the relevant stage of the planning process.

## 06 SITE ANALYSIS & TECHNICAL OVERVIEW

### 6.7 ENGINEERING AND SERVICES

This report has been prepared by Cossill & Webley Pty Ltd, Consulting Engineers, and it summarises the results of a review by the firm of the Engineering Services and Infrastructure requirements for urban development of the South Yanchep Structure Plan.

The Structure Plan covers an area of some 121 hectares which forms part of LandCorp's landholdings at Yanchep. In general, the South Yanchep Structure Plan area includes a series of east-west ridges through the land varying in peak elevation from 40-50 metres AHD. The swales between the ridges vary in shape, orientation and bottom level from a low of 10 metres AHD adjacent to the foreshore reserve to an average of 15-20 metres elsewhere. The topography is typical of the Quindalup Dune System with irregular shape and narrow ridges. Of particular prominence is a parabolic shaped dunal ridge located centrally within Lot 101, between the coast and the Lot 105 Regional Open Space. The peak elevations of the ridge are up to 40 metres AHD and it extends eastwards to link with a well defined ridge system within the ROS. There is a separate and relatively small dune located north of the above ridge, close to the southern boundary of the Ocean Lagoon Estate. Whilst it is small, this dune is high with a peak elevation of 37 metres AHD.

With regard to the proposed siteworks across the Structure Plan area, there is a growing appreciation of the importance to retain existing vegetation and topography to provide 'sense of place' within development areas and to meet 'sustainability' objectives. To a large extent, this has been a basis for the establishment of the Regional Open Space reserves at Yanchep. These protect a range of existing natural attributes including the coastal foreshore dunes and inland sand dunes and vegetation. The Structure Plan has also been prepared to take account of the existing topography. The parabolic dune within Lot 101 is a prominent existing landscape feature within the site which has been retained in the Structure Plan, within an area of public open space. In addition, the higher sand dune, north of this, has also been retained in public open space with the surrounding road configured to suit. In both cases, therefore, the grading of the adjacent roads and development areas will need to match the existing base levels of these features.

Elsewhere within the site, the form and density of the development proposals, in the Structure Plan, are such that a more conventional approach to earthworks is proposed. This includes the terracing of development areas to maximise the elevation of the finished lots and the grading of roads up from the foreshore to provide vistas along the roads to the coast.

In relation to the road network proposed within the structure plan, the Structure Plan accommodates connection to the existing road system within Ocean Lagoon Estate and the proposed alignment and levels of Marmion Avenue adjacent to Lot M1503.

Stormwater drainage within the Structure Plan area would be managed by implementing an overall Integrated Urban Water Management Plan. The principles of the plan revolve around the application of Water Sensitive Urban Design (WSUD) techniques during planning, design and construction of urban development projects. Objectives of WSUD include detention of stormwater rather than rapid conveyance, use of stormwater to conserve potable water, use of vegetation for filtering purposes and water efficient landscaping.

All other essential services for residential and commercial would be provided by LandCorp. The provision of these services would be consistent with agreed strategies as developed in conjunction with the relevant service authorities.

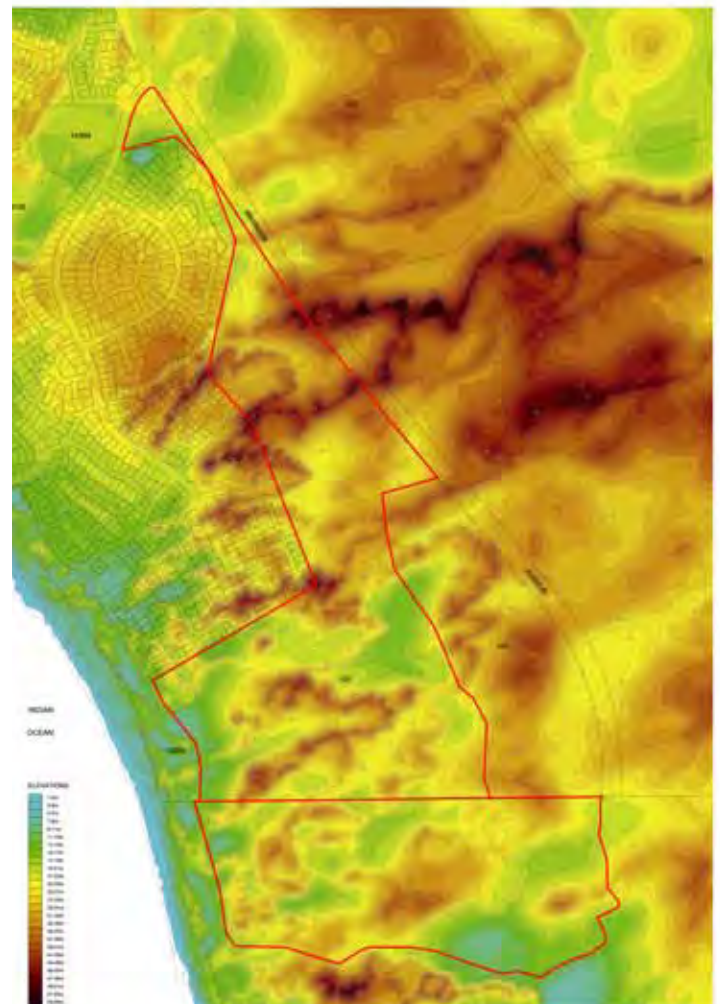


FIGURE 29 TOPOGRAPHY

