YANCHEP - TWO ROCKS DISTRICT STRUCTURE PLAN

NOVEMBER 2010

Title:	Yanchep - Two Rocks District Structure Plan
Project:	Yanchep - Two Rocks
Client:	Tokyu Corporation
Project Management:	Yanchep Sun City Pty Ltd (Taku Hashimoto)
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Authors:	G. Richmond, T. McQue, S. George
Consultant Team:	Coffey Environments (formerly ATA Environmental) (Environmental Scientists), Bruce Aulabaugh (Traffic Engineer), Cossill & Webley (Consulting Engineers), Creating Communities (Social Infrastructure & Community Consultation), MP Rogers (Coastal & Port Engineers), SKM (Traffic Consultants), Syme Marmion (Economic Development), Urbis JHD (Retail Consultants)
Graphic Design:	B. Griniunas
Approved by:	M. White

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Logiden Pty Ltd (October 2007)

Engineering Infrastructure
Cossill and Webley Consulting Engineers (March 2007)

Predicted Future Demand for Coastal Facilities (R187-Rev0)
MP Rogers and Associates Coast and Port Engineers (March 2007)

Regional Community and Human Service Infrastructure Provision
Creating Communities Australia Pty Ltd (March 2007)

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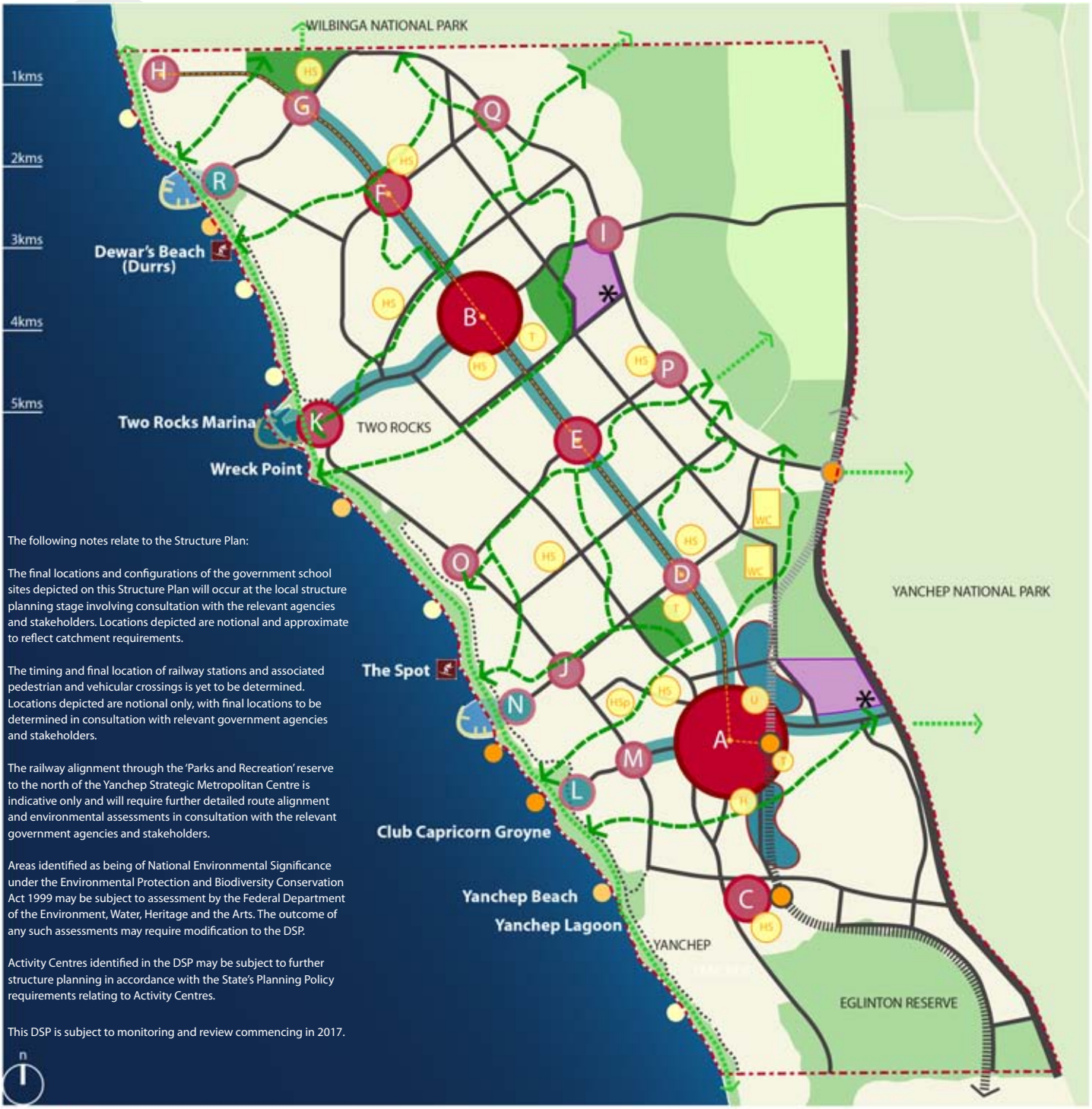


The following notes relate to the Structure Plan:

The final locations and configurations of the government school sites depicted on this Structure Plan will occur at the local structure planning stage involving consultation with the relevant agencies and stakeholders. Locations depicted are notional and approximate to reflect catchment requirements.

The timing and final location of railway stations and associated pedestrian and vehicular crossings is yet to be determined. Locations depicted are notional only, with final locations to be determined in consultation with relevant government agencies and stakeholders.

The railway alignment through the 'Parks and Recreation' reserve to the north of the Yanchep Strategic Metropolitan Centre is indicative only and will require further detailed route alignment and environmental assessments in consultation with the relevant government agencies and stakeholders.

Areas identified as being of National Environmental Significance under the Environmental Protection and Biodiversity Conservation Act 1999 may be subject to assessment by the Federal Department of the Environment, Water, Heritage and the Arts. The outcome of any such assessments may require modification to the DSP.

Activity Centres identified in the DSP may be subject to further structure planning in accordance with the State's Planning Policy requirements relating to Activity Centres.

This DSP is subject to monitoring and review commencing in 2017.

STRUCTURE PLAN BOUNDARY

LAND USE

- RESIDENTIAL
- RURAL RESIDENTIAL
- MIXED USE
- MIXED USE/ EMPLOYMENT
- INDUSTRIAL
- RURAL (EXTERNAL TO SITE)
- REGIONAL OPEN SPACE
- PARKS AND RECREATION
- OPEN SPACE (EXTERNAL TO SITE)
- PUBLIC PURPOSE
  - U UNIVERSITY
  - T TERTIARY INSTITUTION
  - HS HIGH SCHOOL
  - HSp PRIVATE HIGH SCHOOL
  - H HOSPITAL
  - WC WATER CORP

DEVELOPMENT NODES

- SECONDARY CENTRE
- STRATEGIC METROPOLITAN CENTRE
- DISTRICT CENTRE
- NEIGHBOURHOOD CENTRE
- COASTAL TOURIST ACTIVITY CENTRE
- DISTRICT/POTENTIAL FUTURE REGIONAL BEACH
- DISTRICT BEACH
- LOCAL BEACH
- SURF BREAK
- POSSIBLE FUTURE MARINA
- EXISTING MARINA
- NOTIONAL ZONE SUB-STATIONS

MOVEMENT NETWORKS

- RAIL (WITH TRANSIT STATION)
- INDICATIVE RAIL (WITH TRANSIT STATION)
- SECONDARY TRANSIT SYSTEM (LIGHT RAIL/BUS)
- PRIMARY ROADS
- SECONDARY ROADS
- COASTAL ROAD
- SOCIAL/ PEDESTRIAN/ CYCLE LINKAGES
- PEDESTRIAN CONNECTIONS

EXECUTIVE SUMMARY

The Yanchep – Two Rocks development is the largest single urban development project in Perth and with an ultimate population of 155,000, is anticipated to accommodate 2% - 3% of Australia's population growth over the next 40 years. The project is also intended to accommodate 55,000 new jobs, or almost one job per household, which will increase the level of employment self sufficiency in the north-west metropolitan corridor from less than 50% to around 60%. The project heralds an exciting future for Perth and particularly the City of Wanneroo. The unprecedented scale of this project, which covers an area similar to two Cities of Nedlands, or half of the City of Stirling, presents a magnificent opportunity to set new benchmarks in the quality of urban design, effective sustainability initiatives, building variety and neighbourhood identity in a way which will have a positive impact on the many residents of this new community.

The vision for Yanchep – Two Rocks is to deliver the highest quality of urban form and to apply a wide range of advanced planning and design techniques to create a sustainable community.

The District Structure Plan (DSP) offers a dynamic and flexible development framework for urban villages, centres for education, industry, technology and enterprise, regional open spaces and a vibrant city centres serving all of northern Perth, all connected to one another, the City of Wanneroo and the Perth CBD by a comprehensive movement network of public transport routes, roads, cycleways and footpaths.

The project will deliver sophisticated responses to climate change, resource management and community development with a design sensitivity to the natural environment, the provision of lifestyle choice and the support for economic innovation. This approach reflects the requirements of government and the wider community for a holistic and balanced outcome.

The plan for Yanchep - Two Rocks responds to the local environmental context through sensitively integrating the proposed urban layout and a wide range of land uses within the prevailing landform and landscape system, including the retention of significant areas of remnant bushland and species habitat. This is achieved through the provision of major linear parklands, green spines, low density housing areas and vistas which also provide recreational spaces, solar access, topographical landmarks, easy orientation and a clear 'sense of place'.

An important project focus of the Yanchep - Two Rocks development is on creating communities. The project will heighten the community's enjoyment of the urban environment by introducing informal and formal 'social places' in the urban streetscape design with mixed uses, nodes of density and activity in a safe and easily accessible environment. Wherever possible the local natural, historic and cultural characteristics will be integrated.

The community will have the choice of housing form and style from low maintenance units and apartments to family scale homes and gardens. The needs of young singles, older people and those with mobility difficulties will be specifically catered for. The new population will have a wider than normal choice of accommodation types and tenures, reflecting the growing need for more affordable housing options. Clusters of residential development incorporating relatively high densities in key locations will accommodate up to 67,000 new homes.

The cost of living and the costs of maintaining a home may be reduced as energy options and alternatives to car dependence have become an integral consideration of the overall plan. The community will benefit from a high level of local services and advanced communication technologies. The project will also promote new standards in energy efficiency with many homes encouraged to use solar power and other renewable energy sources.

All new homes will be served by broadband or a similar world class communications technology. Many facilities including schools, shops, libraries, parks and plazas will be within a short 2-5 minute walk of the front door. For longer journeys a rapid transit system will ultimately unite neighbourhoods to the city centres and the region beyond. The public transport system will incorporate the latest technology and will provide for 60,000 transport trips each day in and around the Yanchep - Two Rocks area.

The plan encompasses major economic development and employment initiatives. Businesses will be able to operate from the comfort of home or be based in one of the industrial estates, mixed use business areas or the central business district of the city centre. This will have the effect of reducing the dependence on the Perth CBD as a centre for employment with the long term aim of reducing the regular traffic congestion on the Mitchell Freeway.

The Yanchep Strategic Metropolitan Centre will be the economic core of the area and will accommodate around 23,500 jobs. This is a significant scale of activity, about one-quarter of the employment size of the Perth CBD and significantly larger than other regional centres in the metropolitan area. The Centre will contain nearly three quarters of a million square metres of office and commercial uses, including government, civic, entertainment and recreation activity. As well as providing jobs for local Yanchep - Two Rocks residents, the project will provide increased employment choices for residents of Wanneroo and the northern suburbs generally. Business and technology activities within Yanchep - Two Rocks will generate the need for support services and industries in the economic hinterland, providing an essential source of sustained local economic investment and growth. At 2058, the entire North West Corridor (City of Wanneroo and City of Joondalup) will be home to around 40,000 tertiary and TAFE students. The plan has responded with sites identified for up to 4 tertiary institutions. An appropriate site has also been identified for a hospital and health campus.

The plan integrates a significant amount of land for potential tourism activity in selected coastal nodes. This will provide diverse activity including visitor attractions for locals, day trippers and short stay visitors and marine and beach pursuits, which will help to concentrate development and create a balance between recreation and environment. Up to 6,400 people per day are expected to use the accessible beaches along the Yanchep - Two Rocks' coast in peak periods.

Yanchep - Two Rocks will have an economic base that goes beyond the regional, with a range of economic activities with the potential to reach national and international markets. These will develop over time, but viable externally-oriented economic activity already identified includes projects in tourism, health services, education, bio-sciences, environmental technology and information and communications technology.

The comprehensive development program will be guaranteed through the application of guiding sustainability principles and the City of Wanneroo's Smart Growth Tool at all levels of structure planning and land division.

The DSP will guide more detailed planning and the development of the Yanchep - Two Rocks district over at least the next fifty years. At final build out, Yanchep - Two Rocks will be a tapestry of different neighbourhoods, anchored by a series of activity nodes knitted together by a mixed-use transit corridor. Each of the various communities will have its own unique character and sense of place.

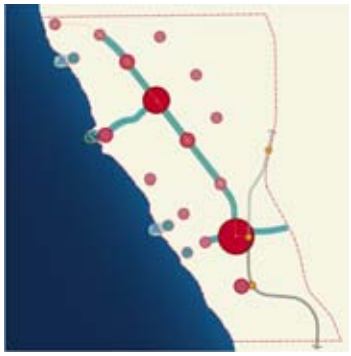
The major components of the plan are as follows:

Existing Settlement
The DSP incorporates the two existing well-established townships of Yanchep and Two Rocks, the rural residential community of Sea Trees at the north eastern edge of the DSP and the Sun City golf course estate. These existing settlements are integrated and accommodated within the overall design of the DSP.

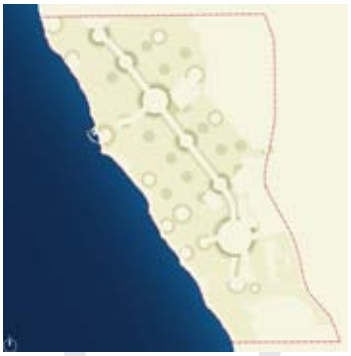
Open Space
In conjunction with the large conservation and coastal reserves, the plan provides for additional regional level open space to meet the future active recreational needs of the Yanchep - Two Rocks' community. In addition, social/ pedestrian/ cycle linkages have been specifically sited to enable the retention of natural elements of the site and to create linkages between the coast and Yanchep National Park.

Mixed-Use Activity Centres
A series of regional, district neighbourhood and tourist activity centres will be located throughout the project to ensure that no neighbourhood is more than a short walk from a pedestrian-scaled mixed-use environment. These centres will incorporate key elements at differing scales including shops, services, restaurants, community uses, transit infrastructure, and housing.

A City Centre
The Yanchep Strategic Metropolitan Centre will be the economic and community core of the area. It will provide the majority of the high-end employment, education and community services. It will be linked to the Perth CBD via an extension of the northern suburbs rail system. To the north is a Secondary Centre that will provide a complementary regional role.



Mixed-Use Transit Corridor
A key element of the design for Yanchep - Two Rocks is the provision of a mixed use transit corridor that connects a series of activity nodes. The nature and character of the corridor will vary along its length, with employment rich uses located in close proximity to the centres and a dense, mixed use environment evolving between the centres. The accessibility afforded by a transit service allows residential and employment densities to be higher in this linear neighbourhood than elsewhere within the Structure Plan area. The transit system will be located in the centre of the boulevard and connect to regional rail at the Yanchep Strategic Metropolitan Centre.



Residential Neighbourhoods
Adjoining the various activity centres and interspersed through the public realm are the residential neighbourhoods. Though each neighbourhood will vary in density and housing form, the principles of liveability and sustainability will apply to all.

Mixed-Use Employment Area
Mixed use employment areas are located to the south and north of Yanchep Strategic Metropolitan Centre. These areas will offer a very high quality urban environment for high-tech, post-industrial businesses and business clusters that will seek this location in order to network with compatible businesses, education institutes and services. The knowledge-based and specialised employment accommodated within these areas will distinguish Yanchep - Two Rocks from other growth areas of Perth. The northern mixed-use employment area is adjacent to a proposed site for a major University, providing an appropriate environment for economic activity linked to University based research.

Industrial Areas
The DSP identifies two strategic locations for light industrial and service commercial activities. These areas provide a setting for industrial uses and employment that because of emissions, size or operations or security concerns, are unlikely to fit well into other mixed use neighbourhoods and activity centres. These sites are buffered by reservations and are highly accessible from the primary road network, rail and the future extension of the Mitchell Freeway.

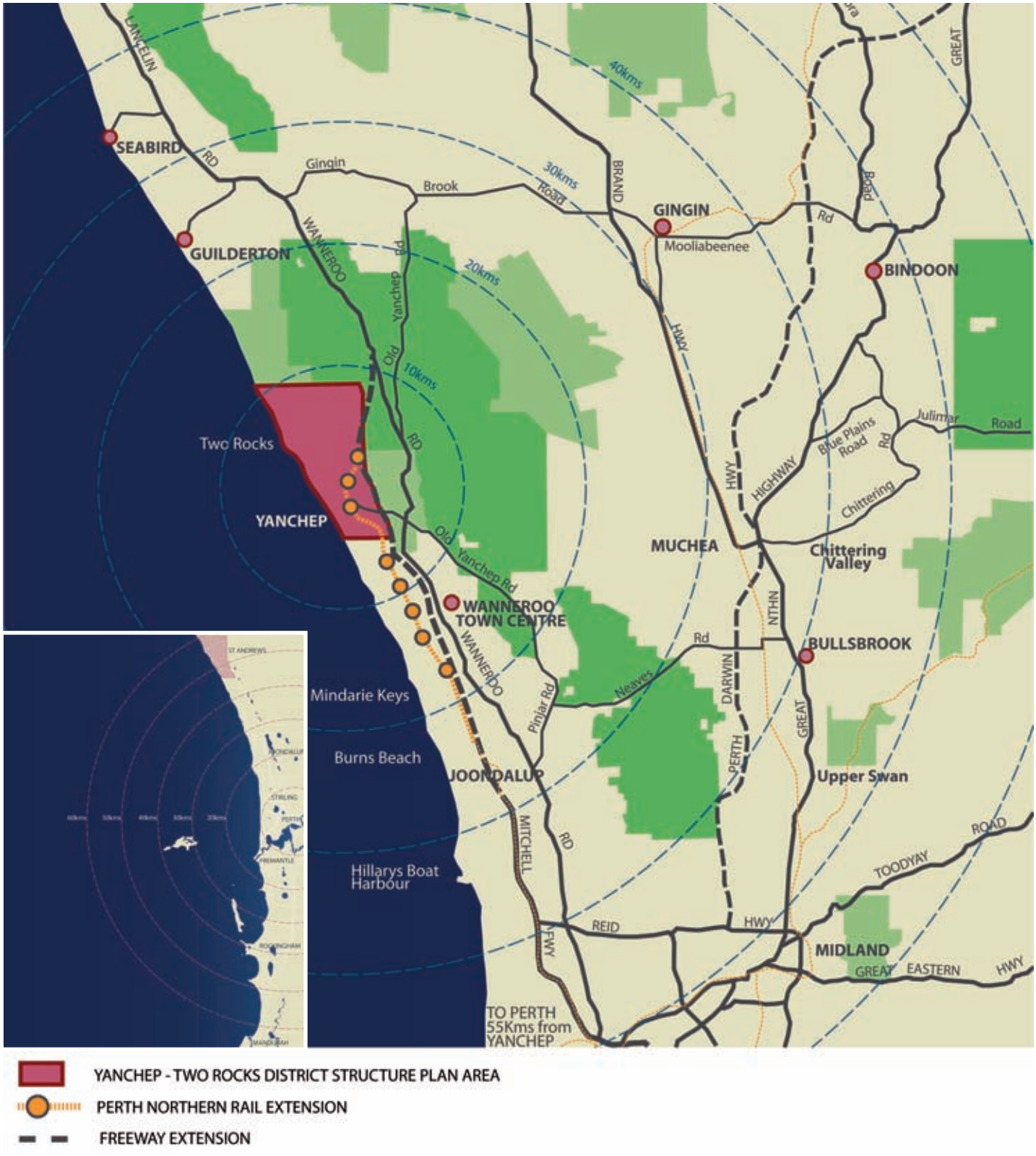
Table 1 outlines the elements provided for in the DSP, their respective land areas and the ultimate dwelling and employment targets.

Table 1 Land Allocation

	LAND AREA (ha)	DWELLINGS	EMPLOYMENT
Strategic Metropolitan Centre and Secondary Centre	220	4095	19 140
District Centres	207	5175	5340
Coastal Centres	38	968	830
Neighbourhood Centres	52	1290	1040
Employment/ Mixed Use Zone	91	545	10 630
Mixed Use Corridors	258	6458	8810
Industrial Zones	112		3920
Residential (25 dw/site ha)	135	3375	2680 (home based business)
Residential (20dw/ ha)	651	13 020	
Residential (10dw/ ha)	3182	31 820	
Rural Residential (0.5dw/ ha)	509	254	
Tertiary Education (4)	60		2610
High Schools (14)	140		
Primary Schools (62)	248		
Health	8		
Regional Open Space	100		
Parks and Recreation (Foreshore and Bush Forever)	1511		
Local Open Space	included in above areas		
Wastewater Treatment	28		
Total DSP Area	**7550ha**	**67 000**	**55 000**

INTRODUCTION

FIGURE 1 CONTEXT



1.0 SITE DESCRIPTION AND CONTEXT

The Yanchep-Two Rocks District Structure Plan (DSP) incorporates an area of approximately 7,550 hectares of land within the northern extent of the rapidly growing North West Corridor of the Perth metropolitan region and approximately 60 kilometres from the Perth Central Business District (CBD).

The DSP area is generally bounded by the Indian Ocean to the west, private rural landholdings and Yanchep National Park to the east, Wilbinga Reserve to the north and Eglinton Reserve to the south. Further south of the site are the developing communities of Eglinton, Alkimos and Jindalee and to the north, the rural coastal communities of Guilderton and Seabird.

The Yanchep-Two Rocks area represents one of the last remaining tracts of urban land in Perth's North West Corridor and the single largest, contiguous parcel of land set aside for urban development in the country. At full build out around 2060 it will accommodate in the order of 155,000 residents. It will also serve as a strategic metropolitan centre, second only to the CBD and inner city area, providing a projected 55,000 new jobs for the Perth metropolitan region.

The rapid rate of development within the North West Corridor reflects the long term population growth in the metropolitan area generally, the high demand for coastal living and the less constrained nature of coastal land compared with land located further east and in other development locations in the metropolitan area.

The Metropolitan Region Scheme (MRS) provides for an extension to the rail network ultimately connecting the DSP site with the remainder of the Perth metropolitan area. The extension of Marmion Avenue northward will traverse the length of the DSP becoming a Transit Boulevard connecting the major activity centres and providing the catalyst for much of the mixed use development planned for region.

FIGURE 2 EXISTING LAND USE AND DEVELOPMENT

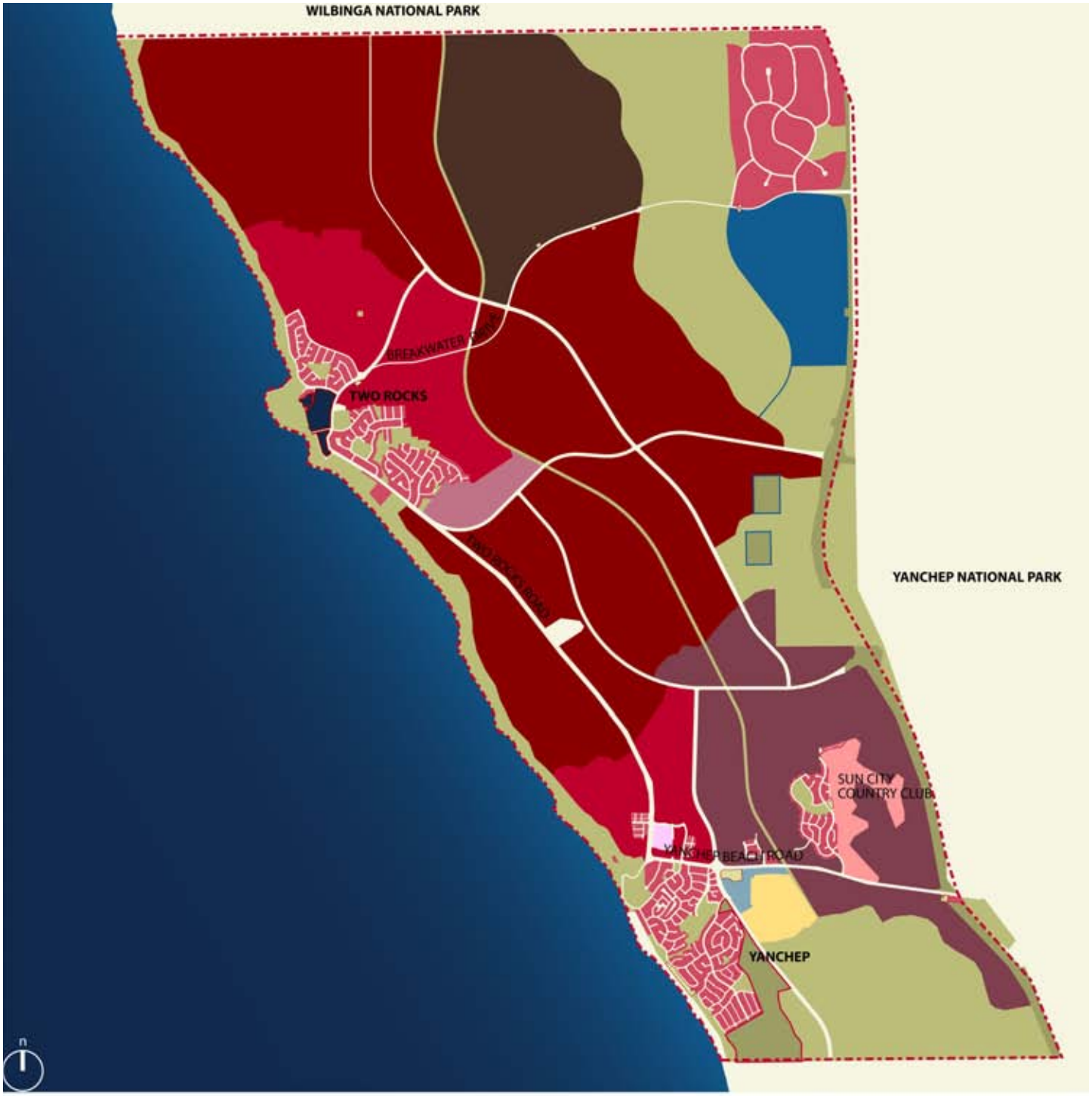
STRUCTURE PLAN APPROVED AREAS
1. TWO ROCKS (status: approved structure plan)
2. ZEBRA PROPERTIES (status: partial structure plan, subdivision commenced)
3. CAPRICORN VILLAGE JOINT VENTURE (status: approved structure plan, subdivision commenced)
4. YANCHEP ESTATES (status: structure plan approved)

EXISTING DEVELOPED AREAS
A. TWO ROCKS
B. YANCHEP
C. SEATREES RURAL RESIDENTIAL ESTATE
D. SUN CITY GOLF ESTATE
E. YANCHEP LIGHT INDUSTRIAL

Existing Land Use and Development

The DSP includes the existing townsites of Yanchep and Two Rocks, the golf course estate of Sun City Country Club and the new rural residential community of Sea Trees in the north east of the site. Development around these nodes is already progressing under the guidance of Local Structure Plans. The balance of the site is predominantly undeveloped urban zoned land with extensive MRS Parks and Recreation reservations, including the coastal reserve, portion of Eglinton Reserve and the land reserved for Parks and Recreation in the north eastern portion of the DSP area.

FIGURE 3 LAND OWNERSHIP



Land Ownership
As at 2008, of the 7550 hectares of land within the DSP, approximately 2437 hectares are owned by Tokyu Corporation with an additional 1358 hectares joint ventured between a Tokyu subsidiary and a third party. A further 1500 hectares is Crown land, reserved under the MRS for recretion or coastal foreshore. The remainder of the DSP area is owned by State and Local Government agencies and various other private landowners.

2.0 PURPOSE AND STRUCTURE OF THE DISTRICT STRUCTURE PLAN

The preparation of the DSP has been the subject of substantial investigation, analysis and dialogue with the City of Wanneroo, State Government agencies, landowners and the community over several years. The Yanchep-Two Rocks DSP represents a significant step in planning for sustainable communities in the Perth metropolitan region.

The DSP will be adopted by the WAPC and City of Wanneroo to provide the basis for the preparation of more detailed local structure plans which will guide the progressive development of the district over the longer term. The role of the DSP is to:

- Provide a vision statement for the study area which will be unique to the Yanchep-Two Rocks project and become the guiding point for all future planning and development decisions.
- Facilitate amendments to the Metropolitan Region Scheme (MRS) and City of Wanneroo District Planning Scheme No. 2 (DPS2).
- Establish key principles to guide the preparation of more detailed local structure plans (LSP).
- Provide the framework for quality urban design, open space provision and development.
- Provide for timely and co-ordinated infrastructure and employment provision.

The DSP is divided into the following three sections:

Introduction provides an explanation of the purpose and structure of the DSP suite of documents and provides a brief description of the site and its regional context.

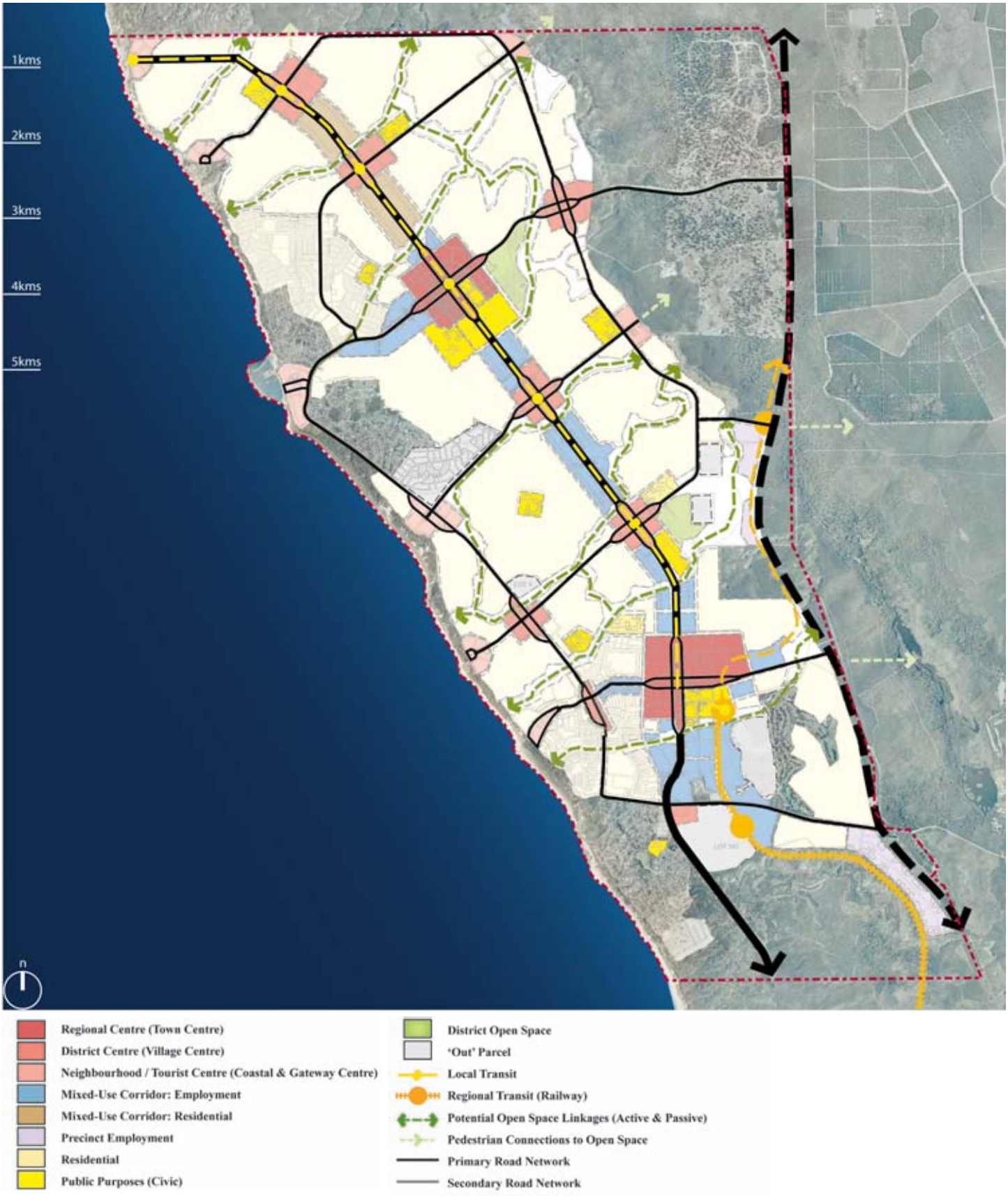
Part One contains the statutory land use provisions adopted by the City of Wanneroo under the City of Wanneroo's DPS2 and the Western Australian Planning Commission which are expressed as guiding principles, objective, strategies and plans. These provisions provide the general basis for the preparation of more detailed Local Structure Plans.

Part Two contains the detailed analysis of the strategic context and site conditions that have informed the detailed principles for development. This section provides the rationale for the statutory provisions and outlines the more detailed principles and information that should be referred to and reflected in the subsequent Local Structure Plans.

Part Three contains the technical reports that were prepared during preparation of the DSP (separately bound).

- Environmental Assessment (Version 3, Report No.2006/061) - Coffey Environments (formerly ATA Environmental) (March 2007)
- Interim Report on The Geology of The St Andrews Property, Yanchep-Two Rocks District - Logiden Pty Ltd (October 2007)
- Engineering Infrastructure - Cossill and Webley Consulting Engineers (March 2007)
- Predicted Future Demand for Coastal Facilities (R187-Rev0) - MP Rogers and Associates Coast and Port Engineers (March 2007)
- Regional Community and Human Service Infrastructure Provision - Creating Communities Australia Pty Ltd (March 2007)
- Retail Hierarchy Assessment - Urbis JHD (September 2007, updated October 2008)
- Economic Development - Syme Marmion (March 2007)
- Transport Study - Sinclair Knight Merz in association with Bruce Aualabaugh (March 2007)

FIGURE 4 ST ANDREWS DISTRICT CONCEPT PLAN



3.0 PROJECT HISTORY AND STATUS

In 2005, a St Andrews District Concept Plan (DCP) was prepared and in January 2006 it was adopted by the City of Wanneroo (City) as an appropriate basis for the preparation of a DSP following detailed assessment and consultation with the Department for Planning and Infrastructure and other relevant government agencies. The DCP emerged from the Memorandum of Understanding (MOU) between Tokyu Corporation and the City of Wanneroo. The purpose of the DCP was to test and gain agreement on a series of planning assumptions relating to the future development of the district, including settlement patterns and transport networks. It was acknowledged that the DCP would lead directly to the preparation of the DSP and amendments to the MRS. The DCP was also noted by the WAPC in November 2006.

Following this, an extensive and rigorous process of consultation was undertaken involving officers from all relevant State and Local Government departments, elected officials and key landowners. A multidisciplinary consultant team prepared extensive reports based on on-site assessments, technical investigations and consideration of State and Local Government policies. This culminated in the preparation of a draft DSP.

The DSP design is broadly based on the DCP, and includes the incorporation of mixed use activity centres, walkable residential neighbourhoods, a mixed use transit corridor, district employment areas and integration with the existing communities of Two Rocks and Yanchep. Where appropriate, the DSP has been modified, in response to comments received from the City of Wanneroo, State Government agencies and the community following a period of public consultation and comment during September-October 2007.

Major Project Facilitation Status

Major Project Facilitation (MPF) status was conferred on the economic development program of the Yanchep - Two Rocks project by the Commonwealth Government in July 2002, and renewed in August 2007 for a further period of 3 years. At the expiry of this period it will again be reviewed.

The MPF status provides Federal Government assistance in gaining government approvals, information, coordination, responsiveness and support in establishing the industry and economic base for the Yanchep - Two Rocks development.

Strategic Cooperation Agreement

The St Andrews Strategic Cooperation Agreement (SCA), established in July 1999, is an ongoing 20-year agreement between Tokyu Corporation, Yanchep Sun City Pty Ltd (YSC) the Western Australian Government (the Premier and the Western Australian Planning Commission) and the City of Wanneroo. The Agreement outlines joint initiatives and cooperation between the parties to progress development and employment creation in Yanchep - Two Rocks. As part of the SCA, the IDEAS project, a joint employment creation feasibility initiative was established.

The SCA is revised and confirmed every five years to enable the detailed planning and implementation schedules to be updated.

Strategic Implementation Group

The St Andrews Strategic Implementation Group (SIG) was established under the SCA in 1999 to manage the delivery of its objectives. It is co-chaired by a representative of the Premier and a Director from Yanchep Sun City Pty Ltd, and includes representation from all SCA members. It meets regularly to ensure efficient program delivery.

Memorandum of Understanding

The 2003 St Andrews Project Memorandum of Understanding is a shared, signed commitment between Tokyu Corporation, Yanchep Sun City Pty Ltd and the City of Wanneroo to provide a local government focus, a strategic framework and agreed targets and responsibilities for the development of the Yanchep - Two Rocks project. It meets regularly to review progress and resolve issues.

IDEAS Project

The IDEAS Project is a response to the need for a strategic model for government and private sector cooperation to identify a suitable framework for employment growth in the North West Corridor. The strategy will progressively identify administrative and regulatory resources required to facilitate and complement specific industry led employment initiatives. Its purpose is to formulate a socially responsive economic development strategy which can be practically implemented and leverage the natural competitive advantages of Perth in a regional and global context.

Through the IDEAS Project there is an active enterprise attraction and facilitation program. This program focuses on the development of identified industry clusters, through the following three complementary business development strategies:

- Business attraction incentives;
- Export development; and
- Local employment and training initiatives, supporting the development of local industries and the facilitation of employer/education/employee alliances.

The strategies promote the development of clusters of related activities in the following categories:

- Bio Sciences;
- Environmental Technology;
- Education;
- Health and medicine;
- Advanced Manufacturing;
- Information Technology;
- Finance; and
- Arts.

Quick Wins

The Quick Wins component of the IDEAS Project is focused on securing employment opportunities at Yanchep - Two Rocks in the short term, which are additional to those provided in the conventional areas of retail and associated support activities. To date these include the following:

- An MOU has been signed to establish a business / office development program for the DSP area, with particular focus on the mixed use employment precinct;
- A comprehensive Aged Care Facility for Churches of Christ is under construction as part of the Capricorn development north of Yanchep;
- A redevelopment plan is being prepared for the Club Capricorn tourism resort; and
- A series of MOU's are being negotiated with businesses compatible with the IDEAS Project. Agreement has already been reached with a clean energy supply company and a remote imaging medical company. Heads of Agreement for both are in the process of being finalised.

PART ONE:
STATUTORY PROVISIONS

CERTIFICATION THAT THE
YANCHEP – TWO ROCKS DISTRICT STRUCTURE PLAN

WAS ADOPTED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON

09 FEB 2011

.....

Date

Signed for and on behalf of the Western Australian Planning Commission

.....

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

.....

Witness

10 FEB 2011

.....

Date

AND BY RESOLUTION OF THE COUNCIL OF THE CITY OF WANNEROO ON

- 9 MAR 2010

.....

Date

AND THE SEAL OF THE MUNICIPALITY WAS PURSUANT TO THE COUNCIL'S RESOLUTION HERUNTO AFFIXED IN THE PRESENCE OF:

.....

Mayor, City of Wanneroo

.....

Chief Executive Officer, City of Wanneroo

6-12-2012

.....

Date

CITY OF WANNEROO • COMMON SEAL •

Record of Amendments made to the Yanchep – Two Rocks District Structure Plan

AMENDMENT NO.	DESCRIPTION OF AMENDMENT	WAPC ADOPTED	COUNCIL ADOPTED

1.0 STRUCTURE PLAN AREA

This District Structure Plan (DSP) shall apply to the area of land contained within the inner edge of the broken red line shown on the DSP Map.

2.0 STRUCTURE PLAN CONTENT

This DSP comprises:

- Part 1 - Statutory Provisions including DSP Map
- Part 2 - Explanatory Report
- Part 3 - Appendices (Detailed Technical Reports)

Part 2 is intended to explain and clarify the application of the statutory provisions in Part 1, and is intended for guidance purposes only. Part 3 provides background and technical analysis, and is intended to assist with an understanding of the basis of the proposals contained in Part 2. Parts 2 and 3 include information and detail, which is not carried over to Part 1. This is intended to be used to inform the application and implementation of the DSP, not to circumscribe the provisions of Part 1.

3.0 INTERPRETATION

The words and expressions used in this DSP shall have the respective meanings given to them in the City of Wanneroo's District Planning Scheme No.2 (the Scheme).

4.0 OPERATION DATE

In accordance with sub-clause 9.8.1 of the Scheme, this DSP shall come into operation on the later date when it is either certified by the Western Australian Planning Commission (WAPC) pursuant to sub-clause 9.6.3 of the Scheme or adopted, signed and sealed by the Council under sub-clause 9.6.5 of the Scheme.

5.0 RELATIONSHIP WITH THE SCHEME

In accordance with clause 9.8 of the Scheme the provisions, standards and requirements specified under Part 1 of this DSP shall have the same force and effect as if these were provisions, standards or requirements of the Scheme. Part 2 of this DSP provides further explanation and detail to elaborate on the provisions contained within Part 1 and shall be used as a reference to guide interpretation and implementation of Part 1.

6.0 GENERAL PROVISIONS

6.1 The DSP provides the broad district level planning framework for development of the structure plan area. It provides inter alia, the broad disposition of land use, major roads, rail and other community infrastructure. The DSP provides the general basis for subsequent preparation of local structure plans (LSPs) over portions or precincts of the area. Those LSPs will provide a more detailed level of planning necessary to guide, coordinate and facilitate subdivision and development.

6.2 The DSP does not include a plan showing zonings, specific residential density codings or detailed development standards and requirements. Generally, no subdivision or development should be commenced or carried out until such time as an LSP has been prepared and becomes operative for the relevant portions of the structure plan area. Any subdivision or development, which does take place, including the creation of super-lots, is to accord generally with an approved LSP unless it can be demonstrated that the subdivision and/or development will not prejudice the design or final outcome of the relevant LSP(s).

6.3 The land uses shown on the DSP Map are only intended to guide future development and do not correlate to the zones contained in the Scheme. Further details of the intention of the DSP Map and the depicted land uses are included in Part 2 - Explanatory Report.

7.0 PRINCIPLES, ELEMENTS, OBJECTIVES AND STRATEGIES

The principles, elements, objectives and strategies set out below are intended to inform and guide the detailed planning process in conjunction with the State Sustainability Strategy, WAPC's State Planning Policies (including particularly Liveable Neighbourhoods and the North-West Corridor Structure Plan) and the City of Wanneroo's District Planning Scheme, Smart Growth Strategy and local policies.

If there is a conflict between one of more of the Objectives and Strategies, then the City of Wanneroo and WAPC will determine which takes priority.

7.1 Guiding Principles
The following principles underpin the intent of this DSP and reflect the content of the State Sustainability Strategy, WAPC's Liveable Neighbourhoods Policy and the City of Wanneroo's Smart Growth Strategy and policies.

Development is to:
1. form an integrated ecological and human system with an interconnected network of a variety of open spaces, social/ pedestrian/ cycle linkages, activity centres and activity corridors;
2. facilitate the creation of healthy communities in terms of healthy lifestyles, social cohesion and economic prosperity;
3. maintain the ecological integrity of the region and locally significant sites;
4. respond to and integrate key landscape features and foreshore characteristics;
5. respond to and accommodate natural hydrological and nutrient cycles;
6. be responsive to the climate, environment, character and identity of the locality;
7. provide for diversity, choice, adaptability, efficiency and innovation;
8. be designed for efficient and integrated movement systems including public and private transport, cycling and walking;
9. provide a safe, attractive and high quality public realm that caters for a wide range of activities from structured recreation to informal, unplanned events and experiences;
10. provide a wide range of civic, commercial, educational, recreational and employment opportunities that are available to the entire community;
11. foster innovative, knowledge based economies to create robust 21st Century communities;
12. provide progressively increasing employment self-sufficiency and opportunities; and
13. facilitate the efficient staging and provision of infrastructure and services.

7.2 Elements
Stemming from the guiding principles, the following core elements have been identified to form the framework for the objectives and strategies.

1. Ecology and Landscape
2. Public Realm, Open Space and Coastal Facilities
3. Urban Structure and Built Environment
4. Transport and Access
5. Community Development
6. Economy, Employment and Activity Centres
7. Resources, Infrastructure and Services

7.3 Objectives and Strategies
Objectives and strategies are provided for each of the elements to ensure the guiding principles flow through the subsequent layers of the planning and development process and are effectively implemented. The objectives set out the desired outcomes for each element and the strategies identify mechanisms to achieve these outcomes.

The objectives and strategies are to be implemented through the Scheme, this DSP, LSPs, subdivision plans, Detailed Area Plans (DAPs), development and infrastructure provision supported where appropriate through strategic agreements and Memorandums of Understanding (MOUs).

LSPs prepared within this DSP area shall demonstrate compliance with the objectives and strategies, including implementation, to the satisfaction of the City of Wanneroo and WAPC. LSPs shall be accompanied by supporting reports, plans and/or strategies as required by the City and/or the WAPC.

7.4 Ecology and Landscape
Objectives
O1. To preserve significant natural features such as fauna habitats/ corridors and high quality remnant vegetation, where practicable;
O2. To maintain and manage the ecological integrity of the coastal foreshore in balance with the needs for structured and unstructured recreation;
O3. To provide Social/Pedestrian/Cycle Linkages between different ecological communities such as coastal and inland reserves and significant natural features of the site;
O4. To facilitate the integration of the built environment with the natural ecosystem in a complementary manner; and
O5. To ensure the natural topography is considered in conjunction with vegetation retention and the design of the built environment.

Strategies

S1. LSPs shall identify significant natural features, as identified in this DSP, and integrate these either within public space (such as POS and road reserves) or suitably controlled and managed private space, or other arrangements to the satisfaction of the City of Wanneroo and/or the WAPC;

S2. LSPs to identify conservation areas such as conservation public open space, and designed these in order for them to remain viable (as is defined by the WALGA/ Perth Biodiversity Project's *Local Government Biodiversity Planning Guidelines of the Perth Metropolitan Region 2004)*. Such open space is limited to the provision of public open space within the LSP, with there needing to be a mix of active and passive open space in accordance with WAPC Policy DC 2.3 Public Open Space in Residential Areas and/or Liveable Neighbourhoods.

S3. Areas identified as being of National Environmental Significance under the Environmental Protection and Biodiversity Conservation Act 1999 may be subject to assessment by the Federal Department of the Environment, Water, Heritage and the Arts. The outcome of any such assessments may require modification to the DSP.

S4. LSPs shall refine the Social/Pedestrian/Cycle Linkages identified in the DSP Map in order to connect areas of ecological significance and transitions between different ecological communities (such as coastal to inland). The linkages may take a variety of forms that correspond with the urban context in line with the Social/Pedestrian/Cycle Linkages Guidelines provided in this DSP;

S5. Where practicable, LSPs shall maintain pre-development topography in order to retain locally significant geomorphology, vegetation and fauna habitat, or provide suitable justification to the City and/or the WAPC;

S6. Landscape plans for public spaces shall utilise local indigenous plant species, or provide suitable justification to the City and/or the WAPC, and their use shall be encouraged in private landscaping;

S7. Where applicable, local Foreshore Management Plans (FMPs) shall be prepared broadly in accordance with the City's Yanchep - Two Rocks Foreshore Management Plan 2007 (as amended) and SPP 2.6 State Coastal Planning Policy and prepared in consultation with Department of Planning's Coastal Planning Section;

S8. Foreshore setbacks are to comply with State Planning Policy 2.6 State Coastal Planning Policy;

S9. A karst investigation shall be carried out for each LSP area prior to the lodgement of the respective LSP; and

S10. LSPs shall include a Vegetation Management Strategy, which, where appropriate, will include a vegetation survey, fauna survey, fauna habitat survey, highlight the areas of vegetation and habitat to be retained and highlight opportunities for existing vegetation to be retained in the landscape through measures such as local seed provenance and retention in public space.

S11. The Structure Plan is subject to Environmental Conditions. Refer to Schedule 12 of the City of Wanneroo District Planning Scheme No.2.

7.5 Public Realm, Open Space and Coastal Facilities

Objectives

O1. To guide development in response to the natural landscape and preserve significant natural and cultural features where practicable;

O2. To provide for a full range and complement of open space areas catering to diverse community recreational and environmental needs;

O3. To ensure accessible and high quality/amenity walking and cycling networks connect with key destinations and with other transport networks; and

O4. To ensure public spaces are developed to a high quality, are multiple use where practicable, highly accessible to all transport networks, safe, interconnected and integrated with surrounding land uses and the built environment.

Strategies

S1. LSPs shall retain significant landscape features such as ridgelines, dunal formations and valleys either within public open space or with a highly landscape-responsive form of development, or provide suitable justification to the City and/or the WAPC;

S2. LSPs and landscape plans shall enhance the natural landscape character with the use of locally native planting where practicable;

S3. LSPs and/ or Foreshore Management Plans (FMPs) shall provide a continuous foreshore shared path and identify appropriate locations for public beach access and facilities;

S4. LSPs shall provide public spaces with high levels of amenity, usability, safety and surveillance;

S5. LSPs and/ or subsequent detailed design plans/ guidelines shall consider the built environment from the perspective of the public realm and include appropriate provisions to deliver attractive and functional streetscapes;

S6. LSPs shall include an overall Open Space strategy for the provision of regional and district active and passive open space (including beaches and recreational facilities), Social/Pedestrian/Cycle Linkages, neighbourhood and local open space, urban spaces and streets;

S7. LSPs shall provide for co-location, such as schools with public open space, and multiple uses, such as conservation and passive recreation, where practicable; and

S8. The design of the public realm in activity centres shall be generally based around a grid of open streets.

7.6 Urban Structure and Built Environment

Objectives

O1. To create an urban structure comprised of a legible, efficient and accessible network of activity centres connected by mixed use corridors serviced by high frequency public transport, cycle lanes and footpaths.
O2. To provide neighbourhood clusters with walkable mixed use centres that function as the primary structuring component of development;
O3. To ensure a high quality built environment is delivered with diverse and innovative architecture, yet with distinct local identity and sense of place;
O4. To ensure the building form will be capable of adaptation over time to meet changing needs of the community;
O5. To provide for a variety of housing choices to support different needs, lifestyles and affordability thresholds;
O6. To ensure the design of buildings will be responsive to the site context and enhances local character and heritage whilst simultaneously responding to current needs, changes in society and cultural diversity;
O7. To ensure buildings will be responsive to climatic and environmental conditions and will be energy-efficient with reference to both their construction and on-going operation;
O8. To ensure the built environment uses land efficiently and effectively with the appropriate allocation of residential densities, housing types and land uses; and
O9. To ensure integration of land use and transport, including high levels of accessibility and minimisation of travel demand and transport-energy use.

Strategies
S1. LSPs shall allocate residential densities in accordance with the following criteria:
- A minimum average density of 50 dwellings per site hectare within 400m of the strategic metropolitan and secondary centres;
- A minimum average density of 30 dwellings per site hectare within 400m of district activity centres;
- A minimum average density of 25 dwellings per site hectare within 400m of neighbourhood activity centres and along neighbourhood connectors supporting future public transport routes; and
- Appropriate density in other locations in order to deliver housing diversity and maximise accessibility to amenities and services.

S2. LSPs shall include a Local Housing Strategy to deliver housing diversity, which is broadly in accordance with the City's Housing Strategy, 2005 (as amended) and Liveable Neighbourhoods and shall include minimum residential densities, housing typology diversity and strategies to provide an acceptable level of housing affordability;
S3. LSPs shall include or provide for precinct and/or streetscape character and building design guidelines;
S4. LSPs shall ensure that the arrangement of spaces and services within activity centres is safe, convenient and efficient and that the form of buildings is adaptable to changing needs; and
S5. LSPs shall provide mechanisms to ensure buildings are responsive to the climate and landscape and promote resource efficient, affordable and flexible building designs.
S6. LSPs and subdivision shall be designed to be robust and to facilitate intensification over time.

7.7 Transport and Access
Objectives
O1. To ensure that both existing and new communities have convenient public transport access to all activity centres and significant destinations in the Yanchep - Two Rocks area;
O2. To ensure that land use and building form is designed in conjunction with the transport system to ensure efficient operation of the transport network and safe and convenient movement between places or residence and employment, recreation and commercial activity;
O3. To provide for a pattern of development, which is supportive of an efficient transport system, including high frequency public transport, cycling and walking with appropriate movement networks and streetscape design;
O4. To encourage public transport use through high quality, attractive and efficient bus/rail interchanges, frequent services and accessible stops and stations; and
O5. To make connections an essential part of place-making by ensuring all routes respond to their context in terms of safety, amenity and level of service.

Strategies
S1. LSPs shall maximise the convenience, efficiency and usage levels of public transport and discourage park and ride facilities within activity centres by integrating high frequency public transport stops with the higher density and diversity of development located within and adjacent to activity centres;
S2. LSPs shall make provision for cycling and walking networks that are continuous, connected, convenient, attractive and safe, and are linked to key destinations;
S3. LSPs shall, where appropriate, investigate the negotiation of strategic agreements with public transport authorities to gain a commitment on timeframes to extend the Perth northern rail line to the northern Secondary Centre and for the delivery of high frequency feeder routes such as those illustrated in this DSP, so as to provide high frequency public transport services to all activity centres and corridors in a reasonable

timeframe;

S4. LSPs, where appropriate, shall be designed to accommodate future high frequency feeder routes such as those illustrated in this DSP;

S5. Roads within activity centres shall be designed to create a safe pedestrian focused environment that also allows for the efficient movement of vehicles; and

S6 LSP shall ensure a road open space or appropriate land use interface occurs with the above ground railway reserve and sensitive land uses such as residential development to help address noise amenity issues, or provide suitable justification to the City and/or the WAPC.

7.8 Economy, Employment and Activity Centres

Objectives

O1. To ensure the development of a regional economic base which will achieve a target 75% employment self sufficiency within the DSP area and contribute towards an overall self-sufficiency for the North-West Corridor of at least 72%, with a wide spectrum of job types and skill levels, including higher order and knowledge intensive industries and employment;

O2. To provide for a network of vibrant, robust and dynamic activity centres of varying types from regional to local, with a multi-use transit boulevard, containing a high concentration of commercial uses, linking the Strategic Metropolitan Centre and northern Secondary Centre;

O3. To plan for a built environment of a scale, land use mix and intensity to support a diverse regional economic base; and

O4. To ensure provision of the appropriate infrastructure, services and built form guidelines to attract and support a wide spectrum of business.

Strategies

S1. LSPs shall provide regional activity centres and supportive district, neighbourhood activity centres and coastal tourist villages connected with mixed use corridors and employment precincts for industry, commerce, community and education/science/ technology/research, generally as depicted on the DSP Map;

S2. The total and distribution of the retail floorspace allocation for the proposed activity centres identified in the DSP shall be generally in accordance with the indicative floorspace provisions set out at Table i of the DSP. An increase in retail floorspace can be considered in accordance with the State's Planning Policy relating to Activity Centres.

S3. Local and Centre structure plans and/or detailed area plan shall demonstrate how the scale and allocation of retail, commercial, community service and associated floor space will be delivered by:

(a) delivering a robust street network that can accommodate an increase in intensity of built form and use over time; and

(b) providing adaptable building designs capable of multifunctional ground floor use and the provision of additional levels without the need for demolition; and

(c) enabling generational change to occur as a right in certain circumstances without the need for further planning approval.

S4. LSPs shall participate in economic development programs where appropriate to ensure the necessary elements required to develop the economic base are in place such as Strategic Co-operation Agreements, IDEAS Project and government/industry collaborative projects;

S5. LSPs and servicing reports shall provide high capacity telecommunications and a range of commercial sites in order to attract and support the development of competitive businesses;

S6. LSPs shall include provisions to support the development of home-based businesses to provide more flexible employment opportunities;

S7. LSPs shall investigate and where necessary provide for the potential tourism industry opportunities identified in the DSP; and

S8. LSPs to provide an Economic and Employment Strategy that, amongst other things, clearly define the roles and responsibilities in the delivery of employment, and provide a clear process and set of milestones, which can be used as decision making points and performance monitoring for employment development.

7.9 Community Development

Objectives

O1. To facilitate the development of active and healthy communities well connected to each other and the natural environment, and built on distinctive local identity and that offer a broad range of lifestyle choices;

O2. To ensure a full range of community services and facilities are located within or near regional and district activity centres; integrated with surrounding uses; where practicable co-located with other activities to enable shared uses or designed for multiple use; locally accessible; and catering for the diverse needs of the community;

O3. To provide for urban environments that value and support the public realm and encourage public life, community engagement and active lifestyles; and

O4. To facilitate the establishment of healthy lifestyles through the widespread provision of recreational facilities, walk trails, bicycle paths and publicly accessible open space areas.

Strategies

S1. LSPs shall include (or make a requirement to prepare) a Community Development Plan, which should include (but not limited to):

- Development of local residents groups and networking with other residents associations in the region;

- Undertake facilities planning and provide community facilities that service local needs (such as community hall, civic buildings, church) for each activity centre or neighbourhood;
- Activities and services to respond to the needs of diverse age groups;
- A range of options for community enterprises including environmental management, arts, education and local tourism activities;
- Recognition and enhancement of cultural and community characteristics via public and community art; and
- Local community actions to encourage adoption of environmental initiatives;

S2. LSPs shall locate civic, cultural, community and education facilities within or near activity centres and to design these facilities as buildings that are integrated with the surrounding form and land uses in the centre;

S3. LSPs shall provide activity centres that offer suitable spaces for social gatherings and community events of varying types and scales and use social infrastructure as a focal point for community interaction;

S4. LSPs shall provide the following social infrastructure/ services and, where applicable, generally in accordance with the DSP Map:
- A health campus of suitable size to accommodate a hospital and other health services such as specialists and an ambulance service;
- Active recreation playing fields and recreational facilities such as aquatic centres; and
- Primary, secondary and tertiary education sites.

S5. LSPs shall provide land of a sufficient size, configuration and topography to accommodate the variety of educational institutions depicted on the DSP Map and that are highly accessible by a range of transport modes;

S6. LSPs shall facilitate synergies between civic and educational institutions, based on such initiatives as:
- Extended hours activity/ creativity precincts around tertiary institutions;
- Government/ Industry collaborative research initiatives in association with tertiary institutions;
- Co-locating performing arts venues and libraries with secondary or tertiary institutions; and
- Where appropriate, encouraging partnerships that enable joint provision and shared-use of infrastructure and facilities;

S7. Where practicable, developers and/ or local governments shall design civic buildings to accommodate a range of uses to maximise shared usage, accommodate changing community needs and showcase leading practice sustainable building design; and

S8. Where practicable, landscape plans and civic building designs shall incorporate public art that celebrates the environmental and cultural heritage of the site, and demonstrates best practice landscape design.

7.10 Resources, Infrastructure and Services

Objectives

O1. To maximise the efficiency of energy, water and materials use through innovative technology and appropriate management;

O2. To ensure infrastructure is designed with flexibility to cater for a range of future development growth rates and patterns and emerging technologies; and

O3. To ensure development and infrastructure utilises best practice water sensitive urban design including, localised rainwater and stormwater harvesting, localised wastewater treatment and re-use, demand management and infiltration/re-charge at source.

Strategies

S1. LSPs shall include a Local Water Management Strategy that incorporates best practice water sensitive urban design principles consistent with the district water management design objectives and standards contained in this DSP.

S2. LSPs shall explore opportunities and initiatives for energy efficiency, including demand management measures, co-generation and tri-generation systems and the potential for either on-site or off-site generation of renewable energy;

S3. LSPs shall investigate opportunities for effective waste management (reduction, reuse and recycling) in construction and domestic/ commercial consumption through alternative technologies, products and services;

S4. LSPs shall demonstrate how funding arrangements, including the agreed Yanchep – Two Rocks Developer Contribution Plan, are to be implemented in order to provide for the efficient and equitable delivery of infrastructure and services; and

S5. LSPs and servicing plans shall provide for high capacity telecommunications infrastructure to maximise future economic prosperity.

8.0 OPERATION OF STRUCTURE PLAN

LSPs shall be generally consistent with the intent of the DSP and with the general arrangement of land uses and infrastructure as depicted on the DSP Map. If a LSP does not accord with the Objectives and Strategies of the DSP, then the proponent of the LSP shall provide suitable justification to the satisfaction of the City and/or the WAPC.

At the time of lodgement of a LSP, the proponent shall provide supporting information, pertinent to the relevant area detailed on the DSP Map, to demonstrate how the Objectives and Strategies have been addressed and the supporting information utilised to guide and inform the LSP design and associated management strategies.

This information is to include (where relevant) the following documentation, together with associated analysis, which is to be undertaken and presented to the satisfaction of the Council:

- Vegetation Management Strategy;
- Indicative Earthwork and Contour Plan;
- Fauna Management Strategy;
- Local Water Management Strategy;
- Open Space Strategy;
- Karst Investigation and Management Strategy (if required);
- Landscape Concept Plan;
- Traffic Modelling and Movement Network Plan;
- Community Development Strategy;
- Economic and Employment Analysis;
- Economic and Employment Strategy;
- Developer Contribution Plan;

This list is not exhaustive; refer to Schedule 7 of the Scheme.

9.0 STRUCTURE PLAN MAP

The DSP Map outlines the planned pattern of development for the DSP area. All developments should be carried out in accordance with the principles, objectives and strategies detailed in this document and described on the DSP Map.

The land uses shown on the DSP Map are only intended to guide future development and do not correlate to the zones contained in the Scheme. Further details of the intention of the DSP Map and the depicted land uses are included in Part 2 - Explanatory Report.

10.0 MONITORING AND REVIEW OF STRUCTURE PLAN

The City of Wanneroo will analyse the economic and employment data for the DSP area in 2017 and thereafter within 12 months of the release of future Australian Census Data focusing on activity centre and employment land within the DSP area. The City of Wanneroo is to:

(i) monitor and forecast employment trends for the DSP area

(ii) ensure there is positive progress towards achieving the employment self sufficiency and employment density objectives of 51 jobs per hectare for the DSP area

(iii) consider any issues that may affect item (i) and (ii) above, taking into account the progress of the provision of public infrastructure, including road and rail, and whether future initiatives or intervention is required to improve economic development and employment in the area.

The City of Wanneroo's analysis of the economic and employment Centres Data is to be forwarded to the WAPC, along with a resolution by the City either to recommend that a review of the DSP is:

(i) supported; or

(ii) not supported.

Following receipt of the City of Wanneroo's analysis and recommendation as to whether a review of the DSP is required, the WAPC will, following consultation with the City, determine if a review of the DSP is necessary. If a review of the DSP is required by the WAPC, this may result in amendments to the DSP and consequential amendments to the relevant LSPs.

Any decision of the WAPC to require amendments to the DSP and consequential amendments to the relevant local structure plans in accordance with this clause will give rise to a right of review to SAT under clause 9.12.3 of the TPS.

Table i Indicative Breakdown of Activity Centres

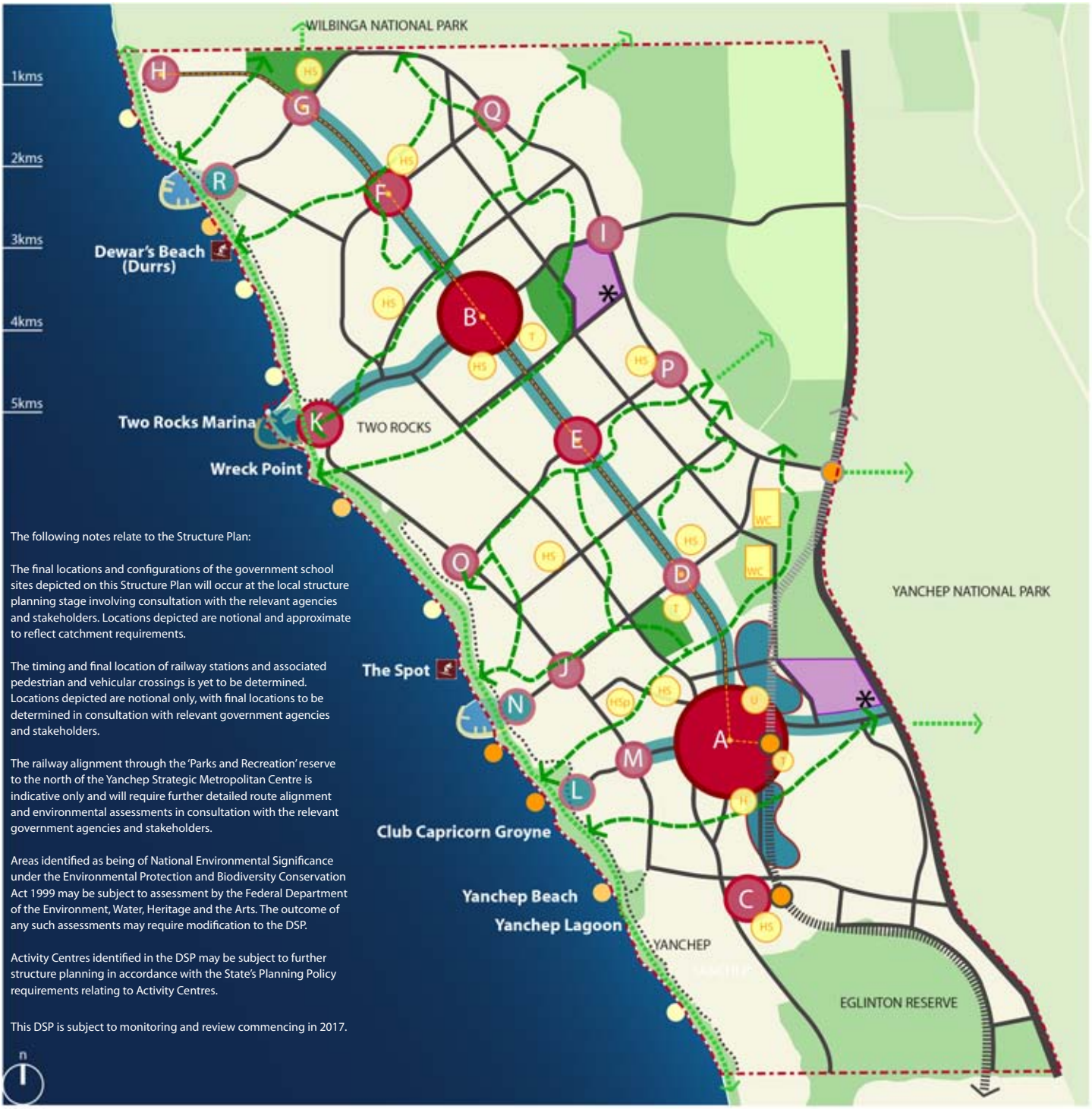
Activity Centre	Type	PLUC 5 Indicative Retail Floorspace (m^2 nla)	Indicative Total Floorspace (m^2 nla)	Indicative Employment (jobs)
A	Strategic Metropolitan Centre	71,800	458 867	15 001
B	Secondary Centre	43,700	130 592	4 139
C	District	11,700	24 177	871
D	Neighbourhood	7,200	14 103	517
E	District	9,400	18 133	669
F	District	9,900	18 133	681
G	Neighbourhood	7,500	14 470	534
H	Neighbourhood	3,700	10 537	306
I	Neighbourhood	5,600	10 440	390
J	Neighbourhood	5,900	11 173	415
K	District	10,900	26 651	957
L	Coastal	1,600	27 241	460
M	Neighbourhood	4,700	17 098	484
N	Coastal	1,600	3 741	136
O	Neighbourhood	1,900	15 230	293
P	Neighbourhood	1,000	2338	85
Q	Neighbourhood	2,100	4909	179
R	Coastal	2,100	8669	231
Total		202,300	816 502	26 347
Other	Neighbourhood/ Local	30,600		

Note:

Location, number and size of 'Other' centres to be determined through Local Structure Plans.

Coastal Centre floorspace shown is supportable by residents and local visitors - additional floorspace may be supportable by tourist activity

PLAN 1 - YANCHEP - TWO ROCKS DISTRICT STRUCTURE PLAN MAP



The following notes relate to the Structure Plan:

The final locations and configurations of the government school sites depicted on this Structure Plan will occur at the local structure planning stage involving consultation with the relevant agencies and stakeholders. Locations depicted are notional and approximate to reflect catchment requirements.

The timing and final location of railway stations and associated pedestrian and vehicular crossings is yet to be determined. Locations depicted are notional only, with final locations to be determined in consultation with relevant government agencies and stakeholders.

The railway alignment through the 'Parks and Recreation' reserve to the north of the Yanchep Strategic Metropolitan Centre is indicative only and will require further detailed route alignment and environmental assessments in consultation with the relevant government agencies and stakeholders.

Areas identified as being of National Environmental Significance under the Environmental Protection and Biodiversity Conservation Act 1999 may be subject to assessment by the Federal Department of the Environment, Water, Heritage and the Arts. The outcome of any such assessments may require modification to the DSP.

Activity Centres identified in the DSP may be subject to further structure planning in accordance with the State's Planning Policy requirements relating to Activity Centres.

This DSP is subject to monitoring and review commencing in 2017.

STRUCTURE PLAN BOUNDARY

LAND USE

- RESIDENTIAL
- RURAL RESIDENTIAL
- MIXED USE
- MIXED USE/ EMPLOYMENT
- INDUSTRIAL
- RURAL (EXTERNAL TO SITE)
- REGIONAL OPEN SPACE
- PARKS AND RECREATION
- OPEN SPACE (EXTERNAL TO SITE)
- PUBLIC PURPOSE
  - U UNIVERSITY
  - T TERTIARY INSTITUTION
  - HS HIGH SCHOOL
  - HSp PRIVATE HIGH SCHOOL
  - H HOSPITAL
  - WC WATER CORP

DEVELOPMENT NODES

- SECONDARY CENTRE
- STRATEGIC METROPOLITAN CENTRE
- DISTRICT CENTRE
- NEIGHBOURHOOD CENTRE
- COASTAL TOURIST ACTIVITY CENTRE
- DISTRICT/POTENTIAL FUTURE REGIONAL BEACH
- DISTRICT BEACH
- LOCAL BEACH
- SURF BREAK
- POSSIBLE FUTURE MARINA
- EXISTING MARINA
- NOTIONAL ZONE SUB-STATIONS

MOVEMENT NETWORKS

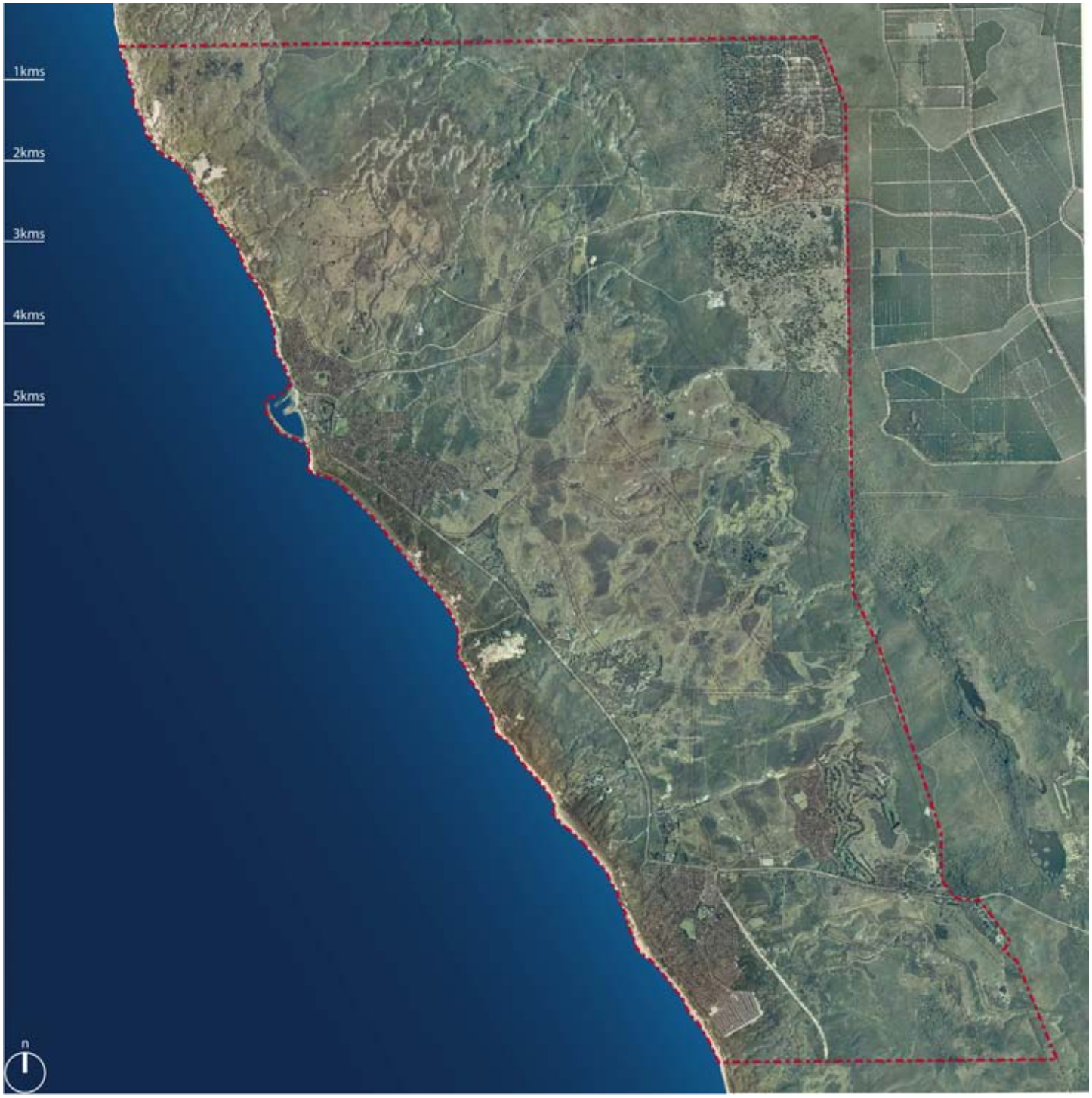
- RAIL (WITH TRANSIT STATION)
- INDICATIVE RAIL (WITH TRANSIT STATION)
- SECONDARY TRANSIT SYSTEM (LIGHT RAIL/BUS)
- PRIMARY ROADS
- SECONDARY ROADS
- COASTAL ROAD
- SOCIAL/ PEDESTRIAN/ CYCLE LINKAGES
- PEDESTRIAN CONNECTIONS

PART TWO:
EXPLANATORY TEXT

01 STRATEGIC PLANNING CONTEXT

01 STRATEGIC PLANNING CONTEXT

FIGURE 5 AERIAL PHOTOGRAPH



01 STRATEGIC PLANNING CONTEXT

1.1 REGIONAL CHARACTERISTICS

The Yanchep-Two Rocks District Structure Plan (DSP) encompasses the northern extent of the rapidly growing North West Corridor of the Perth Metropolitan Region and is located approximately 60 kilometres from the Perth Central Business District (CBD).

The area incorporates approximately 7,550 hectares of land and is generally bounded by the Indian Ocean to the west, private rural landholdings and Yanchep National Park to the east, Wilbinga Reserve to the north and Eglinton Reserve to the south. Further south of the site are the developing communities of Eglinton, Alkimos and Jindalee and to the north, the rural coastal communities of Guilderton and Seabird.

The undeveloped character of the area as seen in the aerial photograph of the site, clearly articulates the scale and complexity of the DSP area.

01) **Coastal Environs**: The most notable feature of the Yanchep-Two Rocks area is the coastline adjacent to the Indian Ocean. There is a wide variety of coastal environments along the 16kms of coastline including sandy, flat beaches, rugged coastal bluffs, off-shore reefs, swimming and surfing areas, and urbanized marinas.

02) **Urbanised Areas**: The existing communities of Two Rocks and Yanchep are clearly visible. These communities consist of predominantly single family detached homes with limited commercial and community facilities. The foreshore area, reserved under the MRS for Parks and Recreation, has been protected from development. There is a resort development at Club Capricorn located northwest of Yanchep, the Sun City golf course estate and the Sea Trees rural residential estate.

03) **Ridge Lines and Significant Topography**: The shadows visible on the aerial photograph indicate the undulating nature of the site's topography. There are a number of dramatic ridge lines that run east west, in some cases from the coastal dunes through to the eastern edge of the property. There are also significant hills and promontories scattered throughout the site that offer spectacular coastal and inland views.

04) **Varied Landscape**: The varied landscape character of the site includes natural coastal heath typical of the dunal systems, dense areas where trees have been replanted and barren areas denuded of most vegetation.

05) **Regional Open Space**: Land currently protected through regional reservations includes Yanchep National Park extending east from the site as an uninterrupted swathe of green. The coastal scrub and bluff ecology is a notable contrast to the evenly forested plains of the National Park.

Graph 1 Growth Trends

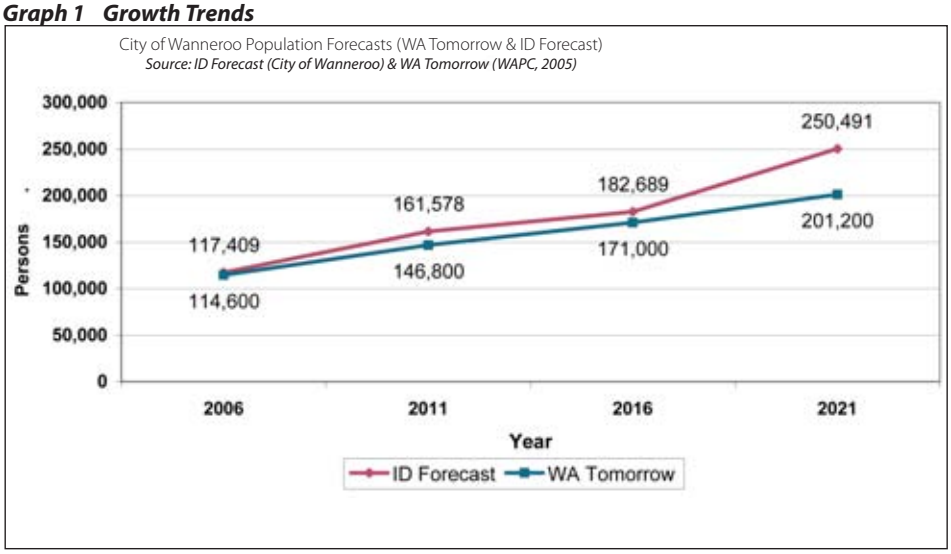


Table 2 Yanchep - Two Rocks Population Projections

Population Projections (ID Forecast)	2001	2006	2011	2016	2021
Yanchep - Two Rocks	3 798	4 485	7 099	12 289	21 563
Alkimos-Eglington	20	24	4 254	16 044	34 820
Butler/Jindalee/Quinns Rock/Merriwa/Ridgewood/Clarkson/Mindarie/Tamala Pk	22 662	35 777	49 602	60 591	64 611
City of Wanneroo North	22 682	35 801	53 836	76 635	99 439
Remainder of City	61 450	81 608	107 722	106 654	151 052
City of Wanneroo Total	84 132	117 409	161 578	182 689	250 491

Source: City of Wanneroo Population Projections (ID Forecast)

1.2 POPULATION GROWTH

The Yanchep-Two Rocks development is being undertaken at a time of rapid population growth in the City of Wanneroo. Medium term population projections for the City have been prepared by the WAPC (WA Tomorrow 2005) and in detail by the City of Wanneroo (ID Forecast October 2006).

While Graph 1 - Growth Trends shows a substantial difference between the population forecasts for the City of Wanneroo using ID Forecast and WA Tomorrow projections, each shows a rapid population increase. By 2021 there is almost a 25% difference between the two forecasts and recent land take-up in the City indicates that a population figure in between these two projections is likely to be reached. In either analysis, the forecast growth in the City is substantial, with the population close to doubling its size within the 15 year period from 2006 to 2021.

Population Projections

ID Forecast projects that by 2021 Yanchep - Two Rocks will comprise 8.6% of the overall population of the City of Wanneroo. As Yanchep - Two Rocks continues to develop rapidly, along with the Alkimos-Eglinton development to the south, the contribution of other areas in meeting housing demand in the City is expected to slow and level out.

Housing

It is projected by ID Forecast that the rate of development at Yanchep - Two Rocks and Alkimos-Eglinton will be dependent upon the progress of other developments to the south. Between 2016 and 2021, it is predicted that Yanchep - Two Rocks will provide housing for 29% of the growth in the North West corridor City, with Alkimos-Eglinton expected to provide 58% growth. The remaining North West suburbs are expected to provide only 13% of housing growth. Yanchep - Two Rocks is expected to house the majority of the North West corridor population growth after Alkimos Eglinton is fully developed around 2031. It is forecast that Yanchep - Two Rocks will be fully developed by around 2058.

Between 2001 and 2005 an average rate of 2,820 new dwellings per year were approved for construction in the City of Wanneroo. Based on the forecast average household size of 2.74 persons per new household, these additional dwellings would equate to an additional 30,900 persons in the City of Wanneroo between 2001 and 2005, or approximately 7,700 new residents per annum.

However, ABS estimated residential population in 2005 was 107,317 persons, or an increase of approximately 27,300 since the 2001 Census, equating to an average of 6,827 per annum. This suggests that recent new development in the City may have reduced household size to approximately 2.42 persons per new household.

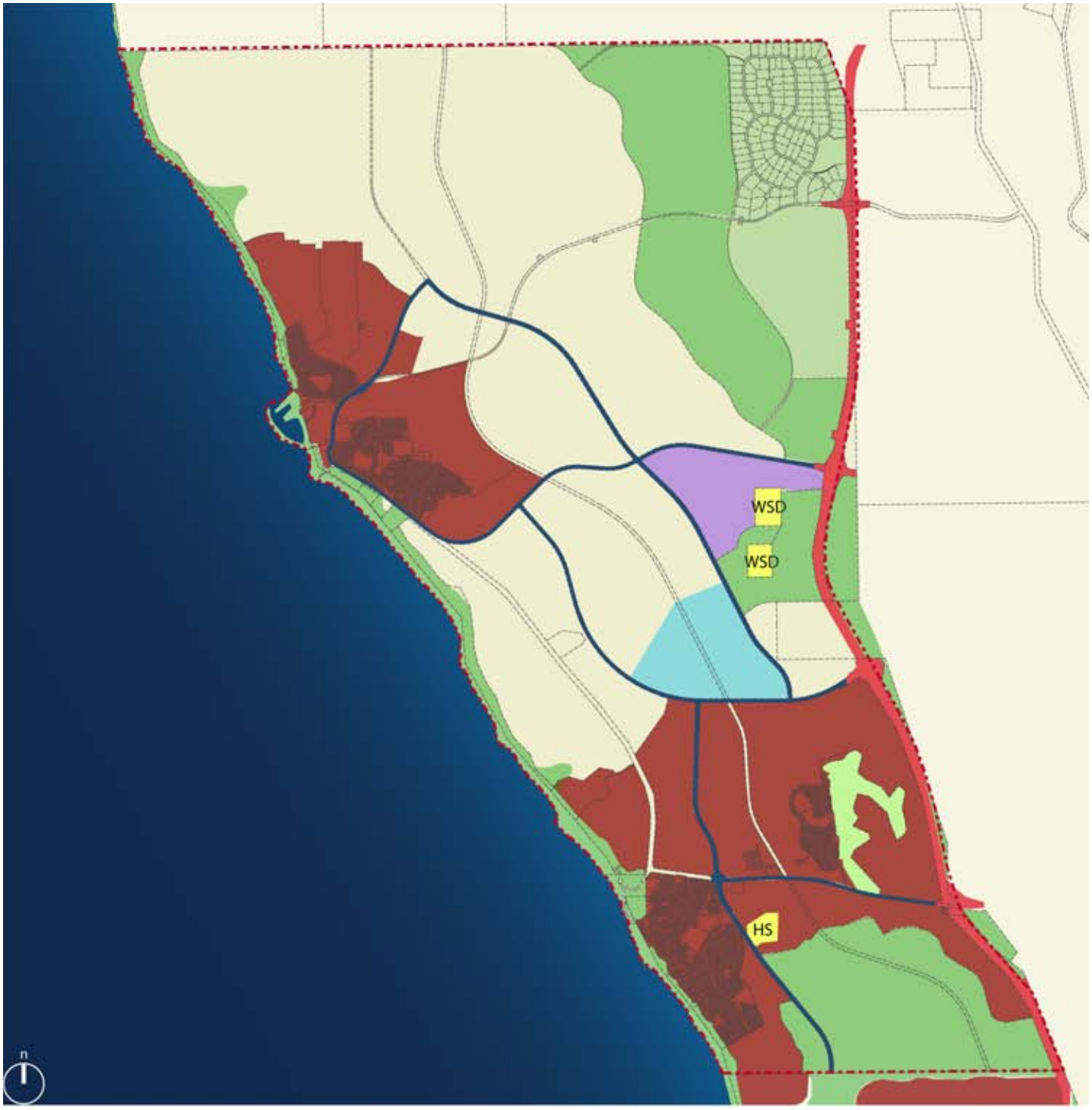
The urban form articulated in the Yanchep - Two Rocks DSP, coupled with future changes in demography, is likely to support a long-term household size equivalent to that projected for metropolitan Perth. This was approximately 2.4 persons per dwelling in 2001 and trending lower. Therefore, for planning purposes, the long-term persons per household ratio for the Yanchep - Two Rocks DSP is expected to be approximately 2.3 persons. This figure is lower than the current persons per household ratio reflecting that there is always a proportion of unoccupied dwellings at any point in time.

Summary

- The population of the City of Wanneroo is forecast to nearly double over the next 15 years.
- By 2021, it is predicted that Yanchep-Two Rocks will provide housing for almost one third of the growth in the North West corridor. However, after this time and once Alkimos-Eglinton is fully developed, Yanchep-Two Rocks is expected to accommodate the majority of North West corridor population growth.
- For planning purposes, the long term persons per dwelling ratio for Yanchep-Two Rocks is expected to be approximately 2.3 persons.
- It is forecast that Yanchep-Two Rocks will be fully developed by around 2058, accommodating a residential population of approximately 155,000 persons.

01 STRATEGIC PLANNING CONTEXT

FIGURE 6 METROPOLITAN REGION SCHEME

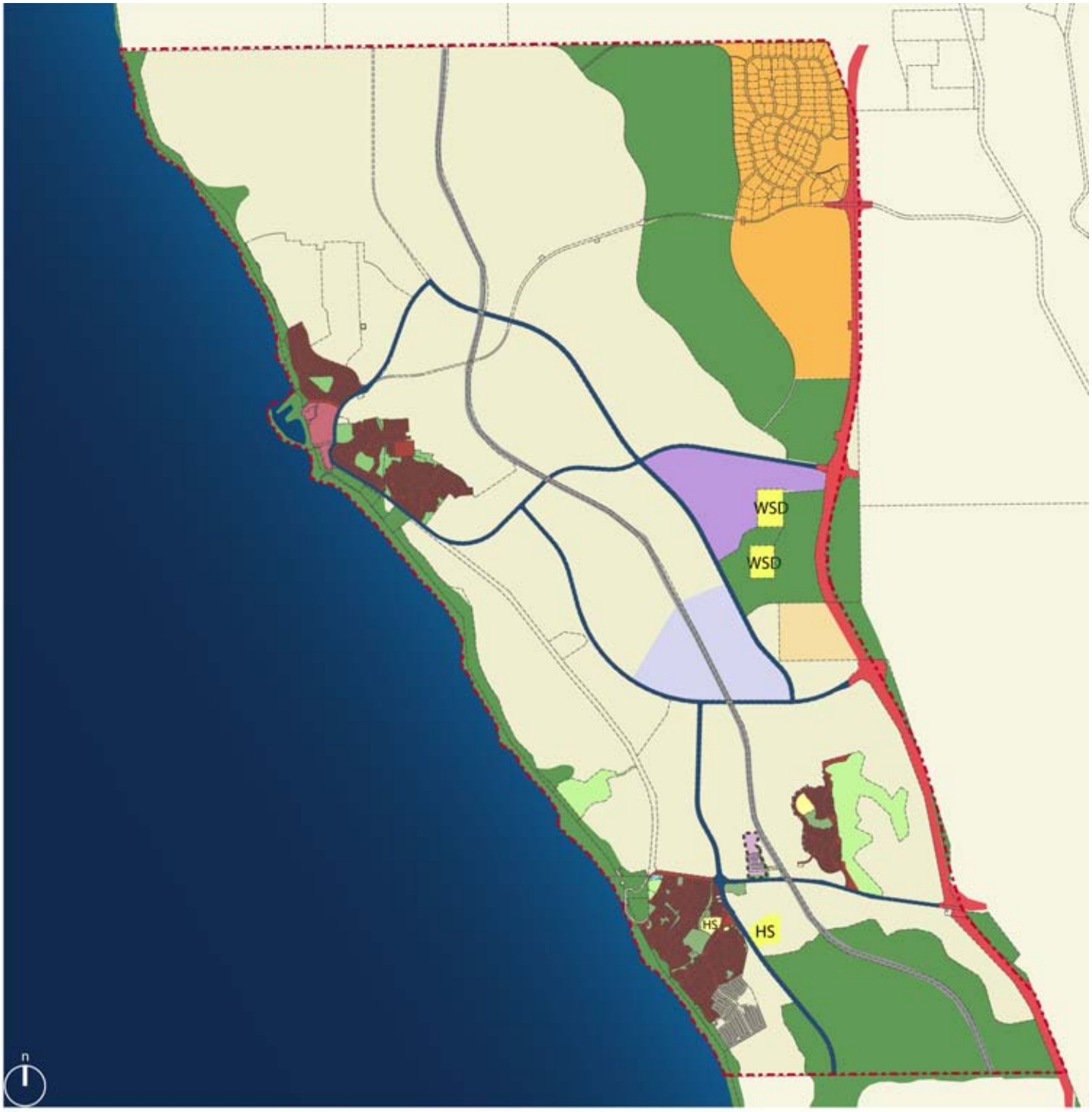


1.3 ZONING

Metropolitan Region Scheme

The Metropolitan Region Scheme (MRS) zoning of the site was gazetted in 1996 through the Yanchep-Two Rocks (St Andrews) MRS Amendment 975/33 and reflects the outcomes of the North West Corridor Structure Plan published in 1992 by the WAPC.

FIGURE 7 CITY OF WANNEROO DISTRICT PLANNING SCHEME NO. 2



01 STRATEGIC PLANNING CONTEXT

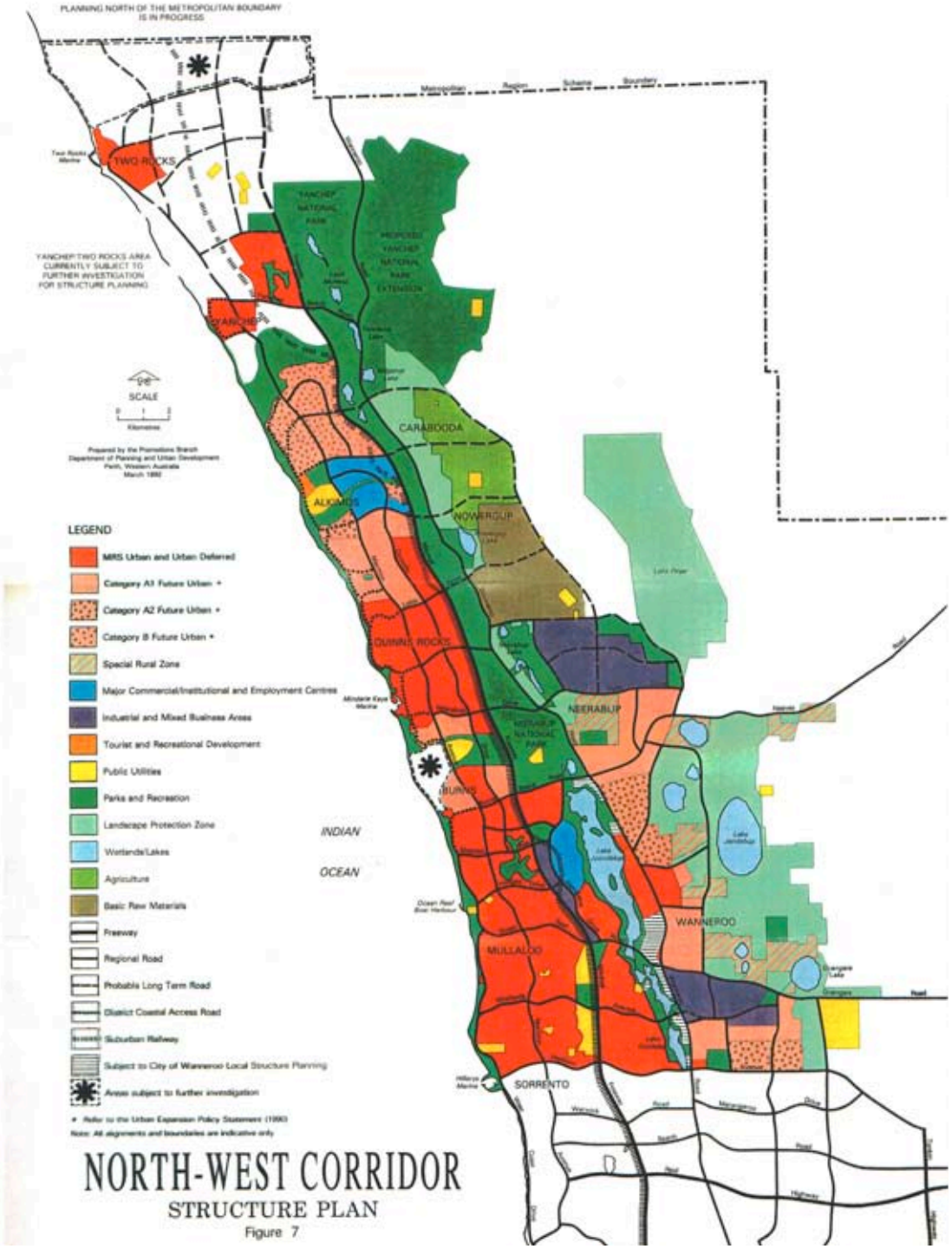
City of Wanneroo District Planning Scheme 2
The majority of land in the DSP area was zoned Urban Development via Amendment No. 787 of the City of Wanneroo DPS No. 2 (DPS2) and is consistent with the broader land use zoning and reservation designations of the MRS. DPS2 requires the preparation and adoption of Structure Plans as a precondition to subdivision and development of the site.

Amendment No. 787 required the preparation of an Environmental Review (ER) under Section 48 of the Environmental Protection Act 1986. The ER addressed the potential environmental impacts of the rezoning and identified appropriate management measures to be implemented at various stages of the planning process. Amendment 787 and the ER were formally assessed by the Environmental Protection Authority, which recommended that the rezoning be gazetted subject to a number of environmental conditions. Each of these requirements are addressed in the environmental assessment report (Table 1) submitted under Part 3 of the DSP.

The special rural subdivision in the north-eastern corner of the project area was separately rezoned to Special Rural as part of Amendment No. 837, and was the subject of a separate ER.

01 STRATEGIC PLANNING CONTEXT

FIGURE 8 NORTH WEST CORRIDOR STRUCTURE PLAN (WAPC 1992)



1.4 STRUCTURE PLANS AND POLICIES

Structure Plans

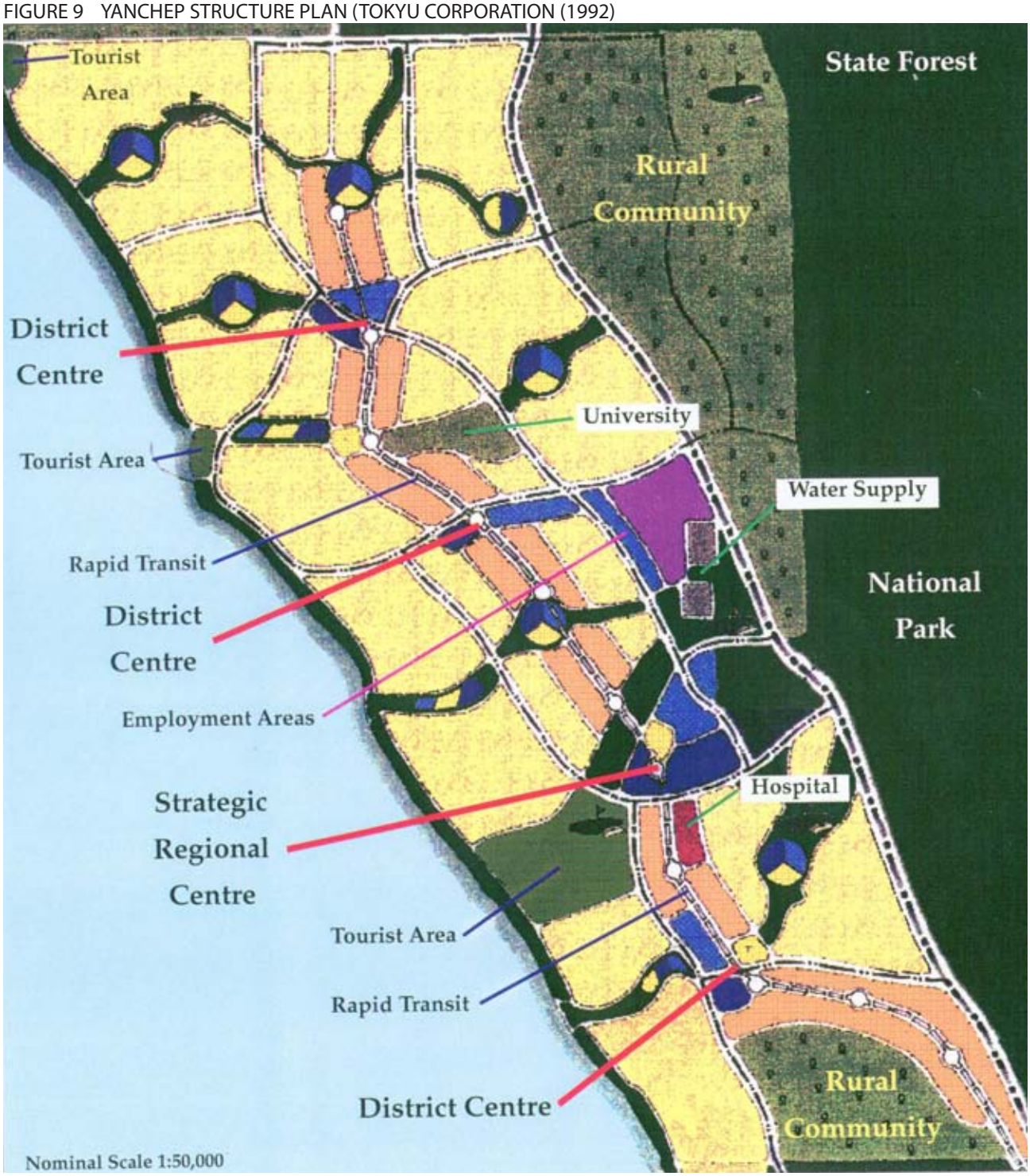
North West Corridor Structure Plan (WAPC 1992)

The North West Corridor Structure Plan (NWCSP) provides the regional strategic planning framework for the development of the North West corridor. The framework materialised from METROPLAN and the Urban Expansion Policy.

The Yanchep-Two Rocks area was excluded from the overall Structure Plan at the request of Tokyu Corporation who commissioned Feilman Planning Consultants to prepare a separate study, and consequently the Yanchep Structure Plan was completed in 1993 and included as an addendum to the NWCSP.

It has been recognised that the NWCSP has not delivered the key economic, environmental and social outcomes, especially relating to local employment generation, environmental sustainability and access to services and infrastructure. As such, a review of the NWCSP within the context of Network City objectives was commenced in 2006 by the State Government. A revised document is expected for public comment in 2009.

FIGURE 9 YANCHEP STRUCTURE PLAN (TOKYU CORPORATION (1992)



Yanchep Structure Plan (Tokyu Corporation 1992)
The Yanchep Structure Plan (YSP) was prepared in response to the draft NWCSP andreleased for comment in 1991. It was subsequently incorporated as an addendum to the NWCSP.

The YSP process was largely influenced by detailed landscape analysis of the area which resulted in a series of plans showing slope characteristics, views, landform, coastal features, groundwater, vegetation quality and opportunities and constraints for conservation and development. This work subsequently had a significant effect on the location of major land uses and transport routes. Detailed information was also compiled for the demographics, infrastructure, servicing and traffic. Based on this information, the YSP was developed with the philosophy of creating a series of urban villages connected by rapid transit and greenway and open space links.

Whilst the YSP was based on sound planning principles, much of the base information required updating. In addition, the design required revision to ensure it was appropriate and responsive in the context of the present and future demographics, economic environment and employment trends for the North-West corridor.

Strategies and Policies
State Sustainability Strategy (Government of Western Australia, 2003)
The State Sustainability Strategy provides a holistic overarching framework for the State Government to operate responsibly. The Strategy identifies the following six broad goals with forty-two strategy areas intended to fulfil these goals and to guide Government action towards achieving its vision for a sustainable Western Australia:

- Sustainability and governance
- Contributing to global sustainability
- Sustainable natural resource management
- Sustainability and settlements
- Sustainability and community
- Sustainability and business

The policy objectives of the State Sustainability Strategy are incorporated into the planning system through State and Local Government policy and formally applied through planning decisions. The principles of sustainability – economic, environmental and social - are fundamental to the planning of Yanchep-Two Rocks and are embodied throughout this DSP, rather than isolated in a seperate section.

State Planning Strategy (Western Australian Planning Commission, 1997)
The State Planning Strategy was prepared by the WAPC as a whole of Government approach to guide sustainable land use planning throughout the State to 2029. The Strategy is aimed at developing a land use planning system to help the State achieve a number of key goals. These include generating wealth, conserving and enhancing the environment and building vibrant and safe communities for the enjoyment of this and subsequent generations of Western Australians. The Strategy was last audited in 2000-2001. The planning that has occurred for Yanchep-Two Rocks, including the content of the DSP, is consistent with the goals and objectives of the State Planning Strategy.

Network City (Western Australian Planning Commission, 2004)
Network City is a broad metropolitan planning strategy for the Perth and Peel region. The vision is that by 2030, the people of Perth will have created a world-class, sustainable city that is vibrant, more compact and accessible and that offers a unique sense of place. A key objective of the Strategy is to consolidate residential development in existing areas and to direct urban expansion into the designated growth areas, which are, or will be, well serviced by employment and public transport.

The Strategy is guided by a series of key headline goals:

- Spatial plan and strategy - Strategies to manage growth, contain sprawl and foster land use and transport integration;
- Governance and process - Recommends a whole of Government approach, partnerships between the Local and State Government, engagement with community and monitoring of Network City for accountability;

- Planning for a liveable city - Promotes community engagement, housing diversity, revitalised centres and mixed use development;
- Economy and employment - Strategies to encourage economic development strategy, employment within well located activity centres and timely provision of land for employment generating land uses;
- Environment and heritage - Promote planning decisions that are focussed on sustainability considerations, with particular regard to biodiversity, protection of water resources, heritage conservation and integrated environmental corridors and linkages;
- Transport - Encourage integrated land use and transport, give greater priority to public transport, cycling and walking and cater for freight movements within dedicated transport corridors; and
- Infrastructure coordination - Achieve timely and efficient provision of state-of-the art infrastructure.

Network City sets our a desired spatial framework for urban development that is "diagrammatic" and indicates an urban structure based on a network of commercial and civic hubs (activity centres), joined by transport networks

Network City dates from 2004 and therefore its recommendations for the North West Corridor are based on the MRS zonings and forward planning that was progressed at that time. Network City accordingly shows three activity centres within the Yanchep-Two Rocks DSP area and an activity corridor that links these centres. The DSP embraces Network City principles by providing activity centres linked by a mixed use activity corridor serviced by public transport. The location and number of activities centres proposed in the DSP have been refined through detailed environmental, planning, economic and social planning during the preparation of this DSP.

The DSP presents the opportunity to systematically address the issues identified in Network City and to deliver benefits to the North West corridor in the long term.

Liveable Neighbourhoods - Edition 3 (WAPC, 2004)

Liveable Neighbourhoods Edition 3 (LN 3) was prepared by the WAPC to implement the objectives of the State Planning Strategy and deliver the strategies and actions of Network City. LN guides the design and assessment of structure plans (regional, district and local), subdivision and development for new urban areas. Its aims include promoting the design of walkable neighbourhoods; places that offer community and a sense of place; mixed uses and active streets; accessible and sustainable parks; energy efficient design; and a variety of lot sizes and housing types.

The key initiatives of LN 3 are covered under eight design Elements. The implementation of each of these elements and the fulfilment of the overall principles of LN will be fundamental to ensuring that development of Yanchep-Two Rocks occurs in a thoughtful and sustainable manner. Application of the LN principles is therefore relevant to all levels of planning at Yanchep-Two Rocks, from the broad district structure planning through to detailed lot and building design.

Statements of Planning Policy

Development of land must generally be consistent with any relevant Statements of Planning Policy (SPP) prepared and adopted by the WAPC under Section 5AA of the Town Planning and Development Act 1928. The WAPC and local governments must have due regard to the provisions of SPPs when preparing or amending regional and district planning schemes and when making decisions on planning matters. Details of the SPPs relevant to Yanchep-Two Rocks are provided below.

SPP 1 State Planning Framework

SPP1 unites existing State and regional policies, strategies and statements with a central framework to provide a context for decision making on land use planning and development matters in Western Australia.

The Yanchep-Two Rocks project is consistent with the primary aim of this overarching policy, which can be surmised as "…to provide for the sustainable use and development of land."

The WAPC and local government will refer to the relevant planning instruments referred to under SPP1 for all planning decisions, including those concerning the DSP and subsequent planning proposals presented for Yanchep-Two Rocks.

Draft SPP Network City (WAPC, 2006)

The objective of this Policy is to give statutory planning powers to the Network City Strategy and to set out the ways the strategy is to be applied by the WAPC In its decision-making. The Policy confirms that Network City is not simply a 'masterplan' that is to be carried out, but instead a foundation for active policy and plan making.

Consistent with the Draft SPP, the DSP has been developed within the context of Network City and therefore reflects its broad principles for sustainable urban development.

SPP2 Environment and Natural Resources Policy

SPP2 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 Yanchep-Two Rocks include those relating to water resource management, air quality, soil and land quality, biodiversity, marine resources, landscapes and greenhouse gas emissions and energy efficiency.

SPP2 is supplemented by more detailed planning policies, which provide specific guidelines for development and protection of the environment and resources, including *SPP2.6 Coastal Planning Policy*, which is discussed below and has particular relevance to Yanchep-Two Rocks.

01 STRATEGIC PLANNING CONTEXT

SPP 2.6 State Coastal Planning Policy
SPP 2.6 sits under the draft Coastal Zone Management Policy for Western Australia (2001), which identifies coastal threats and pressures and provides a whole-of-government framework for establishing strategies and plans for the coast. SPP 2.6 applies to all planning proposals from broad structure planning through to detailed development proposals.

The policy requires the following measures in relation to planning for future development adjacent to the Yanchep-Two Rocks coastline:

Coastal Foreshore Reserve – The policy requires that coastal land be set aside for public ownership for conservation, management, public access and recreation. The 1996 MRS Amendment over the Yanchep-Two Rocks landholding involved reserving coastal foreshore land as Parks and Recreation Reserve and the ceding of this land free of cost by Tokyu Corporation to the Crown. The width of the reserve was determined with regard to environmental considerations and the location of existing development and improvements.

Coastal Strategies and Management Plans – SPP 2.6 requires that at the appropriate time, coastal Foreshore Management Plans or strategies be prepared and implemented for the reserved land and any abutting freehold land with conservation value. These plans will be prepared as part of the local structure planning process.

Physical Processes Setback – To avoid risk of damage from coastal processes, SPP 2.6 requires that setbacks to buildings and infrastructure on the coast be determined using the guidelines contained within the policy. Coastal engineers MP Rogers and Associates has conducted a preliminary assessment to determine conservative physical processes setbacks for the coastline. The setbacks calculated for the Yanchep-Two Rocks shoreline range from 48 to 186 metres and are shown in Figure 17. It is proposed for these setbacks to be revisited and refined through at local structure planning and where necessary, for specific development proposals.

SPP2.8 Bushland Policy for the Perth Metropolitan Region
SPP 2.8 was prepared to give a 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. The document outlines a framework for implementation as well as individual recommendations for each of the 287 individual Bush Forever Sites identified.

The five Bush Forever sites listed below are located within or adjacent to the Yanchep-Two Rocks DSP area. These areas are reserved in the MRS and are owned either by the State Government, the Crown or privately.

#406 Wilbinga Caraban Bushland – This site is located directly to the north of the study area and is currently State Forest but is proposed as a Conservation 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.

#284 South-West Link from Wilbinga to Yanchep National Park - Bush Forever Site 284 is located in the north-eastern portion of the study area and provides a link from Bush Forever Site 406 Wilbinga Caraban Bushland through to Bush Forever Site 288 Yanchep National Park and Adjacent Bushland. The Site is reserved for Parks and Recreation in the MRS and is proposed for inclusion in Yanchep National Park.

#288 Yanchep National Park and Adjacent Bushland – This site is reserved for Parks and Recreation in the MRS and straddles the eastern boundary of the Study Area. The majority of the site, however, is separated from the Study Area by the future Mitchell Freeway alignment.

#289 Ningana Bushland, Yanchep/Eglinton - The 'Ningana' Regional Open Space provides an ecological corridor between the coast at Eglinton and Yanchep National Park.

The Yanchep-Two Rocks DSP allows for the ongoing conservation and management of each of these areas. The design also proposes to enhance these areas through a complementary open space system incorporating a series of social/ pedestrian/ cycle linkages that provide linkages between the Bush Forever areas. The interface treatments applied to the Bush Forever areas will also be complementary and will be defined at the local structure planning stage.

SPP3 Urban Growth and Settlement
SPP3 applies to the whole of the State in promoting sustainable and well planned settlement patterns that have regard to community needs and are responsive to environmental conditions. The objectives and principles of Network City and Liveable Neighbourhoods are enshrined in this Policy.

SPP3 recognises that much 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 costs in 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.

01 STRATEGIC PLANNING CONTEXT

To promote growth that is sustainable, equitable and liveable, SPP 3 encourages a more consolidated urban form. In general terms the proposals for Yanchep-Two Rocks are consistent with the high level principles of SPP3. The Yanchep-Two Rocks DSP will facilitate:

- 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, light 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.

City of Wanneroo Policies

Smart Growth

The City's Smart Growth Strategy (SGS) recognises that its population will continue to grow as a result of natural population growth, immigration, regional population shifts and people's desires to live within the City. This growth needs to be managed by balancing economic, environmental and social principles. Smart Growth sets out to achieve this through the following principles.

- Lifestyle and housing choice - provision of a variety of housing types and enhanced of 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.

These principles have guided the preparation of the Yanchep-Two Rocks DSP. The Smart Growth assessment of the DSP has been completed and a summary of the assessment is inlcuded in Section 9.

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 a new activity needs to be determined prior to development. The environmental assessment undertaken by ATA Environmental and submitted under Part 3 demonstrates that the DSP can be accommodated without compromising the environmental and conservation values attributed to the area.

Economic Development Strategy (City of Wanneroo, 2004)

The City of Wanneroo's primary economic goal is to decrease the amount of people having to travel outside of the region to access suitable employment opportunities. Achievement towards this goal is assisted through implementation of the City's Economic Development Strategy.

The Strategy is designed to build upon the project initiatives already in place to introduce new initiatives in line with the 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 Strategy are:

- 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 objectives and initiatives contained within the Yanchep-Two Rocks IDEAS project are consistent with this Strategy and the DSP contains the various elements required to implement the economic and employment objectives of this project. The DSP provides for the necessary infrastructure and identifies appropriate areas for employment creation, including employment nodes, mixed use corridors, multi-functional activity centres, industrial areas, sites for learning and an urban fabric that is conducive to home-based business.

Employment Policy (City of Wanneroo, 2003)

The City of Wanneroo's Employment Policy is designed to encourage and retain local employment within the City and ultimately the North West corridor. The policy is driven by the City's low employment self-containment, which has resulted in many 'dormitory suburbs'.

The Policy contains a schedule of strategies at district, local and subdivision level to indicate the type and scale of initiatives expected for development of various scales.

The City's Smart Growth Assessment Tool sets an employment self-sufficiency target of 40% at the DSP level. It is projected that Yanchep-Two Rocks will achieve 75% employment self-sufficiency.

Tourism Strategy (City of Wanneroo, 2004)
The Tourism Strategy sets six objectives to grow tourism industries within the City:

- Development of new and existing tourism products;
- Provide a broader visitor experience;
- Increase year round appeal;
- Develop higher yield markets;
- Establish tourism as a major industry of the region; and
- Encourage industry participation in development of tourism.

The urban structure of the Yanchep-Two Rocks DSP, incorporating Coastal Tourist Activity Centres, accessible transport services and infrastructure and an integrated network of parkways, significant opportunities to cater for tourism.

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 combined with an emerging and significant shift in demographic and household profiles will represent a significant challenge for the provision of appropriate housing. Separate dwellings currently make up 90% of the City's dwellings, resulting in a relatively low dwelling density per site hectare. It is recognised that this form of development is not reflective of how growth needs to continue if the future housing demand within the City is to be met in a sustainable manner.

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 and are as follows:

House Types
- Separate House: 76%
- Semi Detached, row/terrace, townhouse etc: 14%
- Flat/ units/ apartment /other: 10%

Densities
- Standard: 10 dw/site ha
- Within 400m of a Coastal Tourist Activity Centre or Neighbourhood Centre: 20 dw/site ha
- Within 800m train station, bus station, Town Centre: 25 dw/site ha
- Rural: 0.5 dw/site ha

The DSP provides density targets that exceed these standards and require the preparation of LHS as part of subsequent LSPs.

Draft Activity Centres Strategy (City of Wanneroo, August 2008)
With a vision for a vibrant, diverse and sustainable network of mixed use activity centres, the Strategy demonstrates a shift in emphasis from exclusive retail floorspace control towards the development of balanced centres with a range of functions.

The Strategy is structured on a foundation of sustainability principles, key objectives and strategies. It provides roles and criteria for each centre type, with retail floorspace figures provided as a guide rather than as strict caps, and sets out requirements for detailed modelling at structure plan stage. The Strategy also addresses density within proximity of centres, public transport linkages and urban design aspects necessary to develop sustainable centres.

The Strategy secifically recognises the strategic regional, district and coastal tourist villages depicted in the DSP and acknowledges that a range of neighbourhood and local centres will develop in the DSP area.

The principles, objectives and strategies contained in this DSP, and particularly the floorspace and urban design guidance provided for the activity centres, are consistent with the City's Draft Activity Centres Strategy.

Previous Reports and Studies
Yanchep-Two Rocks DCP
The DSP reflects the Yanchep-Two Rocks District Concept Plan (DCP) prepared in 2005. The DCP was supported by the City of Wanneroo in January 2006 as an appropriate basis for the preparation of the DSP following detailed assessment and comments from the Department for Planning and Infrastructure and other relevant government agencies. In November 2006, the DCP was also noted by the WAPC.

The DCP emerged from the Memorandum of Understanding (MOU) between Tokyu Corporation and the City of Wanneroo. The purpose of the DCP was to test and gain agreement on a series of planning assumptions about the future development of the district, including settlement patterns and transport networks. It was acknowledged that the DCP would lead directly to the preparation of the DSP and amendments to the MRS.

The DSP design is broadly based on the DCP, and includes the incorporation of mixed use activity centres, walkable residential neighbourhoods, a mixed use transit corridor, district employment areas and integration with the existing communities of Two Rocks and Yanchep. Where appropriate, the DSP has been modified, in response to comments received from the City of Wanneroo and relevant Stage Government agencies on the DCP.

Transport Studies
There has been a number of transport studies for the Yanchep-Two Rocks region, dating back to the early 1990s. Following the signing of the Strategic Co-operation Agreement in 1999, an Enquiry by Design Workshop was held in 2002 that embraced contemporary transport and land use integration principles and the urban design philosophy embraced by LN. The transport studies that ensued were based on these principles.

Yanchep-Two Rocks Transport Planning Study (Sinclair Knight Merz, 2004)
The Yanchep-Two Rocks Transport Planning Study was developed during 2003/04 in conjunction with the development of the Yanchep-Two Rocks Concept Plan (Roberts Day, October 2004).

The movement network that evolved in the DCP was tested and discussions held periodically with the DPI, City of Wanneroo, Public Transport Authority (PTA) and Main Roads Western Australia.

The 2004 transport study provided estimates of intraregional and interregional travel by the different modes and demonstrated the feasibility of the proposed movement network. The key elements of the movement network, which have been retained in the DSP include:

- Extension of the northern suburbs railway to the Yanchep City Centre;
- A light rail (or busway) along the mixed used employment corridor, linking the southern and northern regional activity centres;
- The extension of Marmion Avenue to the Yanchep City Centre and the major mixed use employment corridor;
- The extension of the Mitchell Freeway along the eastern boundary of the Yanchep-Two Rocks DSP, with a number of well spaced east-west linkages into the development area and provision for a rural road extension to the north;
- A network of north-south and east-west district distributor roads with provision for a finer grained network of local distributor roads;
- One-way couplets may be used through city, district and neighbourhood centres to reduce the impact of through traffic and provide a more pedestrian friendly environment.

Northern Suburbs Railway Alignment Definition Study (Alkimos to Yanchep)
This study was commissioned by the DPI to assess the feasibility of a previously determined alignment for the railway from Romeo Road (Alkimos) to Yanchep-Two Rocks. The study confirmed a preferred alignment as far north as the Yanchep City Centre, which has been agreed to by the DPI and PTA, and recommended stations at Yanchep Beach Road, Yanchep (Yanchep City Centre) and Yanchep North. This preferred alignment is reflected in the Yanchep-Two Rocks DSP and described more fully in Section 5.

Neighbourhood Integrator Study 2003
This report provided rationale for the use of one way pairs or couplets and was prepared to support the Capricorn Coastal Village Structure Plan.

The report referred to local and international case studies and concluded that couplets are an effective way of accommodating traffic movements through town centres, whilst maintaining safe, convenient and comfortable environments for pedestrian movement. The report also found that couplets can result in significant benefits where one or more of the intersecting streets have traffic volumes exceeding about 15,000 vehicles per day.

Major advantages attributed to couplets include:
- Intimate street design and simpler intersection treatments with fewer conflicting traffic movements;
- Compatible with a finer grained town centre street network;
- Safer and improved environment for pedestrians;
- Reduced waiting times at intersections for both pedestrians and drivers; and
- Enhanced retail exposure supported by additional on- street parking.

Whilst this design approach is advocated, the DSP does not depict specific road designs. These detailed matters are to be addressed in the subsequent LSPs.

Yanchep-Two Rocks Regional Community Infrastructure Requirements Discussion Paper, July 2004
The 'Yanchep-Two Rocks Community Facility Planning Reference Group' was formed with representatives from the Yanchep-Two Rocks project team and City of Wanneroo to determine the need for regional community facilities within and near to the project area. Following investigations undertaken by this group a discussion paper identified the need for the following regional community facilities:

- 1 x aquatic centre incorporating indoor sports facilities
- 7-8 x regional/district playing fields (approx 100ha in total)
- 1 x indoor sport/recreation centre
- 1 x performing arts centre
- 2 x regional libraries
- 1 x public golf course
- 7-8 high schools
- 1 x tertiary institution

Further analysis of community needs by Creating Communities Australia Pty Ltd (2006), establishes that the planning for Yanchep-Two Rocks should accommodate the following key regional and district level facilities:

- 100ha of regional/district open space - preference across 4 parcels to accommodate 10-14 ovals, co-located with education facilities and for smaller sites, stand alone
- 9 x public high schools (10ha size)
- 5 x private high schools (10ha in size)
- 4 x tertiary education institutions (i.e. universities / TAFE)
- 1 x health campus (8ha) within the southern townsite for hospital, health and ambulance services.
- 1 x regional indoor aquatic and sports facility integrated with the northern regional centre and co-located with a tertiary provider
- 1 x district aquatic and recreation facility in the vicinity of the southern Yanchep City Centre and co-located with a high school
- 2 x regional libraries (within northern regional centre and Yanchep City Centre) co-located with tertiary providers / high schools
- 1 x performing arts centre in the southern Yanchep City Centre co-located with a tertiary provider / high school
- 1 18 hole public golf course (approx 50 ha) as a stand alone single purpose facility not co-located with any other regional infrastructure to be located in the broader Yanchep-Two Rocks / Alkimos-Eglinton area. The DSP has not provided a public golf course due to the proximity to the existing 18 hole private golf course. It is considered more appropriate to locate this facility within Alkimos-Eglinton or other nearby landholdings.

Regional and district level facilities that do not require significant land (such as regional libraries, performing arts centre and aquatic facilities) will be identified at LSP stage. Local facilities, including primary schools and community centre sites will also be identified at the LSP stage.

1.5 KEY DESIGN PRINCIPLES

The Yanchep - Two Rocks DSP is intended to make a substantial contribution to the sustainable growth of the Perth metropolitan region. The DSP has been developed in response to the following guiding principles which respond to the unique circumstances defined by the site, its regional context and contemporary sustainability policies, namely the State Sustainability Strategy and the City of Wanneroo's Smart Growth Strategy. These principles will also inform the preparation of subsequent Local Structure Plans.

Urban Form

- The urban structure will be comprised of a coherent, interconnected network of activity centres that support social interaction and a hierarchy of private, commercial and civic functions.
- The activity centres will be connected by 'liveable' mixed use corridors and streets that will sustain a comprehensive transport network.
- Existing communities will have complete access to the benefits of the Yanchep-Two Rocks development and, where practical and desirable, will be integrated into the broader urban structure.
- The neighbourhood unit will function as the primary structuring component of development with a discernable edge, and with most dwellings located within a 5 minute walk of a mixed use centre.
- The built form will be capable of adaptation over time to meet changing needs and to promote the continued use of existing resources.

Transport and Movement

- Promotes a modal shift from private motor vehicles to more sustainable forms of transport with the layout and design of streets enabling the efficient movement of vehicles and the creation of safe, attractive environments that facilitate walking and cycling.
- Land uses will be seamlessly integrated with the transport system to create a unified network of active, high density transit nodes.
- Transport planning will be integrated with the existing northern metropolitan rail link.
- The geometry and urban conditions of high speed roads approaching neighbourhoods or activity centres will be designed to create an environment amenable to pedestrians, cyclists, homes and business.

Landscape and Open Space

- Landscape areas will be pervasive throughout the overall development, providing places for recreation, preserving significant natural and cultural features and encouraging biodiversity.
- The integrity of significant topographic features that characterise the coastal area, such as ridges, valleys and swales, will be retained in open spaces and in developed areas where practicable.
- Provision will be made for a full complement of open space areas catering to diverse community needs, including areas for structured and unstructured recreation, community gathering spaces, places to relax and children's play areas.
- Strategic links defined through the social/ pedestrian/ cycle linkages will take a variety of forms that correspond with the context of the urban structure and connect coastal recreation resources with regional parkland.
- The design of public open spaces will minimise the ongoing costs and utilisation of resources associated with maintenance of landscape and open space areas.
- Indigenous plant species will be utilised, where practicable, in public open spaces and their use encouraged in private gardens.
- Public access to coastal foreshore areas will be promoted and well-planned and environmentally sensitive recreation facilities will be provided.

Water Management

- Future development will respond to water resource limits through management, protection and conservation of the water cycle as a whole, in accordance with the State Water Strategy 2003 and the State Water Plan 2007.
- On-site infiltration, swales, compensation facilities and water treatment systems will be incorporated into public open space.
- Where possible, water will be harvested on-site for neighbourhood applications that would normally use potable water.
- Permeable surfaces and low water demand plant species will be specified throughout the public realm and water wise gardens will be encouraged within private open space.

Health and Well-being

- The health and well-being of residents and visitors will be catered for by providing the facilities, spatial infrastructure and environmental conditions necessary to sustain community.
- A full range of community services and amenities will be locally accessible and provide for the diverse needs of a mixed community.
- Neighbourhoods and activity centres will offer suitable spaces for social gatherings and community events of varying types and scales.
- Healthy lifestyle options will be facilitated through the provision of widespread recreation facilities, walk trails, bicycle paths and natural environments.
- The public realm is a valued element of the urban environment, establish the prominence of public life and will encourage civic engagement.
- The development process will maintain an open, two-way dialogue with residents of existing and emerging communities to ensure planning responds to the needs of current and future residents.

Economy and Employment

- The Yanchep Strategic Metropolitan Centre will be the predominant urban centre and employment anchor for the northern part of the metropolitan area, offering employment opportunities for the future Yanchep-Two Rocks labour force within the DSP area.
- The development will offer a quality of life that builds upon distinctive local characteristics with a wide variety of housing choices and a broad range of lifestyle choices attractive to all demographic segments.
- The development will provide suitable commercial sites, a diverse range of premises, business infrastructure, amenities and excellent services for major state, national and global businesses, and facilities that will support growing businesses throughout their lifecycle.
- As well as providing a substantial number and diversity of jobs, the development will present opportunities for people to acquire new skills, knowledge and abilities, and access to meaningful employment.
- Residential and commercial densities will be of a scale significant enough to create the critical mass needed to sustain local commerce and employment and provide the development of globally competitive industry clusters.

Built Form and Architecture

- The design of buildings will be influenced by their coastal context and will seek to enhance local character and heritage whilst simultaneously responding to current day needs, changes in society and cultural diversity.
- Buildings will be sustainable, responsive to climatic and environmental conditions and provide a unified aesthetic that evokes a distinct sense of place.
- Provision will be made for a range of building types and densities to accommodate emerging commercial and demographic trends and provide for a wide range of households, lifestyles and businesses.
- Built form outcomes will be managed using development control mechanisms to effectively regulate quality, design and sustainability.

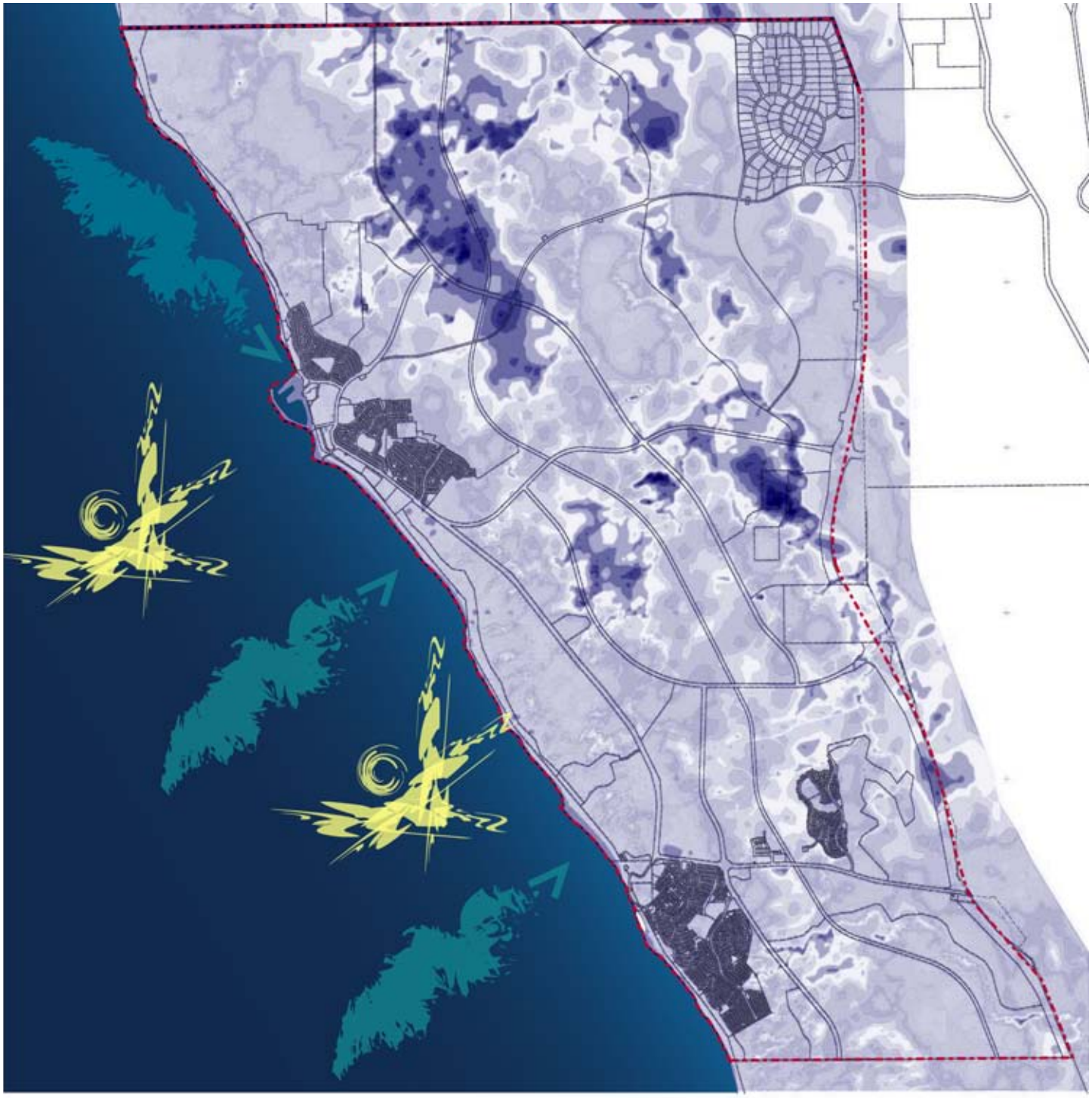
1.6 SUMMARY OF STRUCTURE PLAN ELEMENTS

The following design elements of the DSP reflect the contextual and site characteristics and the relevant state and local planning policies and strategies:

- Environmental conservation objectives define the areas available for urban development.
- A mixed use transit boulevard extending the length of the site. The corridor is centrally located to provide amenity to areas located further from the coast. It will be the backbone for the project, supporting an efficient transit service (light rail / bus) and significant mixed use activity.
- A hierarchy of activity centres, mixed use employment areas and light industrial areas to collectively provide sufficient land area to accommodate the employment targets and to meet the needs of the growing Yanchep-Two Rocks community.
- Regional and district level activity centres located at the intersections of major transport connections to afford high levels of accessibility and exposure for commercial uses. The larger centres are located away from the coast to maximise their catchment areas and to create value and amenity in areas further away from the coast.
- Coastal centres to accommodate high quality, nodal development. These centres have been carefully located to respond to the sensitive coastal environment and to connect with the major inland activity centres. Three of these centres including the Two Rocks coastal node may ultimately be co-located with marinas.
- Neighbourhood centres located to activate residential neighbourhoods and at the intersection of important regional roads.
- Social/ pedestrian/ cycle linkages between the coastal reserve and the regional reserves to the north and east to help define neighbourhood cells, accommodate pedestrian/cycle networks and protect significant environmental features.
- A highly interconnected movement network for with balanced transport modes.
- The viability of the activity centres is heavily dependent on the levels of connectivity and their accessibility from adjoining catchment areas for all transport modes including walking, cycling, public transport and private vehicles. In the case of the larger centres and coastal nodes, these catchments may extend beyond the DSP boundary.
- A grid of primary and secondary regional streets, designed to disperse traffic evenly across the site, mixed use transit corridors and prominent east west green corridors that cater for pedestrian and cyclist movement will create a highly accessible urban structure and form the building block for the Yanchep-Two Rocks community.
- At the district level, the primary roads have been spaced at intervals of 1.6km (where topography permits) to allow four neighbourhoods (400m radius) generally unburdened by through traffic, to exist within the grid.
- To ensure the urban environment is of a human scale, street designs are based on a maximum of two lanes of through traffic in each direction.
- The main north-south transit corridor is complemented by a secondary parallel street system that will redirect through traffic from this main spine.
- One-way couplets may be incorporated in the major activity centres to reduce the impact of through traffic and provide for a more pedestrian friendly environment.
- The northern suburbs railway will connect to the Yanchep Strategic Metropolitan Centre where a multi-modal transit facility will allow passengers to switch between the heavy rail connection and the proposed light rail/bus.
- An integrated network of pedestrian and bicycle paths will cater for recreational and functional travel and incorporates the social/ pedestrian/ cycle linkages, coastal network and mixed use corridors.

02 ECOLOGY + LANDSCAPE

FIGURE 10 KEY CLIMATIC ELEMENTS



02 ECOLOGY + LANDSCAPE

2.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

Climate

The DSP area experiences a Mediterranean climate with mean daily maximum temperatures varying from 31.8C in summer to 17.8C in winter. Mean daily minimum temperatures vary from 17.4C in summer to 8.0C in winter.

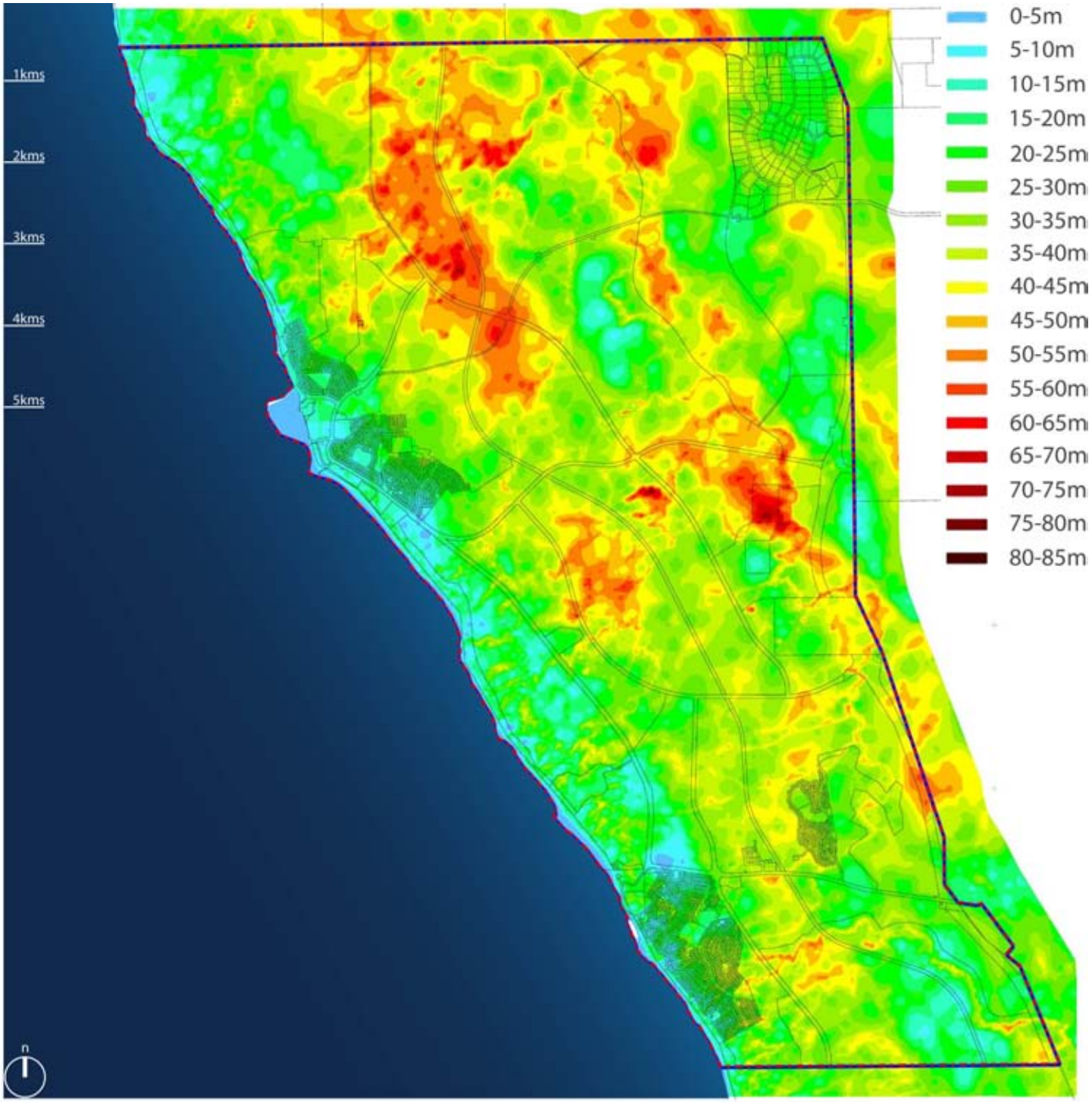
Most rain falls during the winter months of May to October with monthly totals often exceeding 100mm. Monthly rainfall of up to 50mm may occur in the remaining months.

Much of the site is exposed to dominant offshore winds, although the valleys provide limited protection. During summer, winds blow from the east in the morning and from the southwest in the afternoon, bringing cooling sea breezes created from the temperature differential between land and sea. The most severe winds come from the west and north-west and occur during the winter months, although tropical cyclones may occasionally migrate south in the summer to autumn period bringing gale force winds and heavy rains.

Key climatic considerations for the DSP and subsequent detailed design include optimising solar orientation and utilising breezes for cooling effects, whilst ensuring that adequate sheltered and wind protected spaces are available where appropriate.

02 ECOLOGY + LANDSCAPE

FIGURE 11 RELIEF PLAN



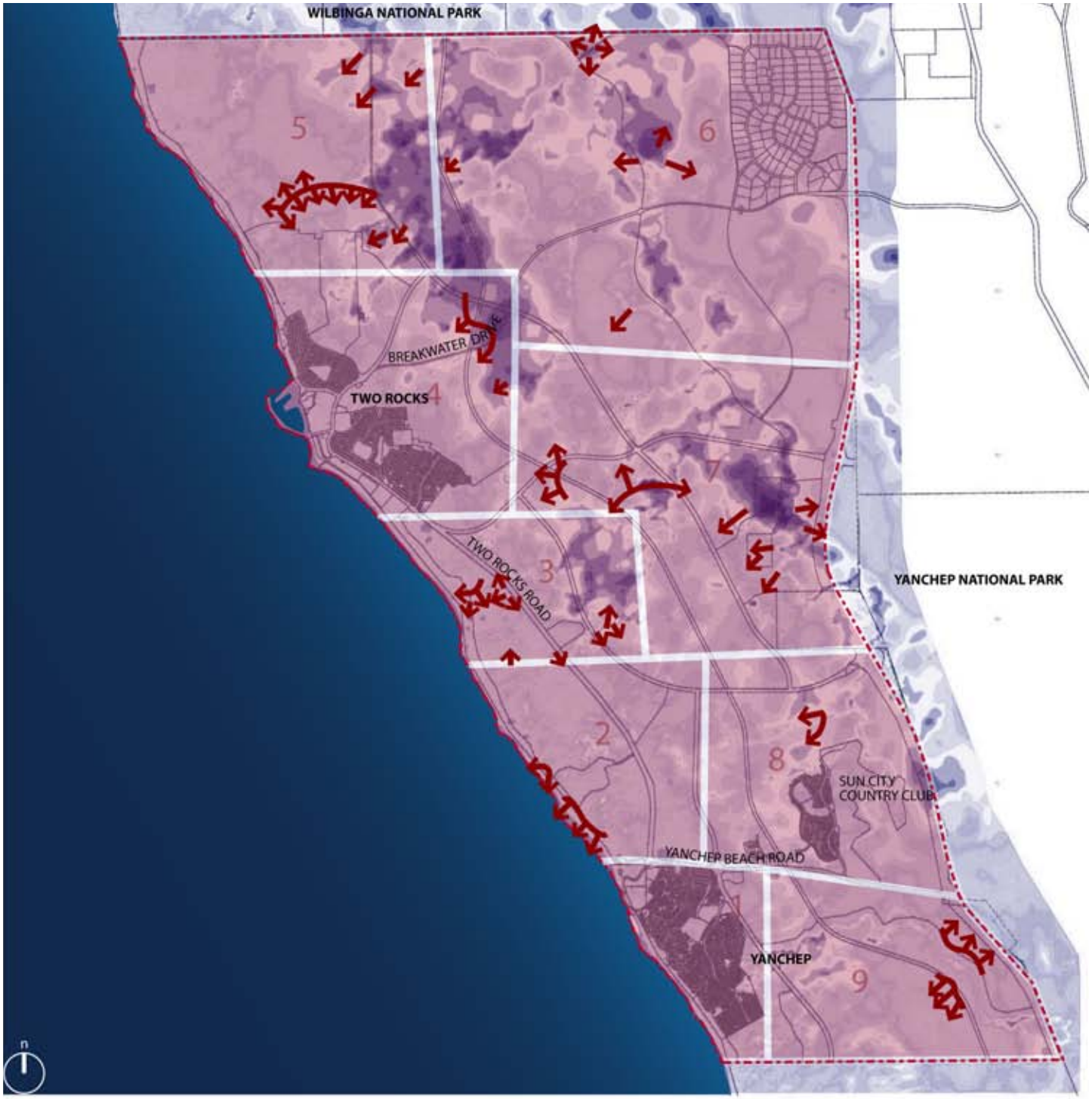
02 ECOLOGY + LANDSCAPE

Terrain
The DSP area consists of an undulating landscape typically associated with coastal areas. The western portion of the site is dominated by chaotic dunal formations generally ranging in elevation from between 1m and 30mAHD. Towards the centre of the site and close to the coast, dunes can rise to as high as 40mAHD. In certain areas these dunes can restrict physical and visual access to the ocean. Further inland, the topography grades to a more gently undulating landform containing valleys, ridges and some high peaked hills that provide visual cues for the surrounding landscape. Two ridges with elevations up to 55mAHD run parallel to the coast. Four main depressions exist between these ridges with low points of approximately 10mAHD. Towards the northern portion of the study area a number of large, east-west oriented ridges with elevations of 55mAHD extend from the coast. These elevated areas, particularly those east of Two Rocks, provide spectacular views to the coast.

Elevations decrease towards the north-eastern and south-eastern portions of the study area.

The topography of the study area presents no significant constraint to development and provides a number of opportunities to retain landscape features, particularly within parkway systems creating urban areas with views west to the coast or east to the Yanchep National Park. The natural character of the landscape will also provide a strong sense of place.

FIGURE 12 LANDSCAPE CHARACTER AND VIEWS



02 ECOLOGY + LANDSCAPE

Landscape Elements and Character
The DSP area contains a range of landforms and vegetation communities. A large proportion of the landscape has been altered by pastoral practices and recreational pressures. A Landscape Analysis and Assessment of the DSP area, conducted by Peter Cala and Associates in 1992 identified nine landscape units based on a set of landscape characteristics, including slope, rock outcropping, drainage soaks, aspect, wind exposure, micro-climate and vegetation. Representative elements of each landscape unit will be preserved within the public realm of the DSP area through the provision of a series of social/ pedestrian/ cycle linkages and other reservations. This will allow the diversity of the natural landscape to be experienced throughout the site. The implications of the landscape analysis for future development can be summarised as follows:

- The chaotic dune landscape adjacent to the coast prevents visual access to the coast from other parts of the study area;
- The intricate ridges and valleys of the chaotic dunes adjacent to the coast provide some protection from the prevailing coastal winds. However, the valleys are inward looking and provide a strong sense of enclosure, which may hinder conventional residential development;
- East-west ridges provide an important visual link between the coast and inland areas. The DSP retains elements of these ridges;
- Elevated sections of the ridges parallel to the coast afford views of both the coastline and the bushland to the east of the study area;
- Portions of gently undulating land in the eastern sections of the study area provide an ideal landscape for residential development;
- Established Tuart trees in the north-eastern portion of the study area provide shelter from the prevailing coastal winds and landscape features that are of a human scale. The area is suited to larger lot residential development, which has been reflected in the local planning for this area;
- The study area contains landscape features that have the potential to be incorporated into future development creating unique environments within the DSP area.

02 ECOLOGY + LANDSCAPE

Soils and Geomorphology
The DSP area falls within the Quindalup and the Spearwood Dune geomorphologic systems of the Swan Coastal Plain.

The Quindalup Dune system is the geomorphologic expression of the Safety Bay Sand geological unit and borders the present coastline of the site as a series of fretted parabolic and chaotic dunes. Close to the coast there is a 100m wide section of low shore-parallel beach ridges that have formed from sand deposition. The Quindalup Dunes extend inland in a series of large-scale elongated parabolic dunes measuring several kilometres in length.

The Spearwood Dune System is the geomorphic expression of the Tamala Limestone geological unit and lies under and to the east of the Quindalup System, extending from within 1km of the coast to beyond the eastern margins of the site. The dunes rise from a maximum elevation of about 30m in western parts, to over 60m in the east.

The dunes originally contained calcium, however leaching by rainwater has removed carbonate from upper portions and deposited it below, forming a hard calcretised cap. Material remaining in the upper portions of the dunes is mainly brown to yellow sand that covers much of the limestone within the site to depths often greater than 1m. In the north-western portion of the site the hard calcretised cap of many of the dunes has been exposed by wind action. This is also evident to the east of the golf course in the south-eastern portion of the DSP area.

The soils are therefore generally well drained and suitable for development. Limestone outcropping occurs in isolated patches and in some more extensive ridge and hill formations. While the limestone areas present an engineering challenge they also provide the opportunity to incorporate a range of interesting landscape features into the development.

Karst Features
Karst features are surface or subterranean and have formed by dissolution of limestone or other soluble rocks. The scale of these features can vary from millimetres to hundreds of metres or more and can include small underground voids or cavities, caves, dolines, collapsed caves and sculpting of limestone surfaces.

Karst features such as solution sculpting exist in the Two Rocks area and have contributed to the distinctive coastline of this area.

Larger karst features such as caves, collapsed caves, and subsurface cavities, are less common in the coastal limestone and, in the northern part of the Perth region, and have generally been thought to be restricted to a linear zone roughly corresponding with the Wanneroo wetlands chain that includes Loch McNess. Notwithstanding this, the potential exists for karst landforms to underlie a portion of the DSP area within the Tamala Limestone and recent investigations confirm that karstification is present further to the west of the known linear karst zone than previously thought.

Within the eastern portion of site there are a number of closed basins with floors between 10m to 15m below the general level. These basins are suspected to be cover-collapse or cover-subsidence sinkholes reflecting the presence, or past presence, of caverns and/or solution basins. They occupy about 6% of the DSP area.

To establish the exact locations of karst formations, an assessment of Karst has been undertaken in areas to be developed in the first stages of development and was not found to contain any constraints.

Karst assessments will be undertaken prior to the preparation of LSPs for all other areas not previously assessed to ascertain the likelihood of karstic formations and the impact on land use distribution and whether a Karst Management Plan is required.

Groundwater
There are no wetland areas or watercourses within the DSP area, however groundwater is present within three underlying hydrological units. The Tamala Limestone is the shallowest and most productive aquifer in the area. It is overlain in western parts by calcareous dunal sands, but is exposed in eastern areas as dune sands and solid limestone outcrop. Water in this superficial aquifer is derived from direct recharge by winter rainfall. Saltwater from the ocean intrudes into parts of the aquifer near the coast. The Water Corporation currently draws water from the superficial aquifer for public supply and proposes to continue this practice.

The Leederville formation is the most important confined hydrogeological unit underlying the site. Most of the water in the formation is held in bands of sand that are generally less than 10m thick. Recharge to the aquifer is from the overlying Tamala Limestone aquifer.

The Yarragadee formation is a massive confined aquifer that underlies much of the Swan Coastal Plain. It consists of an interbedded sequence of sandstone, siltstone, and shale that contain minor claystone and conglomerate horizons. Most of the water in the aquifer is held in sandstone beds composed of medium to very coarse sand that are up to 30m thick. Recharge to the Yarragadee formation occurs by downward leakage from the Leederville Formation and superficial aquifer, in areas where intervening sediments are absent.

The DSP area is within a Priority 3 groundwater source protection area. Priority 3 areas are declared over land where water supply sources need to co-exist with other land uses such as residential, commercial and light industrial developments. Protection of Priority 3 areas is achieved through management guidelines rather than restrictions on land use. Broad management principles consistent with these guidelines have been developed for the purpose of this DSP and locational and design features will be identified at the LSP stage.

Vegetation and Flora

Remnant Vegetation

The remnant vegetation within the DSP area reflects the regional soil associations. Vegetation of the Quindalup Complex is found throughout most of the area, with small areas of remnant vegetation comprising the Cottesloe Complex – North found in the eastern areas. The major vegetation associations can be grouped as follows:

- Vegetation associated with the Quindalup dunes adjacent to the coast is dominated by *Acacia rostellifera, Ammophila arenaria, Spinifex hirsutus, Olearea axillaris* and *Spyridium globulosum*;
- Vegetation associated with the older Quindalup dunes further to the east is dominated by *Acacia rostellifera, Acacia saligna, Xanthorrhoea preissii* and *Melaleuca systena*;
- Vegetation associated with the Limestone Heath Types in the central portion of the study area is dominated by *Dryandra sessilis, Calothamnus quadrifidus, Melaleuca huegelii* and *Melaleuca cardiophylla*; and.
- Vegetation associated with sand over Limestone in the eastern and northern portions of the study area is dominated by *Banksia attenuata, Eucalyptus gomphocephala, Eucalyptus marginata* and *Eucalyptus todtiana*.

The condition of the vegetation ranges from 'Excellent' (vegetation intact with almost no disturbance) to 'Completely Degraded' (where the vegetation structure is no longer intact and without native plant species). The majority of the DSP area has historically been used for farming which has adversely affected areas of native vegetation through grazing, trampling, introducing and spreading weeds, and nutrient enrichment. There are some areas of remnant vegetation with the larger pockets of better quality vegetation generally confined to the northern potion of the area.

Flora

A flora survey of the study area and adjacent areas was conducted in 1991. The flora survey identified a total 248 native species, which is comparable with other areas of similar size in the region.

The flora list includes one Declared Rare Flora (DRF) species, *Eucalyptus argutifolia*, which is protected under the provisions of the Wildlife Conservation Act, 1950. Two discrete populations of *Eucalyptus argutifolia* occur within an area that is now part of Bush Forever Site 284 "South West Link from Wilbinga to Yanchep National Park". No other DRF or Priority Flora was recorded in the DSP area.

The species, *Goodenia berardiana* and *Thomasia triphylla* are not listed as Rare or Priority Flora but are considered significant and have been recorded within the Yanchep to Two Rocks area. Both of these species were recorded within *Melaleuca cardiophylla* vegetation on limestone.

Fauna

Alan Tingay and Associates conducted an assessment of vertebrate fauna within the DSP area in 1991 and Coffey (formerly ATA Environmental) conducted a further assessment in 2005. Both surveys revealed relatively diverse, but generally typical vertebrate fauna for the region.

Of the species listed under Commonwealth and State government legislation requiring special protection due to their vulnerability, Carnaby's Black Cockatoo, Carpet Python, Black-striped Snake, Western Brush Wallaby, Southern Brown Bandicoot and Rainbow Bee-eater were recorded on or adjacent to the DSP area.

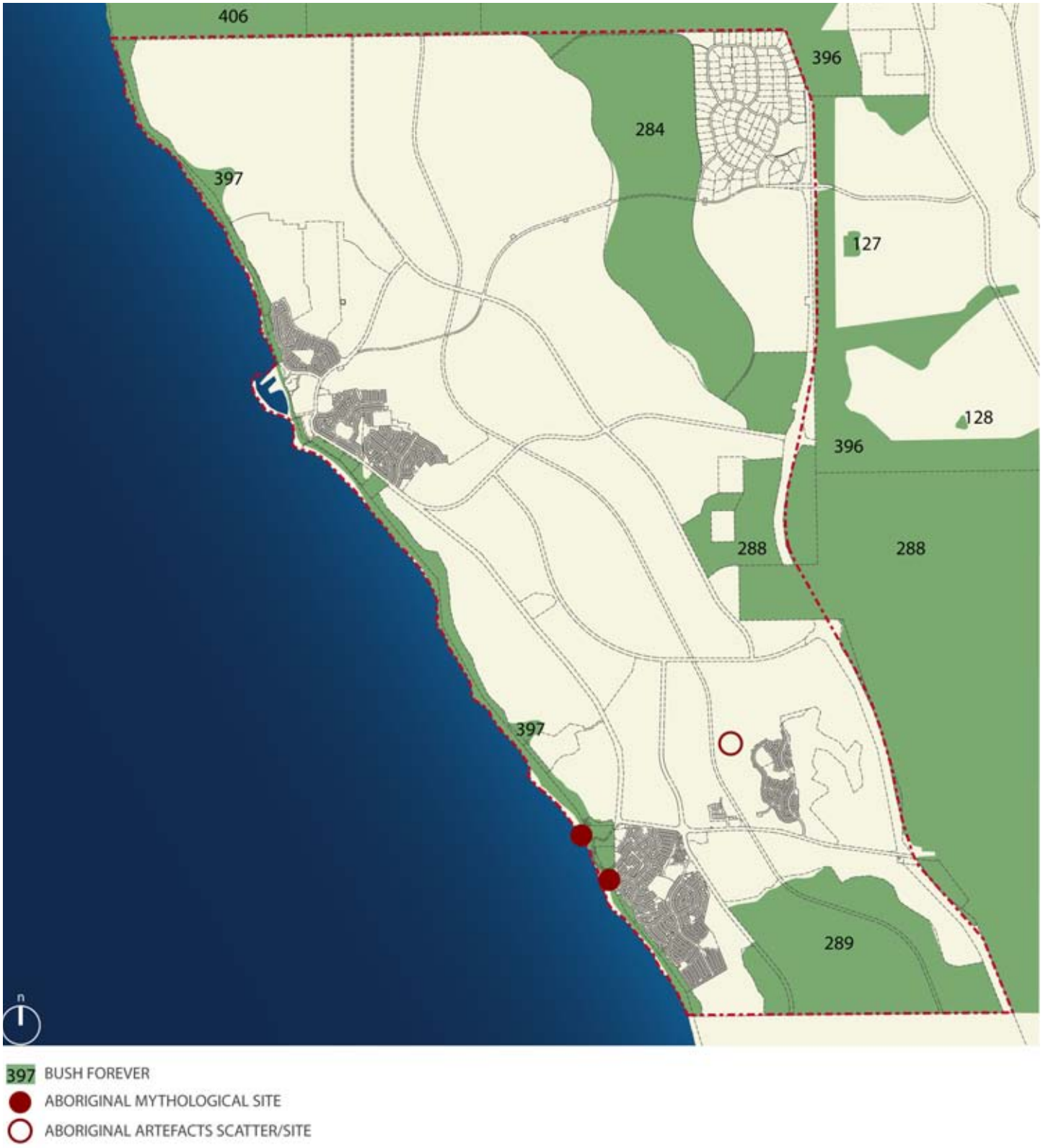
Notwithstanding this, other than the presence of the Western Brush Wallaby, Honey Possum and the Southern Brown Bandicoot, there are no characteristics of the mammal assemblage or the species recorded on site to indicate that the mammal assemblage has particular conservation significance in the region.

The bird assemblage recorded at Yanchep was also typical of both other surveys conducted in the region and desktop predictions from known distributions. Breeding Rainbow Bee-eaters use the site, and Peregrine Falcons have been recorded in the region. A large number of Carnaby's Cockatoos were recorded feeding in the Dryandra shrublands and Banksia woodlands. These habitat types are important feeding grounds for this species.

The main habitats for fauna are the tracts of remnant vegetation and remaining stands of Tuart trees on pastureland. This vegetation is restricted particularly to the near coastal zone and small portions of the north-eastern sector within the study area. Habitat areas containing taller vegetation are also present to the east of the pasture areas within Bush Forever Sites284 and 288. Both these sites provide a wide range of the locally important fauna habitats.

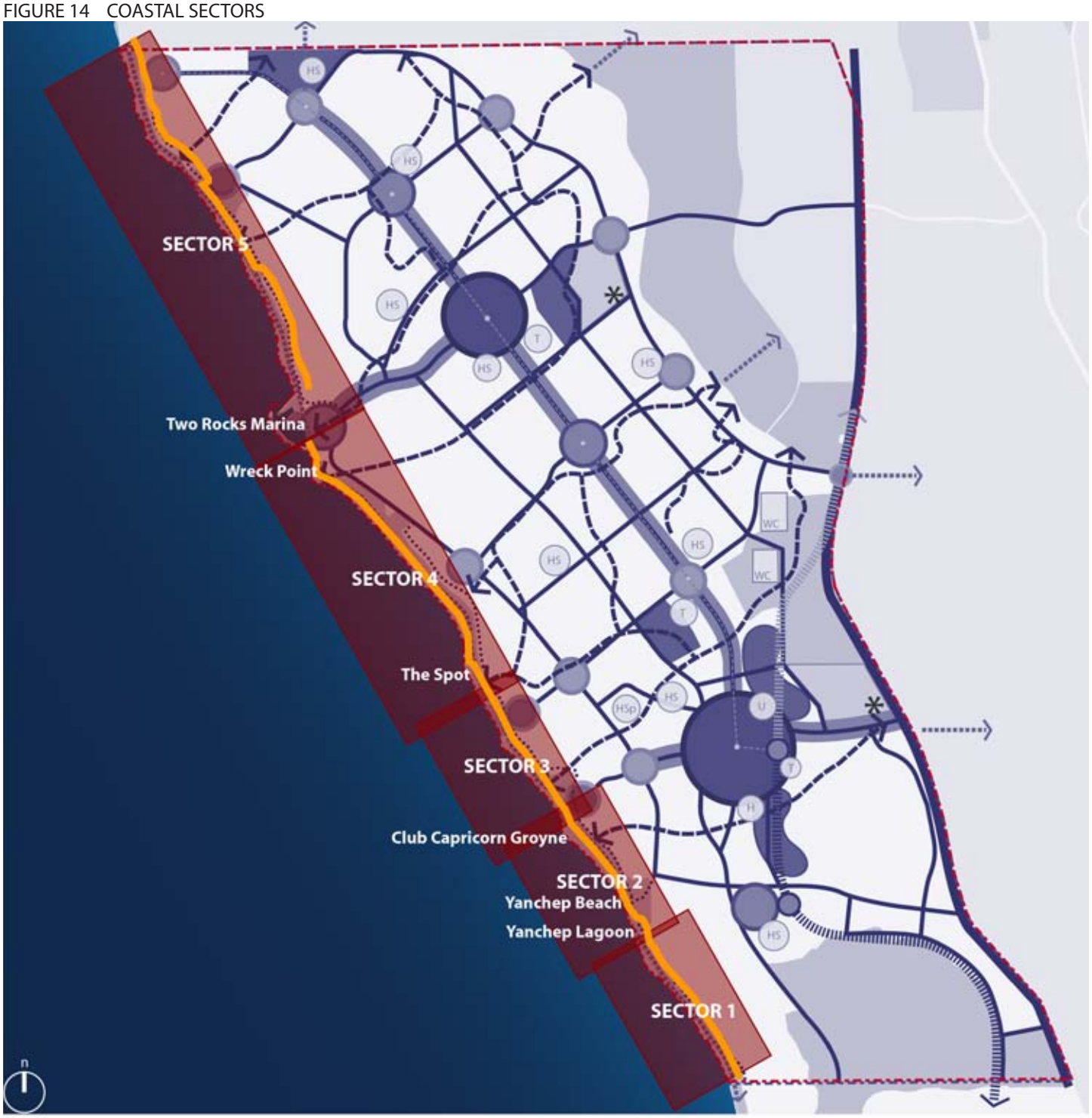
Investigations indicate it is unlikely that stygofauna (subterranean fauna) is present within the study area due to the absence of Tuart Woodland and the low likelihood of karst features being present. Notwithstanding this, if karst features are identified under the small areas of Tuart Woodland during future assessments, the presence of stygofauna may need to be reviewed.

FIGURE 13 BUSH FOREVER AND ABORIGINAL HERITAGE



Aboriginal Heritage
Archaeological and ethnographic surveys have been undertaken over the site, but have not resulted in any additions to the Department of Indigenous Affairs' site register. The register records three sites within the study area. Yanchep Beach and the limestone reef near the shore are recorded as having mythological significance. The third site further inland contains aboriginal artifacts. The approximate locations of these sites are shown in Figure 13. The Environmental Conditions included in the Environmental Review of Amendment 787 to DPS2 requires the preparation of Aboriginal Culture and Heritage Management Plans during the LSP stages.

FIGURE 14 COASTAL SECTORS



Coastal Environment

Coastal Character Assessment

Coastal planning investigations conducted by Coffey (formerly ATA Environmental) in 1993 formed the basis for the delineation of the MRS foreshore reserve in the Yanchep - Two Rocks area. The width of the reservation varies up to a maximum of 250m, depending on a range of factors including the presence of houses and private lots in proximity to the coast, the recreation potential and suitability of the coastal area for development of recreation facilities and amenities, coastal processes and stability, sea level change and the character of the coastal environment.

To aid the coastal assessment process, the Yanchep - Two Rocks coastal area has been divided into five sectors. The following summaries of each sector highlight the changing character of the coastal environment within the study area.

Sector 1 - Southern Boundary to Yanchep Lagoon

This sector consists of a sandy beach 15 - 30m wide that extends two kilometres north from the southern boundary of the study area before terminating against a limestone headland, where elevations range from 2m to 6.5m above sea level. Primary dunes are well vegetated except where pedestrian access and off-road vehicle use have destabilised vegetation.

Sector 2 - Yanchep Lagoon to Club Capricorn Groyne

The Yanchep Lagoon is characterised by a shallow, limestone reef approximately 700m long and 50m wide. The lagoon itself is a popular recreation fishing and swimming area. There is a single beach extending from the Yanchep Lagoon to the Club Capricorn Groyne that widens from about 20m near the lagoon to around 80m south of the groyne. Historical shoreline movement data indicate that this area has been accreting since the 1940s. The beach is backed by a series of low broad dunes that rise to steep primary dunes about 75m from the beach.

Sector 3 - Club Capricorn Groyne to South of "The Spot" Headland

The beach north of the Club Capricorn Groyne is relatively narrow (10-15m wide) and backed by low foredunes colonised by marram grass. This section of beach is affected by sediment interruption caused from the construction of the groyne.

Sector 4 - "The Spot" to Two Rocks Marina

This section is approximately 3km long and comprises a gently curved accreting beach. "The Spot", a popular surfing destination, is a large rocky headland consisting of Tamala Limestone, up to 200m long and 5m high. The exposed limestone in this location serves to retard longshore drift and aids beach accretion to the south where the beach is relatively wide. Immediately north of "The Spot" the beach is narrow due to the interruption of sand movement by the rocky headland. Further north, however, the impact of the headland diminishes and the beach widens to up to 80m. Wreck Point and Two Rocks Marina to the north limit the extent of near shore littoral drift and contribute to continued sand deposition. Seaweed also builds up during summer just south of the Two Rocks Marina.

Sector 5 - Two Rocks Marina to the Northern Boundary

This sector is characterised by narrow, eroding beaches with steep profiles and backed by cliffed dunes. Weathered, exposed Tamala limestone and beach rock contribute to the rugged appearance of this section of coast.

In addition to the assessments undertaken by Coffey (formerly ATA Environmental) to establish the MRS coastal reserve, coastal engineers MP Rogers and Associates conducted a preliminary assessment to determine conservative physical processes setbacks for the coastline. The setbacks calculated for the shoreline range from 48 metres to 186 metres and are depicted on the Coastal Sectors plan. More detailed assessment and refinement of setbacks may be undertaken at the LSP phase.

Marine Environment

Offshore habitat

The marine environment in the Yanchep - Two Rocks area contains no marine protected areas under either the Federal Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) or the State Conservation and Land Management (CALM) Act 1984.

No biological survey data is available for the Yanchep - Two Rocks area. Discussions with the Fisheries Department indicate that there are no Fish Habitat Protection Areas (protected under the Fish Resources Management Act 1994 (FRMA)) in the Yanchep - Two Rocks area.

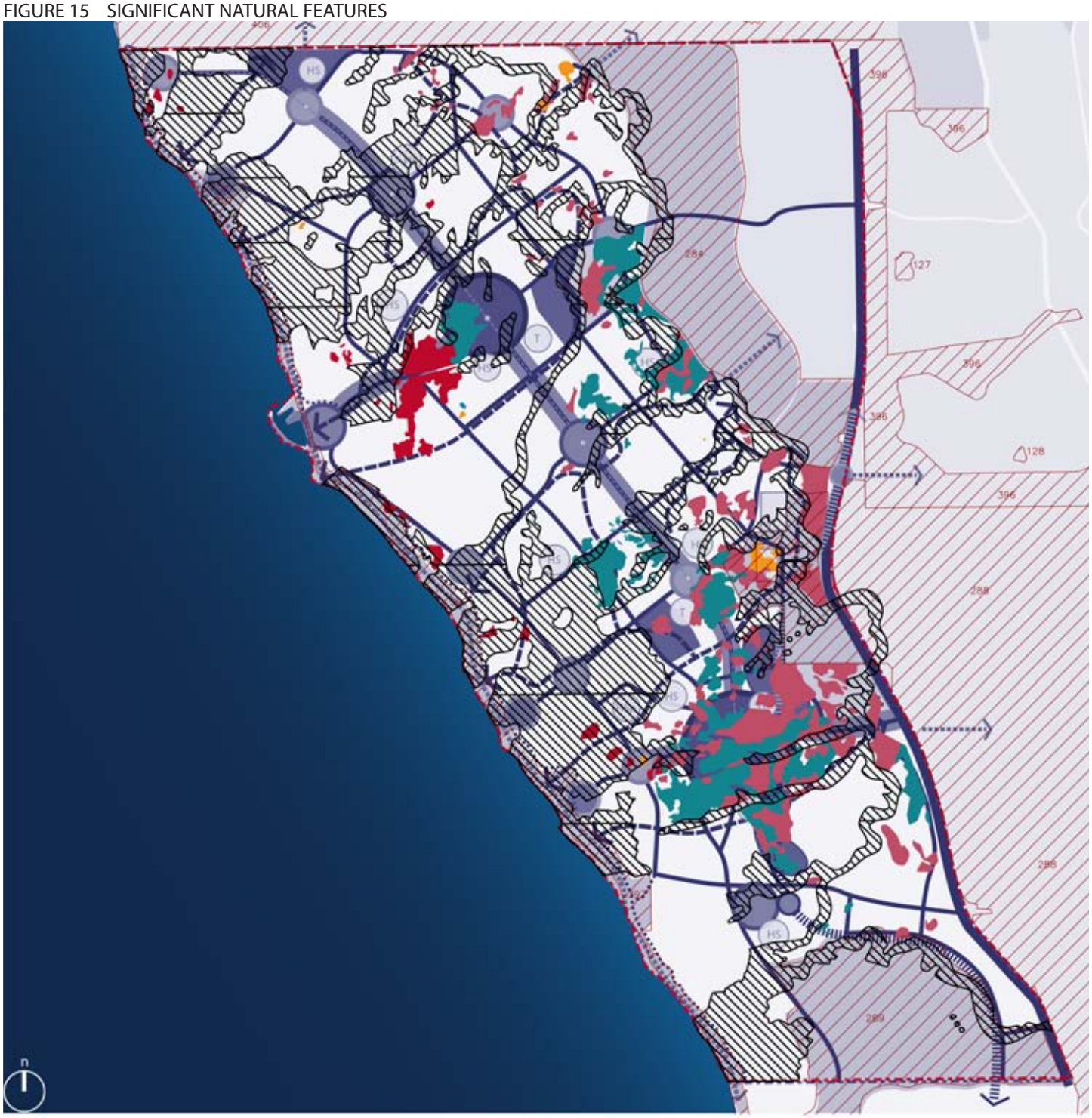
Shipwrecks

A report on shipwrecks in the Yanchep area was prepared by Alan Kendrick in 1991 as part of the preparation of the original Yanchep Structure Plan. The report identified four shipwrecks in the surrounding area, two of which are located near the DSP area.

The Emily, a schooner built in 1868 was wrecked in the same year on rocks near the Two Rocks Marina and lay on the beach just south of what later came to be known as Wreck Point. The exact position of the wreck of the Emily is not known and, if not broken up or dispersed by waves, may now lie buried beneath the beach or foredunes.

The Alex T. Brown, a 180ft four masted American Schooner struck rocks in gale force winds in May 1917. The Maritime Archaeological Association of WA surveyed the site in 1988 and found it to consist of the ships keelsons and floor timbers scattered in a 50m area. The remains can still be seen today with keel ribs and planking visible. The Alex T. Brown has considerable tourist potential and an information plaque has been erected on the shore adjacent to the wreck.

FIGURE 15 SIGNIFICANT NATURAL FEATURES



Significant Natural Features
The Significant Natural Features Map (Figure 15) identifies both landforms and vegetation types within the DSP area that have ecological significance.

With regards to landform, the Quindalup Dune System is considered aesthetically and ecologically significant. Bordering the coastline as a series of fretted parabolic dunes and chaots, the dunes extend inland in a series of large scale, elongated and coalescent parabolic dunes, whose arms and faces measure several kilometres in length. The protection of the Quindalup Dune System beyond the foreshore reserve will provide protection for the vegetation of the older dunes in accordance with the initiatives of Bush Forever which aims to increase the reservation of the Quindalup Complex to include 20% of the original distribution.

The Melaleuca cardiophylla vegetation type is considered locally significant as it has limited protection in existing reserves and is not common in the metropolitan area outside the Yanchep – Two Rocks area. The DSP area also has particular conservation value for two species of flora; Goodenia berardiana and Thomasia triphylla as they are outside or at the edge of their normal range. The conservation of these species is most readily achieved by conserving the habitat in which they occur, Melaleuca cardiophylla.

Species listed as being significant under Commonwealth and/ or State government legislation that have been recorded in the DSP area include the Short-Billed (Carnaby's) Black Cockatoo, Peregrine Falcon, Carpet Python, Black-striped Snake, Western Brush Wallaby, Southern Brown Bandicoot and Rainbow Bee-eater. In order to conserve these species, it is considered important to conserve the Dryandra sessilis and Banksia attenuata shrublands, which have high fauna habitat value. In addition, linkages between these vegetation types is desirable for species movement and the continuation of viable populations. The DSP makes provision for this with the inclusion of strategically located social/ pedestrian/ cycle linkages and guiding principles for corridor design in Section 3.3.

Also of significance are the natural stands of Tuart trees (Eucalyptus gomphocephala) which offer both habitat and aesthetic value.

2.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that should flow through to the preparation of LSPs.

Terrain

The DSP makes provision for the retention of defining landscape elements, including dunes/significant natural topography, view sheds and limestone outcropping, through the incorporation of carefully positioned parks, social/ pedestrian/ cycle linkages and through low density housing.

Groundwater

Broad management principles, consistent with the Priority 3 Groundwater Source Protection Area Guidelines, will be developed to guide the preparation of the DSP. More detailed land use and design features to protect groundwater resources will be resolved through the preparation of LSPs.

Any proposal to extract water in the DSP area will need to be referred to the EPA for approval in accordance with the position contained within EPA Bulletin 959.

Remnant Vegetation

The design of the open space in the DSP is sufficiently flexible to accommodate vegetation/flora conservation objectives. Specifically, the DSP protects and manages valuable vegetation through the following mechanisms:

- Bush Forever Sites 284, 288, 289, 397 and 406 protect large areas of regionally significant vegetation in existing MRS reservations;
- The stands of planted Tuart trees will be retained within Regional Open Space (ROS) and greenbelts. The majority of naturally occurring Tuart trees will be retained within Parks and Recreation reserves in the east of the DSP area and within large lots in the northeast of the DSP area;
- Areas of Banksia woodland and Dryandra shrub land that have high fauna habitat value will be incorporated into greenbelts and ROS. Large areas containing Dryandra and Banksia dominated vegetation will also be conserved within Bush Forever sites in the eastern portions of the DSP area; and
- Vegetated corridors provide linkages between Bush Forever Sites to the north and east of the DSP and the Foreshore Reserve (Bush Forever Site 397 Coastal Strip from Wilbinga to Mindarie). Vegetated connections between larger areas of habitat will enable migration, colonisation and interbreeding of plants and animals.

The LSPs will locate open space to ensure protection of existing vegetation with intrinsic environmental, scientific, educational and aesthetic values. Local areas retained as native bushland will be established and managed in accordance with best practice local biodiversity strategies.

Flora

The DSP will retain approximately 16% of the remnant *Melaleuca cardiophylla* association to provide the local habitat required for the conservation of the two flora species considered to be significant: *Goodenia berardiana* and *Thomosia triphylla*.

Conservation of flora that has been assessed as significant will entail the following:

- Areas set aside for natural vegetation retention will be carefully located and configured to contain as many vegetation associations as possible. This will enable a diverse flora assemblage to be retained within the DSP area;
- The general location of social/ pedestrian/ cycle linkages will be shown on the DSP, whilst specific areas to be retained as natural vegetation within corridors, Public Open Space (POS) and low density residential areas will be determined at the LSP stage;
- Approximately 16% of the remnant *Melaleuca cardiophylla* association is proposed for retention within the DSP. This will provide the local habitat required for the conservation of the two flora species considered to be significant (*Goodenia berardiana* and *Thomasia triphylla*); and
- The rare plant species *Eucalyptus argutifolia* is protected within Bush Forever Site 284 "South-West link from Wilbinga to Yanchep National Park".

Areas to be set aside for protection of natural vegetation in LSPs will be carefully located and defined to contain as many vegetation associations as possible.

Fauna

The DSP protects fauna values in the area through the following mechanisms as recommended by the Coffey report:

- Social/ pedestrian/ cycle linkages and ROS areas are located to enable areas of vegetation with high fauna habitat value to be conserved where possible;
- Preparation of a Fauna Management Plan detailing techniques to minimize the impacts on fauna species of national and state significance to be developed at the LSP stage. In its technical report (refer to Part 3 of DSP) Coffey has indicated that the management plan may need to allow for the capture and relocation of certain fauna species (i.e. Western Brush Wallabies, Quenda);
- Areas disturbed, but which remain after completion of the development, will be rehabilitated with local Banksia and Dryandra to provide supplementary feeding habitats for Carnaby's Cockatoo; and
- If it is determined during assessment of karst that the presence of stygofauna is likely, a subterranean fauna assessment should be undertaken at the LSP stage for those areas where stygofauna is likely to be present; and
- Large Tuart trees will be retained within POS where possible for breeding sites for Carnaby's Cockatoos.

The requirements of the EPBC Act to be addressed through the preparation of LSPs.

Indigenous Heritage

Aboriginal Culture and Heritage Management Plans will be prepared as part of LSPs in accordance with the Environmental Conditions attached to Amendment 787.

Coastal Foreshore
The existing MRS foreshore reserve will provide a permanent zone of protection along the coast. This reserve varies in width depending on coastal character, and provides a physical link with communities to the south. MP Rogers and Associates (MRA) has determined a conservative physical processes setback to guide proposed development, unless a more detailed assessment in accordance with SPP2.6, can justify a lesser setback. The physical setback line calculated for the stretch of coastline varies from 48 – 186m in width and generally accords with the boundary of the existing foreshore reserve. The physical setback line will generally be forward of the proposed development line indicated on the DSP.

Most of the coastline within the area is largely undeveloped, although there are some facilities at the Two Rocks Marina and Yanchep Lagoon. As development progresses there will be increased demand for boating and marine recreational facilities. The DSP focuses development on existing coastal nodes and within sensitively located and designed new mixed-use nodes, allowing protection of the more fragile coastal areas from undue pressure. At designated coastal nodes, it may be appropriate to have some development within the foreshore reserve, including grassed picnic areas, car parks, beach access paths and kiosks.

MRA predicts (Predicted Future Demand for Coastal Facilities – St Andrews Project, 2006) that two additional marina locations, in addition to the Eglinton Marina and the possible expansion of the Two Rocks Marina, will be required to cater for future demand. The nominated sites are relatively stable, protected sections of coast and can be integrated with adjacent Coastal Tourist Activity Centres.

The provision of these facilities requires significant forward planning to ensure adequate area is available along the coastline to accommodate the projected demand for coastal facilities without compromising conservation objectives.

2.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through LSPs.

Significant Natural Features
LSPs shall provide more detailed information on the key landform and vegetation as depicted on the Significant Natural Features map (Figure 15) and demonstrate how these have been preserved or integrated into either public spaces (POS and road reserve) or suitably controlled and managed proviate space such as low density housing lots. Where these features cannot be retained, adequate justification must be provided. For example strategic activity centres will need to balance urban outcomes with conservation objectives.

Environmental Protection and Biodiversity Act 1999
Areas identified as being of National Environmental Significance under the Environmental Protection and Biodiversity Conservation Act 1999 may be subject to assessment by the Federal Department of the Environment, Water, Heritage and the Arts, in accordance with this Act. The outcome of any such assessment may require either a modification to the DSP or minor variations from the DSP at LSP or development stage.

Management Plans
Environmental conditions imposed through Amendment 787 are set out under Schedule 12 of the City of Wanneroo DPS2 and require further assessment and/or the following Management Plans to be prepared:

- Vegetation and Fauna
- Stygofauna and/or Troglobitic Fauna
- Drainage Nutrient and Water
- Karst Formations
- Solid and Liquid Waste
- Aboriginal Heritage
- Coastal Foreshore

The Environmental Assessment report undertaken by Coffey (refer Part 3) identifies the stage in the planning process at which these various assessments and Management Plans are to be completed.

The requirements of the the EPBC Act are to be addressed through the preparation of LSPs.

Coastal Foreshore, Facilities and Marina's
The precise size, nature and location of development nodes and coastal setback zones and the provision of recreation facilities and amenities will be addressed as part of the LSPs through the preparation of Foreshore Management Plans to ensure that development adjacent to the coast provides a balance between protection of the environment, commercial and community needs and sustainable development.

Remnant Vegetation
LSPs shall locate open space to ensure protection of existing vegetation with intrinsic environmental, scientific, educational and aesthetic values. LSPs should undertake studies to locate and configure open space such that:

- The width of the social/ pedestrian/ cycle linkages between Bush Forever sites and the coastal foreshore reserves ensure that areas of significant habitat, vegetation and other unique environmental features are protected;
- open spaces contain as many vegetation associations as possible; and
- Large Tuart trees will be retained within POS where possible for breeding sites for Carnaby's Cockatoos'.

Refer to Section 3 for more guidance on open space and social/ pedestrian/ cycle linkages.

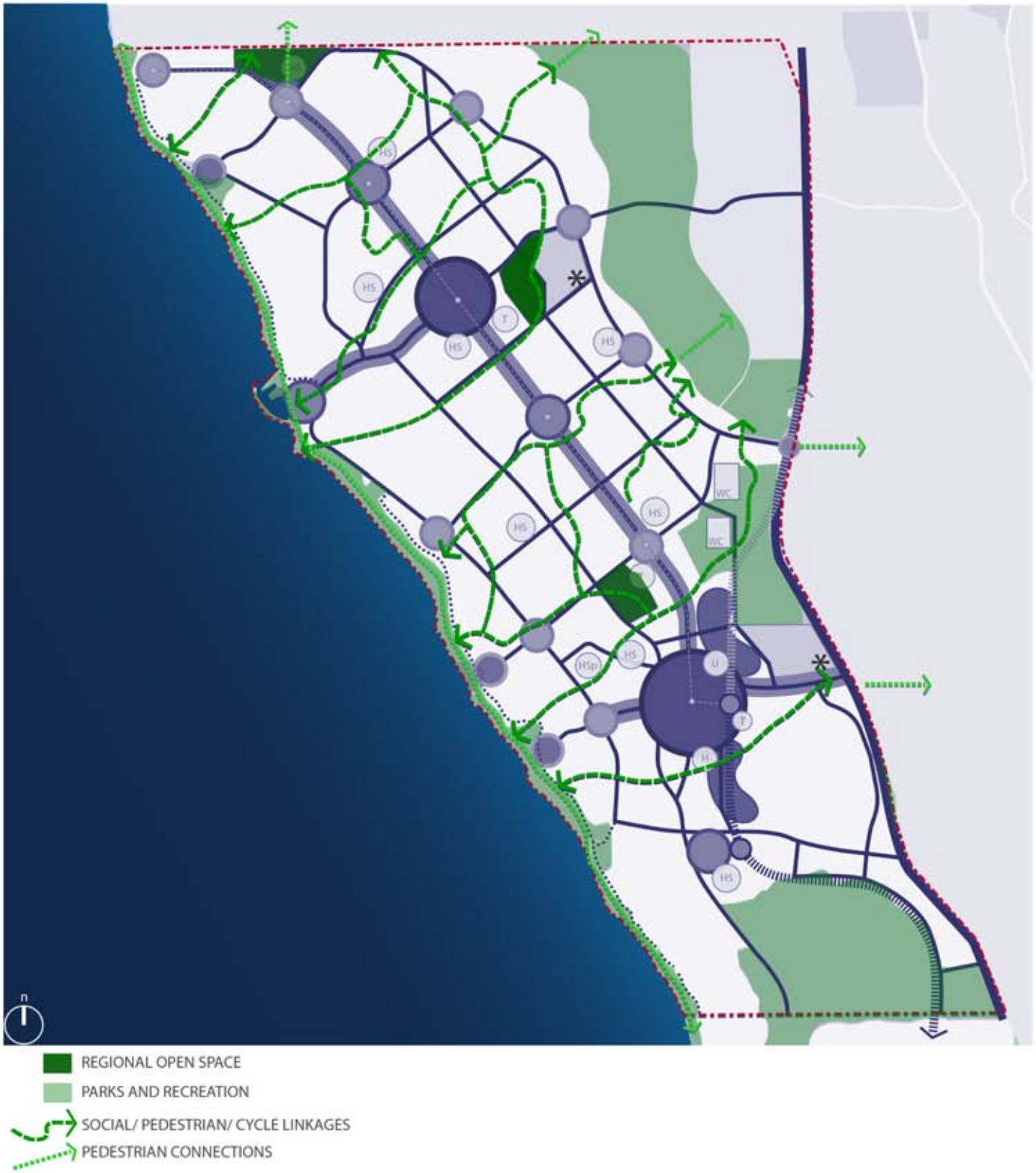
Local areas retained as native bushland will be established and managed in accordance with best practice local biodiversity strategies as set out in the WALGA/Perth Biodiversity Projects *Local Government Biodiversity Guidelines of the Perth Metropolitan Region 2004*.

Groundwater Extraction
Any proposal to extract water in the DSP area will need to be referred to the EPA for approval in accordance with the position contained within EPA Bulletin 959.

Karst
Karst assessments will be undertaken prior to the preparation of LSPs for all other areas not previously assessed to ascertain the likelihood of karstic formations and the impact on land use distribution and whether a Karst Management Plan is required.

03 PUBLIC REALM, OPEN SPACE + COASTAL FACILITIES

FIGURE 16 OPEN SPACE



03 PUBLIC REALM, OPEN SPACE + COASTAL FACILITIES

3.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

The public realm encompasses water, movement corridors, parks, squares and streets. It reinforces the sense of urbanism, whilst embodying the intrinsic landscape characteristics of the Yanchep-Two Rocks area and its coastal setting.

A basic tenet of the design approach has been to work with the existing values of the site. These values include the undulating coastal terrain, visual links to the coast and inland plain, and the stands of *Dryandra sessilis, Banksia attenuata* and *Melaleuca cardiophylla*.

Rather than being considered 'left over space', the public realm is a major organising element that has shaped the DSP design and defines the unique sense of place of this emerging community that is consistent with more traditionally planned Australian coastal communities.

Principles for Open Space

The public realm will perform many functions including:

- Reinforcing the identity of Yanchep-Two Rocks through the protection of the defining elements of the natural coastal landscape;
- Preserving significant elements of the natural environment, including fauna corridors/habitat and quality vegetation and flora within the open space system;
- Incorporating a network of social/ pedestrian/ cycle linkages that connect people with key land uses, provide wildlife corridors, link coastal and inland reserves and protect significant natural features of the site;
- Catering for the diverse recreational needs of an ultimate community of 155,000 people, including demand for structured and unstructured active recreation, play, walking/cycling, civic events, community gathering and places to relax;
- Promoting community health and well-being;
- Forming buffers between potentially conflicting land uses; and
- Offering visual relief to the dense urban form and substitution for the reduced private spaces available to medium and higher density housing.

The development and management of the open space and landscape network has been guided by the following principles:

- Responsive to landform/environment
  In developing a major new community, harmony must be achieved between human and natural habitats. The network of spaces at Yanchep-Two Rocks will strike a balance between the spaces created for public use and those created to protect natural biodiversity, thereby allowing nature and people to coexist.

  Where practicable, the integrity of significant topographical features will be retained in open space. Low lying areas will be used for drainage swales and pronounced dunes and ridgelines will be incorporated within open space areas to reinforce the coastal character. Likewise, significant vegetation will be preserved within the open space system to promote biodiversity. Remnant vegetation will play an important role in contributing to identity and sustainability of the region.

  The precise location and configuration of open space areas will be refined and confirmed at the LSP stage following detailed site assessments.

- Responsive to community needs
  The provision of active open space within the project area has been guided by population projections for the northern corridor and informed by a number of investigative processes including work undertaken by the St Andrews Community Facility Planning Reference Group in 2004 and through consultation with the Department of Sport and Recreation.

  Open space for less structured activity and passive use, will include the social/ pedestrian/ cycle linkages, town parks/squares and local neighbourhood parks. The detailed planning and design of these areas will occur at the LSP stage. These areas will be located for convenient access and will be designed to accommodate facilities and experiences that respond to the needs of all user groups.

- Quality
  Whilst the project will meet the WAPC's 10% POS contribution standard or equivalent thereof, the focus will be on the quality of the public realm rather than quantity. A rich and diverse open space system that is usable, attractive, safe and accessible and have the capacity to meet a broad range of recreational needs within close proximity to homes and workplaces will be provided.

  The quality of the public realm will therefore be a hallmark of the project and contribute significantly to the quality of life for those living, working or visiting the district.

- Diversity, Flexibility and Multi-Use
  The DSP achieves a balance between regional, district, neighbourhood and local open space to meet the needs of all user groups. The objective is to provide a full complement of accessible open space areas to cater for a variety of functions, including walking/cycling, structured and unstructured recreation, resting and interacting, civic activity, children's play areas, wildlife habitat and landscape protection.

  To encourage greater use and efficiency, spaces will be designed to be multi-purpose including shared school/community parks and parks that cater for a range of compatible functions and user groups.

- Access & Safety
  Road interfaces or other design techniques such as low walls, grade separation, footpaths and planting will be used to clearly demarcate the public and private realm and to facilitate public access. These techniques will be particularly important for the social/ pedestrian/ cycle linkages that cater for pedestrian/cycle access separate from the street system.

  Where direct frontage development is proposed, buildings will be oriented to overlook adjacent parks to create opportunities for passive surveillance and landscaping and lighting will be carefully planned to promote safe environments.

- Connected and integrated
  The public open space system will be connected and integrated with adjacent development and land use. Social/ pedestrian/ cycle linkages will link major land uses, environmental and topographical features and connect communities. Parks will be designed to complement and integrate with adjacent development. The principle of locating mixed used and medium and higher density development near landscape areas will also be applied.

Key Principles for Coastal Facilities
As a nation, Australians have developed a strong affinity with the beach and the coastal environment is a significant asset that contributes to the environmental, economic, social and cultural fabric of the state.

Yanchep-Two Rocks incorporates over 16km of pristine and varied coastline, making it a significant asset for Yanchep-Two Rocks and the broader Perth region. The majority of the Yanchep-Two Rocks coastline is largely undeveloped, although some facilities are present at the Two Rocks marina and Yanchep lagoon. As the Yanchep-Two Rocks development progresses along the coast there will be increased pressure on the coastal environment and increasing demand for boating, marine and other beach facilities. Significant forward planning is required to ensure that the demand for such facilities can be met while managing and protecting the beautiful and sensitive coastal environment.

MRA has undertaken a district level assessment of the coastal environment and future coastal and boating facility requirements for Yanchep-Two Rocks (refer to Part Three)

Provision of beach, marine and coastal facilities for the Yanchep-Two Rocks area is guided by the following key principles:

- Responsive to coastal environments
  The beach and coastal environment of Yanchep-Two Rocks is characterised by a varied landform of low and high energy beaches, dunes and rocky outcrops. Beach usage, provision of marina facilities and location of coastal development must respond to the stability and suitability of the coastal environment in which it is located. A broad level assessment of coastal setbacks and coastal processes in accordance with guidelines from Statement of Planning Policy 2.6 *The State Coastal Planning Policy* (SCPP) to determine a hierarchy of beaches and beach facilities including the possible location of marinas has been undertaken at DSP level. A more detailed review of coastal facility requirements, including a detailed environmental review of proposed marina locations, will be undertaken as part of the preparation of LSPs.

- Responsive to community needs
  As Yanchep-Two Rocks and the broader North West corridor develop increasing numbers of residents and visitors will use the beach for a wide range of recreational pursuits placing increasing pressure on the coastal foreshore. Planning for future community requirements in relation to beach and boating facilities will ensure that the fragile coastal environment can be protected whilst still providing for the needs of the community.

  Assessments of predicted demands are required to provide estimates of the staging and ultimate requirements of the project so that provisions can be made during the planning phase. An assessment of the changing community needs will enable appropriate planning to be undertaken through the preparation of LSPs and at the development stage to ensure that sufficient land is set aside for beach and marine facilities.

  Coastal planning should endeavour to integrate development, social and environmental factors. Of particular relevance is the wave climate, exposure and physical nature of designated coastal nodes. Therefore, it should be ensured that the natural amenity of such regions do not impact upon the desired use of the area and visa versa. This is essential to ensure that the intended functionality of each coastal development is maintained as required to suit the desired use.

- Integrated Coastal Development
  The coast represents one of the sites significant natural assets. Planning for the coast should be integrated with, and provide for strong connectivity, with adjacent uses. At the detailed design phase, the opportunity to integrate tourism and activity nodes with the coastal foreshore should be explored. This process will also provide an opportunity to review coastal setbacks in strategic locations as indicated on the DSP map.

3.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that shall flow through to the preparation of LSPs.

Regional Active Open Space

The DSP includes 1,511 ha of land (20% of total site area) currently reserved in the MRS as Parks and Recreation. The reserves include the coastal foreshore to the west and major conservation areas within the southern and eastern portions of the site. These areas have high conservation and landscape values and incorporate Bush Forever sites. Although the recreation potential of these reserves will be restricted by conservation values, they are vital to the amenity, identity and health of the Yanchep-Two Rocks community. They will be the lungs of the new community and will contribute to its overall environmental quality.

The potential for parts of these Reserves to be made accessible to the public for informal recreational pursuits, including bushwalking, with appropriate management structures in place, will be explored at the LSP stage.

To cater for more formal, active recreational pursuits at a regional level three major open space sites have been planned:

- One 40 ha major regional recreation area located between the Secondary Centre and Industrial area. It is envisaged that this reserve will accommodate 6 – 8 active playing fields, possible indoor recreation facilities together with significant areas for other pursuits including walking, picnics and other forms of passive recreation.

  The site is relatively flat and located within close proximity to a tertiary education facility and three high school sites, allowing opportunities for shared use and collocation, and will have good access to public transport and the primary road network. A highly accessible facility of this scale with the potential for collocation with complementary uses, can achieve certain benefits, including efficient management structures, shared use of built amenities/car parking and coordinated traffic management.

- Two 30ha regional recreation areas to service the northern and southern districts, accommodating 4-6 playing fields to provide for a range of both active and passive functions (including formal playing fields) as per Liveable Neighbourhoods provisions. This scale of facility will promote shared use of built amenities and cost effective management structures.

- The functionality of these two open spaces is dependent on a number of factors, including optimum size and shape, distribution and level of amenity. The open space areas will be nestled within a landscaped setting and cater for a wide range of activities in addition to formal sport. These activities may include children's play for different age groups, picnicing, dog exercising and other informal recreation pursuits.

- The northern area of regional open space is triangular in shape and integrated with a district level activity centre and the Wilbinga National Park to the north. Collocated with high school playing fields, it will service the catchment to the north of the northern regional centre. This site is afforded good access via the light rail/ bus system and the primary road network.

- The southern area is rectangular in shape, collocated with a tertiary education site and within proximity to four high schools. It is also integrated with a district centre and well serviced by public transport and the primary road network. This site will service the catchment that surrounds the City Centre.

- Both areas are relatively flat and therefore suitable for active recreational use. They are also integrated with the social/ pedestrian/ cycle network, which will further enhance the accessibility and ecological cohesiveness of these areas.

The land parcels identified above are regionally significant active open space sites and therefore it is envisaged that it will be reserved as a Parks and Recreation reserve under the MRS. This land will not form part of the 10% POS contribution to ensure the availability of sufficient accessible recreational areas at a district, local and neighbourhood level.

03 PUBLIC REALM, OPEN SPACE + COASTAL FACILITIES

ILLUSTRATION 1
SOCIAL/ PEDESTRIAN/ CYCLE LINKAGES MAY COMPRISE OF POS AND LOW DENSITY HOUSING CONNECTING COAST TO EASTERN PARKLAND AREAS

Social/ Pedestrian/ Cycle Linkages
A key component of the DSP is the social/ pedestrian/ cycle linkages. These linear corridors connect and form part of the local neighbourhoods, linking homes and workplaces to the coast, the eastern parklands and to major facilities and services. In this regard they connect playing fields, education facilities, activity centres, drainage corridors and industrial buffers and link into neighbourhood streets that are designed for pedestrians and cyclists. They also define strategic pedestrian entry points to the eastern and northern parklands and coastal reserve.

The linkages will be aligned to preserve significant topographical features (ridgelines and gullies), vegetation, fauna habitat and view corridors, as well as flat areas suitable for neighbourhood recreation. They will widen out in certain locations to encompass areas comprising significant ecological and/or landscape value.

The form of these social/ pedestrian/ cycle linkages will vary depending on the environment in which they sit. In some areas these links will form conservation functions either through the provision of POS, or as areas of low density housing where both landform and vegetation can be retained. The linkages will be developed as urban parks, when they traverse the transit corridor or move through activity centres.

This diversity will allow the corridors to perform conservation functions (as open space or low density housing) as well as cater for a broad spectrum of active and passive recreation pursuits. The accessibility of the linkages to all members of the public will ensure that the landscape qualities and views available to the Yanchep-Two Rocks site are not preserved for the exclusive domain of one section of the community.

The function, delineation and management of the social/ pedestrian/ cycle linkages will be determined through the preparation of LSPs.

Neighbourhood and Local Open Space
The amount of land given up to neighbourhood and local open space will be identified at LSP stage and will be in accordance with WAPC policy requirements. More detailed guidance for the siting, design and functionality of neighbourhood and local open space is provided in section 3.3 "Guidance for Local Structure Plans".

Urban Spaces
In the absence of a specific minimum POS standard for mixed use development, the quantity of open space provision in these areas will be determined through LSPs in conjunction with the equally important considerations of open space distribution, function and quality. More detailed guidance for the siting, design and functionality of neighbourhood and local open space is provided in section 3.3 "Guidance for Local Structure Plans".

Golf Course
The existing Sun City Country Club 18 hole golf course currently provides facilities for the golfing community. No provision of a second public golf course has been made in the DSP area, as the distance between the two facilities would be minimal. Given the regional nature and catchment of these facilities, consideration could be given to locating a second golf course within Alkimos-Eglinton or other nearby landholdings.

Beaches
To assist in the planning and development of beach facilities along the coastline and accommodate ultimate peak beach use, a hierarchy of local, district and regional beaches has been established along the DSP coastline. The hierarchy and location takes into consideration the anticipated beach usage for the stretch of coastline, the suitability of the various beaches for different recreational activities and the association with adjacent planned activity centres and associated public transport links. This work has been based on previous recreational beach use surveys (as outlined in the MRA report, see Part 3) that estimates approximately 6,400 people will use the beaches along the coastline on a peak beach use day once the area is fully developed.

Regional Beach
Regional beaches, such as those found at Cottesloe and Scarborough provide an integrated coastal development node that attracts people from the surrounding area as well as the broader metropolitan region. Specific facility requirements for regional beaches are generally determined on a case by case basis but as a guide include provision for 500 car parking bays, toilets, grassed areas, shade/shelter, picnic facilities, kiosk/deli, beach front commercial facilities, playgrounds and lighting. The combination of these facilities and a coastal setting help to make these areas popular, and therefore ensures high levels of patronage.

The DSP makes provision for a regional beach and associated facilities to be accommodated at either the Capricorn coastal node or at the beach just south of the possible southern marina location. Both of the locations are characterised by wide sandy beaches and are comparable in terms of wave conditions to Trigg and Scarborough.

It is estimated that, if developed to a regional level, the length of developed beach would be in order of around 1,200 to 1,500m, with capacity to be extended if demand exceeds expectations. Both sites are adjacent to planned coastal nodes which enables the development of integrated coastal nodes, including the provision of tourism accommodation, high density residential development, tourism related retail, restaurants and bars. These facilities will help to create a vibrant mixed use coastal centre that benefits from the natural attraction of the coast and provides supporting activities for residents and visitors to the regional beach. Both sites are also in close proximity to the Strategic Metropolitan Centre, providing the opportunity to establish a strong public transport link to the coastal location from the surrounding region.

In peak time the regional beach could attract up to 2,700 people a day. Significant forward planning is required to ensure that suitable land is set aside for facilities that are necessary to support a regional beach. As the planning for the Capricorn development is significantly advanced it is anticipated that the regional beach will most likely be accommodated at the more northern of the two potential locations, where appropriate forward planning can be made to support a regional beach classification. In the interim, it is anticipated that this centre will be developed as a district beach that can accommodate future growth when the demand for a regional beach is reached.

District Beaches
District beaches are used by people that reside within the district of the beach. Based on anticipated beach usage it is expected that the five district beaches would attract a combined patronage of approximately 4,800 people. The following 5 potential district beach locations have been identified along the coast:

- Existing Yanchep Lagoon area;
- The beach south of the Two Rocks Marina, known as Leeman's Boat Landing;
- Adjacent to the potential marinas and coastal nodes to the north of Yanchep and North of Two Rocks; and
- Adjacent to the coastal node associated with the Capricorn development in Yanchep.

These sites are all characterised by sandy beaches suitable for swimming. Yanchep Lagoon and Leeman's Boat Landing are located adjacent to the existing communities of Yanchep and Two Rocks respectively and are already utilised by local residents and either include, or have facilities planned, that are consistent with those typically provided at district beaches. The other district beaches are located adjacent to the Coastal Tourist Activity Centres, thereby providing the opportunity to integrate and develop associated tourism and recreational facilities. Two of the sites are also identified as suitable for future marinas, and combined with associated built form development, have the potential to develop as key destinations for residents and tourists.

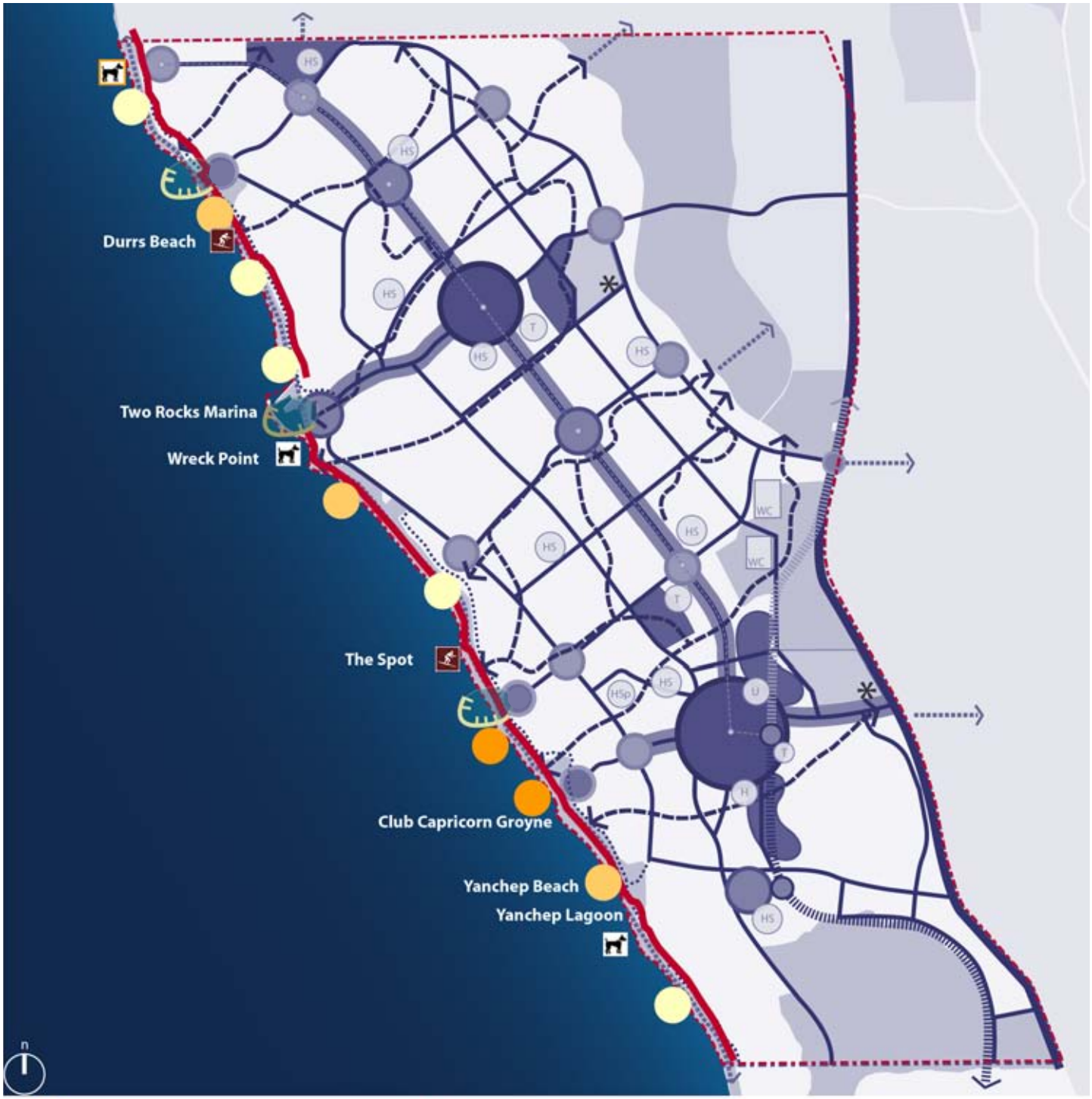
As a guide, district beaches generally accommodate facilities for 150 car parking bays, toilets, grassed areas, shade/shelter, picnic facilities, kiosk/deli, playground and lighting. The facilities for each of the district beaches will be further examined through the preparation of Foreshore Management Plans at LSP stage.

Local Beaches
Local beaches are typically classified as those beaches that are used by residents within the immediate area. Facilities typically provided at a local beach are 20 car parking bays with a small toilet block. Five suitable locations have been identified for local beaches within the DSP. These beaches will provide coastal access to nearby residents, reducing the need to travel to district beaches in the area. This will help to spread beach usage over a wider area, and eliminate possible congestion at district and regional beaches. It is assumed that the length of coast used at a local beach would be in the order of around 200 m per beach. This would mean that around 140 people could use each local beach on peak days. The five local beaches will collectively accommodate about 700 people on peak days.

Beach Safety
The MRA report refers to Short (2006) who provides guidance on the safety of beaches around the Western Australian coastline, using a beach hazard rating based on physical hazards associated with beach type and surf environment. Current Western Australian examples of regional beaches include Trigg, Scarborough and Cottesloe which have been rated between 3 /10 and 5 /10 with 10 being most hazardous. Short rates the two regional beach locations for Yanchep - Two Rocks as 5 / 10 which is comparable to Trigg Beach.

The proposed locations of the five district beaches have beach hazard ratings between 4 and 5 (Short, 2006). Yanchep Lagoon is rated the safest for swimming due to the presence of the protected waters behind the reef.

FIGURE 17 BEACH HIERARCHY



Surf Life Saving Facility
The City of Wanneroo is committed to the relocation and redevelopment of the existing Yanchep Surf Life Saving Club to cater for the increased beach use associated with the expanding Yanchep – Two Rocks community. Detailed planning undertaken to date has concluded that an area behind the groyne at the Club Capricorn Resort would be the most appropriate location for the new facility (Arbor Vitae and CCS Management Services, September 2004). This site has sufficient space for the future facilities, has access to good swimming, surfing and fishing beaches, allows effective surveillance of the beach, has the ability to work with the existing landscape features and is centrally located to be readily accessible to the growing community.

It is anticipated that the facility will include a beach patrol office, club administration area, first aid room, viewing tower, equipment store areas and social amenities including training facilities, club rooms, board room, bar and kitchen. The area would be complemented with public amenities, including car parks, toilets, showers and open space with picnic facilities. The facility may also incorporate a commercial element such as a café/restaurant and/or kiosk. The desired outcome is a self sustaining multi-purpose community facility that can be used by a number of community groups. The planning for the facility will need to be integrated with planning of the coastal node at LSP stage and also the implementation of the Yanchep-Two Rocks Foreshore Management Plan.

Marina Facility Requirements
As a coastal city, boating is a popular recreational pastime. In recent years favourable economic conditions, increases in leisure time and the affordability of boats have further contributed to an increasing ratio of boat ownership.

The current boat ownership rate for Perth is approximately 38 boats per 1,000 people. In recent years this has increased at a rate of 6 boats per 1,000 people per decade.

The figures in Department of Transport (1999) and P A Australia (1981) suggest that about 85% of the total number of boats will be kept on trailers and launched when necessary. The remaining 15% would be kept in a mooring pen in sheltered waters such as a marina or boat harbour. By 2058 it is expected that boat numbers within Yanchep-Two Rocks will be between 5860 and 11250 boats.

The levels of boat ownership that are estimated for 2058 are almost twice the levels that were observed in the metropolitan area in 2001. However this level is not much greater than the peak level that is currently observed in suburbs within the northern corridor of Perth. These established coastal suburbs have up to around 65 boats per 1,000 people.

It is expected that the higher rates of boat ownership, such as those at the upper end of the estimated forecast range, are likely to occur in Yanchep-Two Rocks, as the community matures.

Based on the results of P A Australia (1981), Department of Transport (1999) and MRA engineering research it is anticipated that the demand for boat landing facilities is likely to be affected by whether the vessels are in regular use and/or utilised on weekends. It is anticipated that at build out, in the order of 1,300 and 3,000 boats will be launched on a peak day in Yanchep-Two Rocks requiring between 22 – 49 boat ramp lanes and between 1,100 – 2,500 trailer parking bays.

Provision for such facilities needs to be considered as part of future local structure plans and foreshore management plans.

In the short term (up to 2015) it is anticipated that the demand for marine facilities could be satisfied by the possible construction of the Eglinton Marina to the south. Additionally, expansion of the Two Rocks Marina could provide further facilities and would help to further satisfy the demand for facilities in the next 20 years.

Based on the predicted ultimate demand it is unlikely that the development of the Eglinton Marina and the possible expansion of the Two Rocks Marina will provide adequate marine facilities for the ultimate population of Yanchep-Two Rocks. As a result, two additional possible marina locations have been included on the DSP. The southern location provides the opportunity for integration of the marina with the district, or possibly even regional, beach to the south. Furthermore, the marina would be located adjacent to a coastal activity centre and within reasonable proximity to the Twown Centre, providing a strong catchment for facilities associated with marinas.

A marina located adjacent to activity centres, such as Hillary's marina, can become a regional attractor, whilst also fulfilling its functional requirement of providing marine facilities. This proposed marina could be sited behind Rhodes Reef which would provide some protection from offshore wave conditions. The entrance to the marina could be located in around 6 m of water, significantly reducing the risk of large waves breaking near the entrance to the marina. Further, the location of this proposed marina is in an area that has previously been assessed as having a relatively low physical processes setback allowance, indicating that the region is relatively stable. Nonetheless, it is acknowledged that some form of coastal management would be required to prevent erosion updrift from the marina as a result of the interruption of the longshore sediment transport.

The second potential marina site is located to the north of the Two Rocks Marina. This marina would again be located adjacent to a coastal activity centre to encourage integrated development. It would also be afforded some protection from the offshore wave climate by the presence of Mallee and Map Reefs just offshore. It is likely that the entrance to the marina would be located in around 5 m of water, which would significantly reduce the risk of large waves breaking near the entrance to the marina providing safe boating access for small vessels.

The expansion of the Two Rocks marina and the development of two additional marinas along the Yanchep-Two Rocks coastline will be subject to detailed environmental, social and economic assessment. If the proposals are progressed, detailed assessment is expected to be undertaken as part of the preparation of LSP over the surrounding areas.

3.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through LSPs.

Open Space Guidelines

The detailed design of the open space network, including the location of local and neighbourhood parks, the configuration of social/ pedestrian/ cycle linkages and the detailed design of district and regional spaces, will be addressed through LSPs.

Open space should be designed according to the following principles:

- location and configuration of open space areas to respond to the natural environment and landscape qualities of the site;
- open space and social/ pedestrian/ cycle linkage planning and design should make every effort to retain and maintain the health of existing large Tuart trees for breeding sites for Carnaby's Cockatoos which are listed as under Commonwealth legislation as Endangered (Environment Protection and Biodiversity Conservation Act 1999) and in WA 'Specially protected fauna' (Western Australian Wildlife Conservation Act 1950);
- open space network to be designed in conjunction with the urban water management system to enable drainage to be incorporated into parkland design;
- all open space areas to be designed to promote community integration as opposed to separation. Where practical open space to be co-located and/or linked with other community features and facilities such as school open space to maximise efficient use of land, functionality and management regimes;
- areas may range in size and diversity and will be designed to provide a high standard of safety, amenity, accessibility and functionality;
- design of all open space areas shall allow for surveillance and easy access, with all residents ideally being located within a 3-5 minute walk of a park (250m to 400m);
- the facilities present in open spaces will be attuned to the needs of their community catchments and may include children's and youth playgrounds, gardens, sitting areas, dog exercise areas, kick-about and court areas and local nature conservation areas;
- active open space will be required at the local level in the form of kick-about areas as well as junior and senior sized ovals. The location and design of these spaces will be determined in consultation with the City of Wanneroo;
- particular care should be paid to the relationship and design of open space to medium and higher density areas, where private space is limited;
- highly connected to their neighbourhood catchment via a comprehensive network of pathways for walking and cycling;
- higher densities and mixed-use development will result in more activity on streets and as such, streets should be designed as social spaces for encouraging pedestrians and cycle activity and opportunities for informal community interaction through generous footpaths, street trees, adequate lighting and attention to safe urban environments, reflecting local character
- POS areas to be designed to minimise ongoing costs and use of resources associated with maintenance and management; and
- staging of open space provision to correspond with projected community need;

Social/ pedestrian/ cycle Linkage Guidelines

Social/ pedestrian/ cycle linkages will vary in width, functionality and design and may include formal, passive and active public open space reserves from regional through to local level, habitat corridors, boulevards, conservation areas, coastal reserves and water management areas. The location of the social/ pedestrian/ cycle linkages in the DSP was guided by Coffey (refer to report in Part 3) who have prepared a more detailed assessment of the widths and alignments that can be used to inform more detailed assessment at the LSP stage. Reference should also be made to the Significant Natural Features map (Figure 15).

Social/ pedestrian/ cycle linkages should be designed using the following principles:

- located and configured to respond to the natural environment and landscape qualities of the site;
- retains and maintains the health of existing large Tuart trees for breeding sites for Carnaby's Cockatoos which are listed as under Commonwealth legislation as Endangered (Environment Protection and Biodiversity Conservation Act 1999) and in WA 'Specially protected fauna' (Western Australian Wildlife Conservation Act 1950);
- where appropriate incorporates cycle and pedestrian linkages from homes and workplaces to the coast, the national parks, activity centres playing fields and education facilities;
- may form part of local neighbourhood places and streets that are designed for pedestrians and cyclists;
- may form conservation functions either through the provision of POS, or as areas of low density housing where both landform and vegetation can be retained;
- retains valuable remnant vegetation to achieve conservation objectives and in this regard they will be wider in certain locations to encompass areas comprising significant ecological and/or landscape value;
- aligned to preserve significant topographical features (ridgelines and gullies), vegetation, fauna habitat and view corridors and encompass in certain locations areas comprising significant ecological and/or landscape value;
- define strategic pedestrian entry points to the eastern and northern parklands and coastal reserve;
- may be developed as urban parks with ecological functions when they traverse the transit corridor or move through activity centres; and
- where corridors intersect with barriers such as major road or other site facilities such as community facilities, activity centres or recreation places, pedestrian and cyclist movement should be given priority and integrated into the design without compromising user safety or functionality of both the social/ pedestrian/ cycle linkages or the place/facility.

Management plans and implementation strategies to be prepared for both open spaces and social/ pedestrian/ cycle linkages at the LSP stage are to address the following issues:

- the function, delineation and management of the spaces;
- delineation and treatment of boundaries and interfaces with urban areas;
- management of remnant vegetation within the areas both during infrastructure works and once the area has been improved;
- specific recreation facilities and other amenities to be accommodated within open space areas to satisfy community needs;
- measures to control access;
- fire management;
- exclusion of domestic and feral animals where warranted;
- measures to control weed invasion; and
- rehabilitation procedures for degraded areas.

Local areas retained as native bushland are to be established and managed in accordance with best practice local biodiversity strategies.

Urban Spaces
The allure of the public realm and the possibilities it presents for creativity, social interaction and other forms of public urban life will be a defining character of the activity centres and mixed-use employment areas. Designed to complement the built form and enhance existing environmental and landscape attributes, the public realm will encapsulate the urban qualities and identity of these nodes and their community and civic life.

Within the activity centres and other mixed use areas, the sense of enclosure created by the dense built form will give way to spaces of varying scale, function and design - from intimate scaled plazas, gardens and laneways to larger civic squares. This permutation of spaces will add interest to the urban fabric and contribute to varied and memorable experiences for visitors and residents as they move through these areas. The dispersal of open spaces throughout the urban centres and mixed development areas will ensure a range of recreational needs is catered for within proximity to workplaces and homes.

In the absence of a specific minimum POS standard for mixed use development, the quantity of open space provision in these areas will be determined through local structure planning and centre plans in conjunction with the equally important considerations of open space distribution, function and quality.

Regional, District and Local Beaches
The coast will be a major element of the overall public realm that will define the character of Yanchep-Two Rocks and perform a significant recreation role for future communities of the region.

To achieve a balance between conservation and recreation, facilities along the coast will be concentrated within specific nodes. The range of facilities available within each node will reflect the beach position within the overall hierarchy of local, district and regional beaches.

LSPs for the coastline will involve the following more detailed investigations of the facilities identified through the district level planning:

- Integration of the foreshore and adjacent development
  Studies will be undertaken through the preparation of LSPs to ensure the maximum integration of uses. In some locations, a review of coastal setbacks may be warranted as contemplated by the DSP.

- Foreshore Management Plan
  Detailed Foreshore Management Plans will be prepared as part of the LSP and will address matters including the provision of coastal facilities and management for foreshore environments.

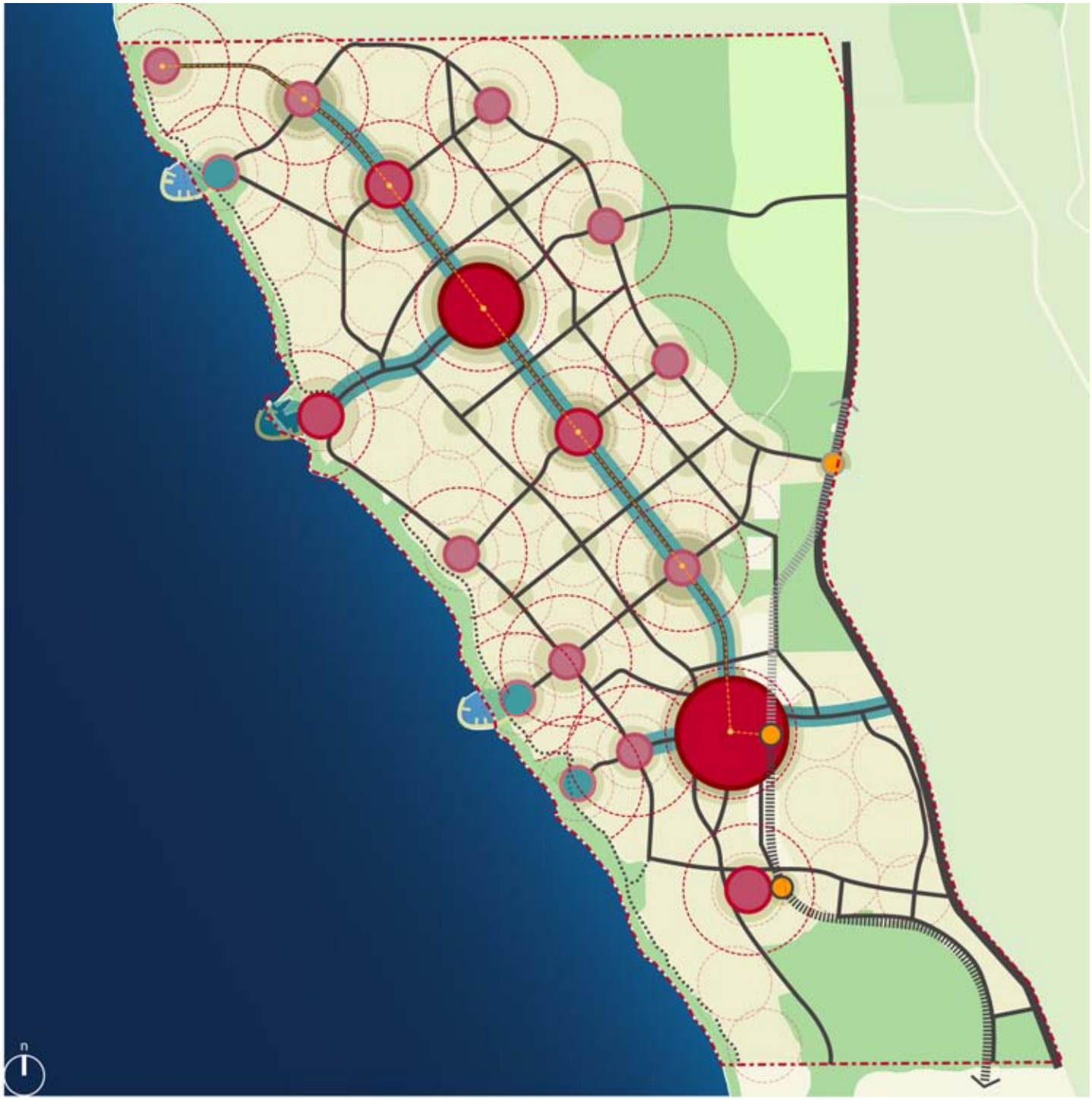
- Marina Sites
  The DSP identifies two potential additional sites for marinas along the Yanchep-Two Rocks coastline. Detailed studies in relation to economic, social and environmental factors relating to marinas must be undertaken as part of the preparation of LSP's over the area.

- Surf Life Saving Facility
  Planning for the new Yanchep Surf Life Saving Club will be integrated with the preparation of the LSP for the coastal node at Club Capricorn and will address matters such as location, access, parking, facilities to be provided and associated public open space and amenities.

04 URBAN STRUCTURING + BUILT ENVIRONMENT

04 URBAN STRUCTURING + BUILT ENVIRONMENT

FIGURE 18 URBAN STRUCTURING



04 URBAN STRUCTURING + BUILT ENVIRONMENT

4.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

Analysis of the DSP indicates that the land use and residential mix proposed for the Yanchep-Two Rocks project has the capacity to accommodate a residential population in the order of 155,000 people and approximately 55,000 jobs. The activity centres and mixed use corridors allow for a higher residential population and workforce to be accommodated within the Yanchep-Two Rocks area than would typically be achieved if the land was developed as a dormitory residential suburb of Perth. This is consistent with the mixed use and consolidated urban form advocated by Network City.

The residential population estimated for Yanchep-Two Rocks has been calculated by applying average 'urban densities' to all areas within the Structure Plan that are indended to provide residential housing. The urban density applied to each area is equivalent to the projected dwelling yield per hectare of land, wherein a significant percentage of the same hectare of land is also allocated to other uses including open space (approx. 10 per cent), streets (approx. 25 per cent), primary schools and other non-residential land uses. This is consistent with the approach used for calculating densities in Liveable Neighbourhoods (Edition 3).

Key Principles for Neighbourhoods

The planning and design of neighbourhoods at Yanchep-Two Rocks will be based on the following principles:

There will be a discernable centre to each neighbourhood that is in walking distance to most dwellings.

The centre of each neighbourhood should provide a community focus that is centred on a public space. This may be one of the larger mixed use activity centres serving several neighbourhoods, a smaller centre, accommodating local shopping, services and community uses, or a town square, community facility or important street intersection serving a single neighbourhood. Given the scale of the DSP, those neighbourhoods that will be structured around small local centres or areas of amenity are not illustrated on the plan and will be determined at the next more detailed stage of planning. In the aggregation of multiple neighbourhoods which will occur in the regional, district and sometimes neighbourhood activity centres, retail and commercial activity may be located at the edge of the neighbourhood where they can be combined with others and intensify commercial and community activity.

Most dwellings will be located within a five minute walk of a centre. This pedestrian catchment, or distance most people find comfortable to walk, is approximately 400 metres. Neighbourhoods that are designed to be pedestrian friendly and transit orientated permit the broader district and region to be accessible without singular reliance on cars.

Neighbourhoods will contain a balanced mix of activities – retail, employment related, civic and cultural- bound together by a range of residential densities and a mix of housing forms to cater for a diverse mix of households and lifestyles that make up a community.

Changing demographic profile and lifestyle choices are contributing to an increased need for a greater diversity and choice in housing form across Australia. In recent decades development has been characterised by homogenised density profiles focused around single family dwellings. This approach has tended to produce featureless and bland environments that do not respond to the range of dwelling types needed to cater for a diverse mix of households and lifestyles that make up a community.

As a general rule, neighbourhoods accommodate between 1,500 – 2,500 dwellings. Yanchep-Two Rocks will provide a mix of housing products to cater for all market sectors. This will result in a greater level of activity within each neighbourhood reflective of traditional neighbourhood design. The range of housing types will include apartments, row or terrace housing, duplexes, cottage homes and single family dwellings increasing housing affordability. Higher density housing will be developed around the centres of neighbourhoods, in and around the activity centres, mixed use corridors, and other areas of amenity. This increases the accessibility of these areas, improving their viability and vitality and reducing the reliance on the private motor vehicle.

The structure of the neighbourhood will be based on a highly interconnected network of streets that is permeable, and legible achieving a safe, efficient and attractive street network for vehicles, pedestrians and cyclists alike.

Neighbourhoods will be designed with traditional street patterns incorporating more intersections and smaller street blocks, providing a greater degree of permeability and more walkable places. The road hierarchy will be based on a simple, efficient and legible network of local streets with strong external connections to major routes and between key nodes outside the neighbourhoods. Streets will be attractive and enable the efficient and safe movement of vehicles, cyclists, pedestrians and those with restricted mobility, and will function as a legitimate part of the public realm encouraging casual meetings that help form the bonds of a community. Local streets will be orientated to maximise the opportunity for dwellings to achieve appropriate climate responsive dwelling design.

Open spaces will be an integral part of all neighbourhoods and provide for a broad range of passive and active recreation opportunities within a short walk of most homes.

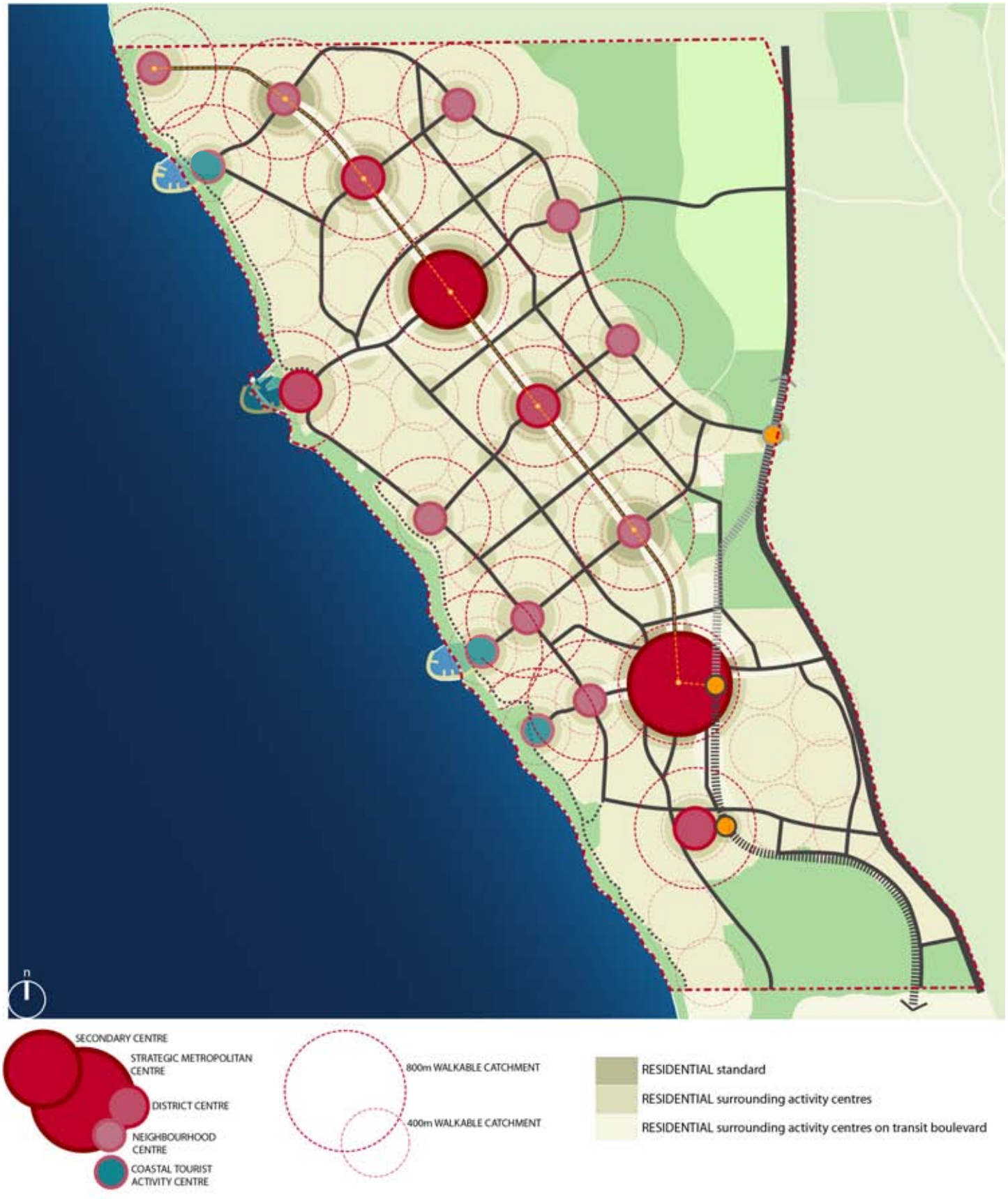
Open spaces play a significant role in the neighbourhood unit providing for both passive and active recreation and contributing towards the legibility of an area by creating a sense of place that helps define and build communities. The DSP includes a broad framework of open spaces including regional reserves, regional active open spaces and social/ pedestrian/ cycle linkages. LSPs will define a hierarchy of local open spaces designed to fulfil the recreational needs of the community, retain natural and cultural features of the site and define a sense of place. In some cases these areas will include open spaces located within the social/ pedestrian/ cycle linkages defined on the DSP.

Neighbourhoods will be designed to reflect and respect its setting.

Based on a broad level ped-shed analysis the DSP area, when fully developed, will accommodate approximately 35 neighbourhoods. Each neighbourhood will be developed with reference to the local context, landscape, topography and broader urban framework. Consequently, each neighbourhood will assume its own local identity. Coastal communities will have a different focus than those established as part of the highly urban fabric of the City Centre or Transit Boulevard creating a rich tapestry of neighbourhoods across the site offering different lifestyle choices and opportunities to the future communities of Yanchep-Two Rocks.

Development at Yanchep-Two Rocks will result in compact, walkable, mixed use neighbourhoods modelled on the best town-making traditions and which pay due regard to the demands of contemporary urban life. In simple terms, this translates into narrow streets and relatively short blocks laid out in an interconnected pattern, interspersed parks and civic uses placed in prominent locations, a mix of uses geared to local needs and dwelling types which vary from detached single family homes, to attached houses, and apartments. This approach accords with the Liveable Neighbourhoods policy, a key element of the WAPC's State Planning Strategy.

FIGURE 19 NEIGHBOURHOOD STRUCTURE AND WALKABLE CATCHMENTS



4.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that should flow through to the preparation of LSPs.

Neighbourhood Structure

The neighbourhood unit is the principal organising element for the residential areas of the Yanchep - Two Rocks DSP. It corresponds to a pedestrian catchment of a five minute walk, or approximately 400m. The structure plan has been divided conceptually into neighbourhoods, each measuring roughly 400m from centre to edge. This structure places the majority of households within pedestrian access of a small neighbourhood centre likely to comprise convenience shopping, civic activities and public open space. Based on this measure, the archetypal neighbourhood would be circular and average 50 hectares in area. Neighbourhoods will not, of course, all be circular, nor will they all be 50 hectares, as their shape and size will be determined by surrounding conditions, landscape and topography, existing road networks and wider strategic objectives. However, all neighbourhoods are predicated on the discipline of the pedestrian catchment. Once the neighbourhood structure is determined, all other planning and design decisions follow naturally.

The DSP identifies the general neighbourhood structure in proximity of the mixed use transit boulevard and activity centres. The DSP also reflects the existing communities of Yanchep and Two Rocks and the detailed structure planning that has already been undertaken across parts of the site.

Interspersed between centres will be a series of walkable neighbourhoods developed around the community nodes and accommodating a range of housing types. Although the design of each neighbourhood will vary depending on its context, each will offer a balanced mix of dwellings, workplaces, shops, civic buildings and parks. Neighbourhoods will incorporate best practice urban design principles that contribute to the development of a sustainable community framework that reflects the key principles for neighbourhood design.

Although the DSP establishes a broad network of neighbourhoods defined through walkable catchments, it is recognised that the configuration of these neighbourhoods will be further defined through the preparation of LSPs. Walkable catchments of 400m are established around neighbourhood and mixed use areas and 800m catchments identified around those areas with a greater strategic attraction to which people are willing to walk further to reach. The shape and size of neighbourhoods will be determined by surrounding conditions, landscape and topography, existing road networks and the wider strategic objectives for the DSP. It is expected that the Yanchep City Centre will accommodate and anchor a series of neighbourhoods in and around the centre.

The regional road network has been largely dictated by the long and narrow geometry of the site and the desire to create a mixed use Transit Boulevard that maximises catchment and accessibility for the site. As a consequence of this, a broad inter-cardinal network of regional and district streets has been established. The scale of the street network presented as part of the DSP is broad enough to enable a high degree of solar orientation through the design and layout of the local and secondary road networks, placement of neighbourhood amenities and at detailed housing design phase.

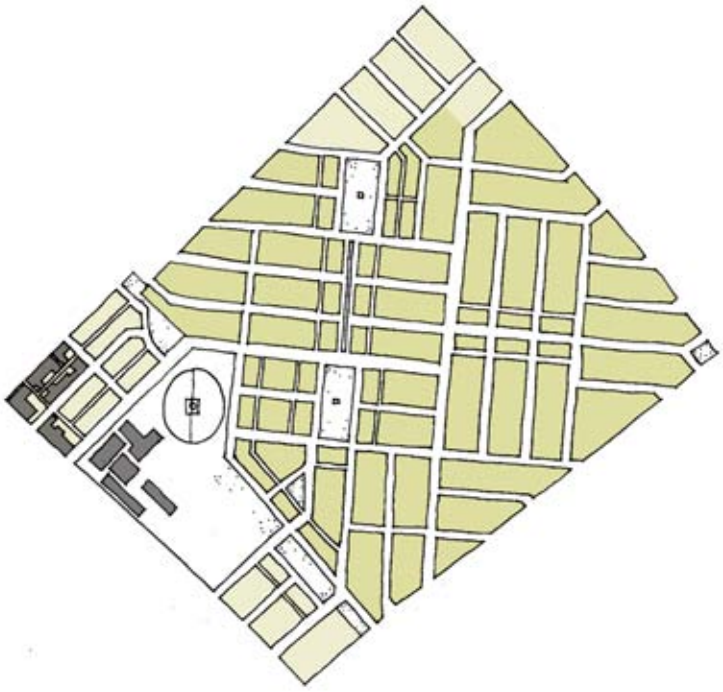
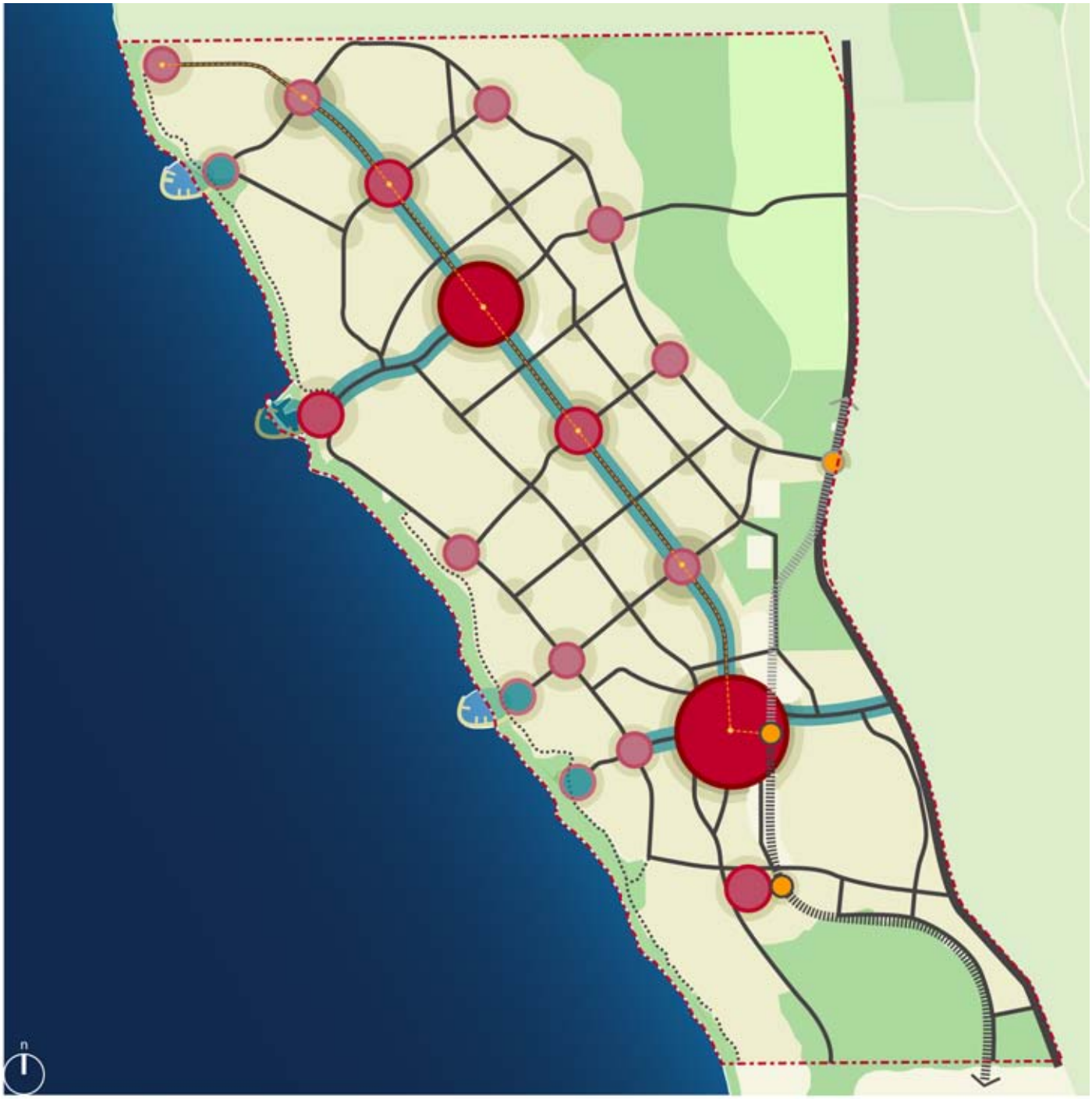


ILLUSTRATION 2
HIGH DEGREE OF SOLAR ORIENTATION CAN BE ACHIEVED THROUGH DESIGN AND LAYOUT OF THE LOCAL STREET NETWORK AND PLACEMENT OF NEIGHBOURHOOD AMENITIES

FIGURE 20 RESIDENTIAL DENSITIES



GROSS DENSITIES

STRATEGIC METROPOLITAN CENTRE & SECONDARY CENTRE	**220ha**	=	3 960dwellings [@ 18 d/urban ha]
DISTRICT CENTRES	**207ha**	=	5 175 dwellings [@ 25 d/urban ha]
COASTAL TOURIST ACTIVITY CENTRES	**38ha**	=	968 dwellings [@25 d/urban ha]
NEIGHBOURHOOD CENTRES	**52ha**	=	1 290 dwellings [@25 d/urban ha]
EMPLOYMENT/MIXED USE	**91ha**	=	544 dwellings [@ 6 d/urban ha]
MIXED USE	**258ha**	=	6 458 dwellings [@25 d/urban ha]
RESIDENTIAL [25 dwellings/ha]	**135ha**	=	3 375 dwellings
RESIDENTIAL [20 dwellings/ha]	**651ha**	=	13 014 dwellings
RESIDENTIAL [10 dwellings/ha]	**3196ha**	=	31 959 dwellings
RURAL RESIDENTIAL [0.5 dwellings/ha]	**509ha**	=	254 dwellings
			66 996 dwellings [x 2.3persons/dwelling]
			154 091 people

Urban Densities and Residential Form
The DSP allocates a range of urban densities to the different land uses that are planned to support residential housing. In accordance with Liveable Neighbourhoods and the City of Wanneroo Housing Strategy and experience gained from the wider application of these policies, a range of suggested residential urban densities has been formulated to ensure that the housing targets established for the DSP can be achieved.

In accordance with Liveable Neighbourhoods, the urban density applied to each area is based on the projected dwelling yield per hectare of land. These figures recognise that in the order of 35% of any area is required for uses such as public open space, streets and primary schools.

The figure takes into account both the proportion of the land use that is expected to be residential and the likely density of that residential form. For example, it has been assumed that whilst a significant proportion of land within Activity Centres will be set aside for non residential activities, the form of urban development will be relatively dense.

ILLUSTRATION 3
CASE STUDY - CAPRICORN DEVELOPMENT
The Lindsay Beach precinct contains a broad range of low and medium density development.

R40
R30
R20
R10
R5
POS

GROSS DENSITY = 10 DWELLINGS/URBAN HA

Residential:	61.0%
Commercial:	0.0%
POS:	6.6%
Roads & PAW:	32.4%

ILLUSTRATION 4
CASE STUDY - CAPRICORN NEIGHBOURHOOD CENTRE
The Neighbourhood Centre comprises a diverse mix of housing and non residential development while still achieving an overall high urban density.

R80
R60
R40
R30
R20
R10
POS

GROSS DENSITY = 21 DWELLINGS/URBAN HA

Residential:	46.3%
Commercial:	8.7%
POS:	10.7%
Roads & PAW:	34.3%

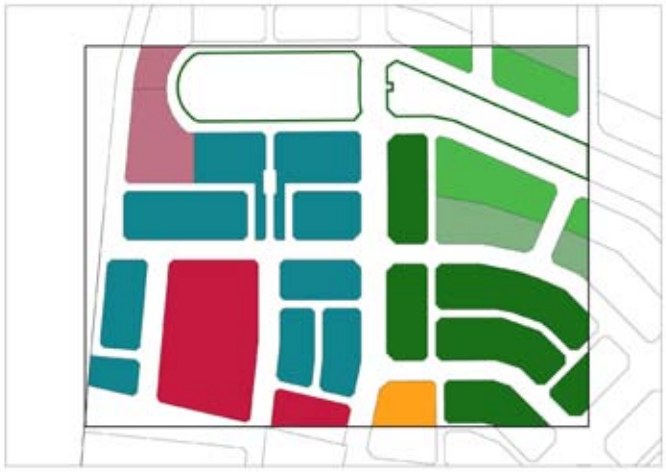
ILLUSTRATION 5
CASE STUDY - PERRY LAKES
A wide range of lot sizes contributes to a diverse built form outcome.

Apartments
Small Apartments
Terraces
Split Level Townhouses
Single Residential
POS

GROSS DENSITY = 21 DWELLINGS/URBAN HA

Residential:	49.5%
Commercial:	0.0%
POS:	15.8%
Roads & PAW:	34.7%

ILLUSTRATION 6
CASE STUDY - HARVEST LAKES
The Havest Lakes Neighbourhood Activity Centre will be supported by a dense and diverse community.



Local Centre
R80
R60
R50
R30
R20
R12.5
POS

GROSS DENSITY = 23 DWELLINGS/URBAN HA

Residential:	52.0%
Commercial:	1.4%
POS:	10.3%
Roads & PAW:	36.3%

ILLUSTRATION 7
LOW DENSITY HOUSING BUILT INTO NATURAL LANDSCAPE

ILLUSTRATION 8
TERRACES FRONTING AREAS OF AMENITY

ILLUSTRATION 9
MULTIPLE DWELLINGS BENEFIT FROM AMENITY OF LOCAL PARK

ILLUSTRATION 10
SHOP TOP HOUSING PROVIDE ANOTHER ALTERNATIVE HOUSING FORM

Residential
The DSP is predominantly comprised of a series of residential neighbourhoods. Three different densities have been allocated to residential areas based on the principle that residential densities are closer to activity nodes, intersection of important roads and surrounding the mixed use transit corridor.

For those residential areas that are expected to make up the majority of neighbourhoods, an urban density of 10 dU/ha has been applied. The actual density of urban form for each neighbourhood will vary depending on the extent of non residential land uses planned for the area, but as illustrated in the case studies presented, an urban density of 10du/ha can provide a compact mix of densities and housing forms to accommodate a range of different housing needs and lifestyles.

For those residential areas located in close proximity to areas of amenity and community uses such as activity centres, coastal nodes and transit stations, an urban density of 20 dU/ha has been applied to reflect the anticipated higher concentrations of medium and high density housing. This will enable a greater proportion of residents to live within a short walk of neighbourhood and district facilities.

A higher urban density of 25 dU/ha is applied to those residential areas in closest proximity to the Yanchep Strategic Metropolitan Centre, Secondary Centre and Mixed Use Transit Boulevard. These areas will support a residential population that will live in town houses, units and apartments and benefit from living in a highly urban mixed use environment in close proximity to a wide range of facilities serviced by an efficient public transport system.

Residential Development within Activity Centres, Mixed Use and Employment Nodes
The DSP makes provision for a hierarchy of activity centres, mixed use areas and employment focused areas that will service future residents and visitors to the region and be the focus for significant employment creation. The DSP also makes provision for a range of residential development in each of these areas.

The centres will be multi-functional and networked by major transport connections, allowing synergies to form between centres and providing maximum accessibility. Coastal centres, including the three marina nodes, will create a focus for leisure and recreation based development and activity which will attract tourists and other guests to the region.

All activity centres and mixed use areas, other than the Strategic Metropolitan and Secondary Centres, incorporate an average urban density of 25 dU/ha, reflecting the anticipated higher residential densities and the high proportion of non residential activities including retail, commercial and civic. The proportion of non-residential uses is even more pronounced in the Strategic Metropolitan and Secondary Centres which will accommodate a significant amount of employment related activities and other non residential uses. As a consequence an urban density of 18 dU/ha has been suggested.

The employment nodes located north and south of the Yanchep Strategic Metropolitan Centre will also accommodate a limited amount of residential development in an effort to provide for a 24 hour presence as opposed to a 'drive-in / drive-out' business estate. However, to reflect the employment focus of this area, a low urban density of only 6 dw/site ha has been applied. Residential building typologies specifically designed to accommodate both living and working will be encouraged to allow a seamless transition between employment areas and adjacent residential areas.

Establishing a minimum urban density target for residential development throughout Yanchep-Two Rocks will facilitate the development of more sustainable new communities by encouraging a more dense and mixed use urban form that will provide for more efficient use of social and civil infrastructure and make public transport more feasible.

Transit Boulevard and Mobility
The DSP proposes a mixed use Transit Boulevard to form a central spine that traverses the length of the site and binds together the various elements, including the major activity centres, mixed use development and transit services.

This Boulevard forms a logical extension to Marmion Avenue and its central position maximises the catchments available to the major activity centres and mixed uses that will be developed within this corridor. The central location of the corridor will also inject amenity further east, recognising that communities to the west will readily leverage from the amenity of the coast.

Industrial districts are located to maximise accessibility and are buffered from more sensitive residential and commercial areas by regional open space. Mixed use employment nodes and major community uses, including hospitals and universities, are also sited for accessibility near major activity centres where relationships can be formed with other uses.

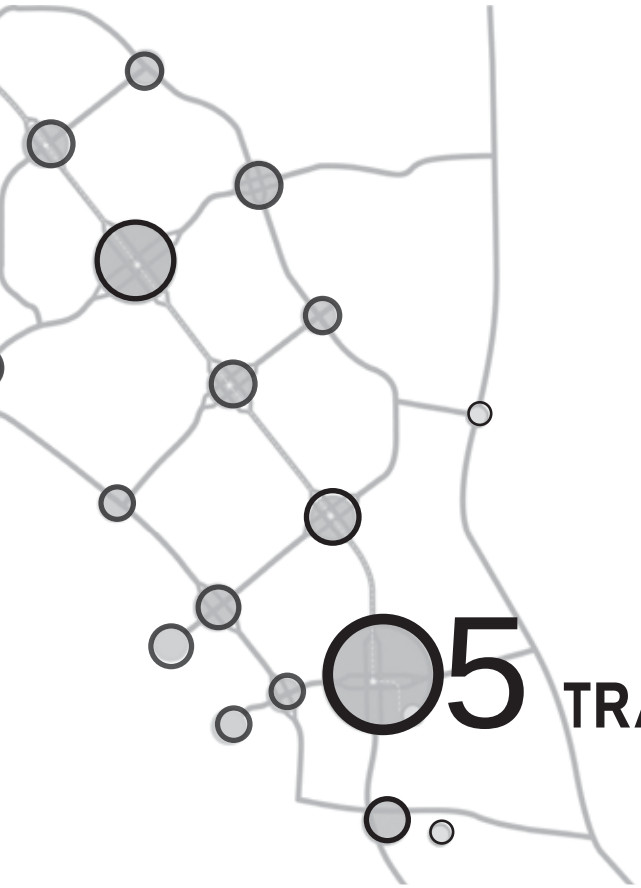
Rural- Residential
The DSP area incorporates a pocket of rural residential land in the north eastern most portion of the site. This area, known as Sea Trees is currently of being subdivided into 1ha rural residential lots. For the purpose of the DSP an urban density of 0.5 du/ha has been applied to this area. These semi rural communities are currently poorly serviced by community and commercial facilities, however in the future will be serviced by activity centres and communities facilities that form part of the broader DSP area to the east.

4.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through LSPs.

Principles for guiding residential development in LSP
A series of LSPs will be prepared to guide more detailed planning of the residential areas. The following principles will guide the preparation of LSPs:

- LSPs will include an analysis of urban densities and an assessment of neighbourhood design based on the principles espoused in the DSP.
- LSPs will accommodate diverse and affordable housing including Homeswest, community housing and private sector provided affordable housing that is located near support infrastructure, including public transport, education and employment.
- LSPs are to incorporate strategies to promote climatic responsive design through appropriate configuration of the local road network, orientation of lots and housing design.
- The LSPs will detail street blocks, and where greater detail is required building layout plans and building design criteria, and nominate a series of building typologies (including adaptable buildings) that will contribute to high quality urban design, architecture and built form. The LSPs will also offer detailed design direction with respect to the treatments of the street environments (landscape treatments, public art etc).
- A street type, capacity and character plan will be produced as part of the LSP that considers the multi-functional role and desired character of each street and ensures street design responds appropriately.
- The design and treatments applied to the public realm of neighbourhoods and the management of these areas will be given detailed attention at the LSP stage. Key objectives will include versatility to adapt to different users, provision of complementary uses around spaces, safety and access; diversity (i.e. including plazas, squares, parks) and place making.
- LSPs to address potential noise issues in residential areas associated with the Freeway in consultation with Main Roads such as lowering of freeway carriageways behind a noise bund.



05 TRANSPORT + ACCESS

05 TRANSPORT + ACCESS

5.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

Urban life at Yanchep-Two Rocks will encourage interaction through a well-designed movement system comprising streets, footpaths, cycleways and public transport routes. These elements will be integrated with each other, and with land use, to form a crucial element of the urban fabric and character of Yanchep-Two Rocks. Together, these elements will underpin a progressive transport system that will allow Yanchep-Two Rocks to function effectively and efficiently and for its communities to be linked with the wider metropolitan transport network.

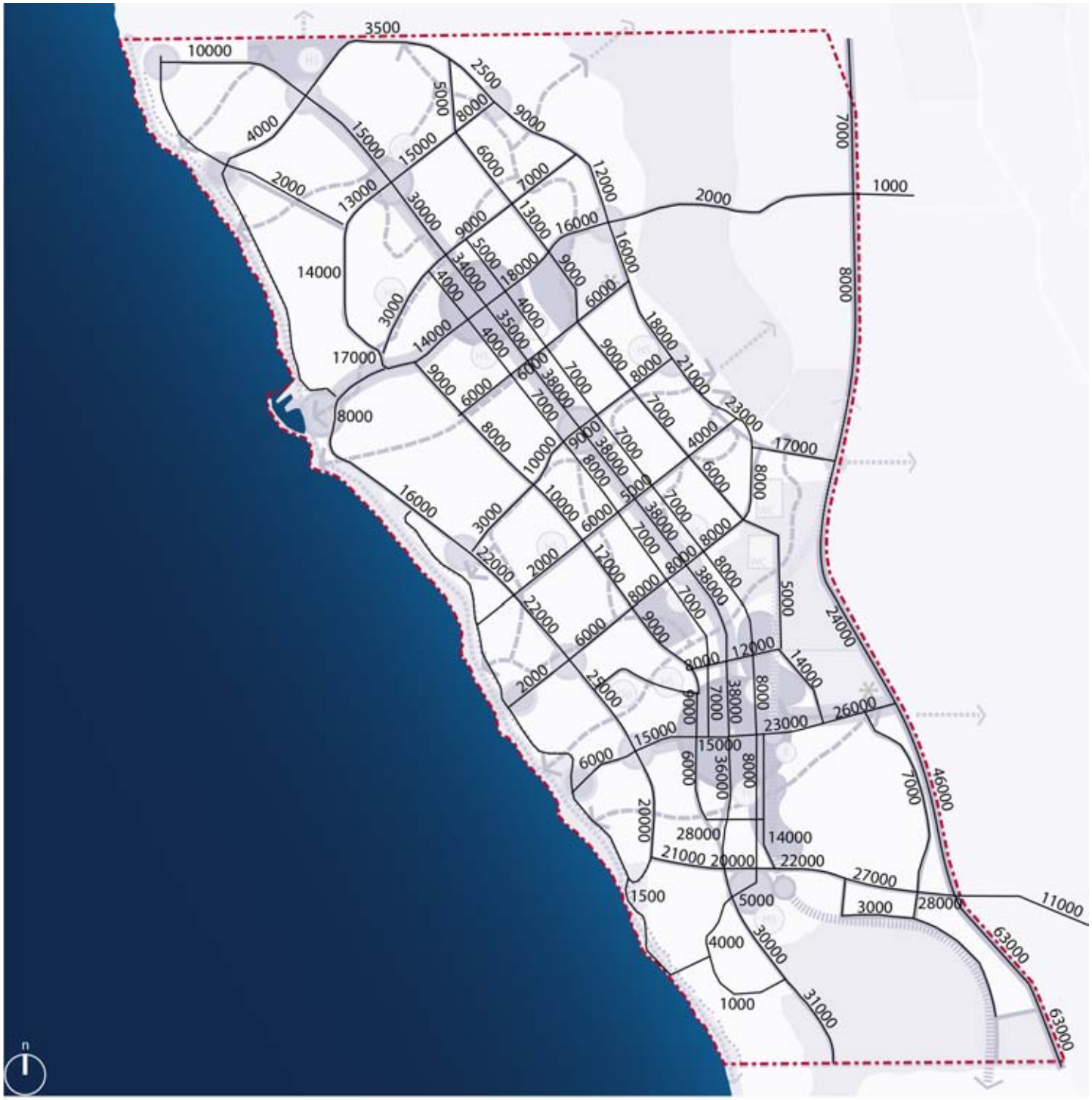
Sinclair Knight Merz (SKM, August 2006) has prepared a comprehensive transport study for the Yanchep-Two Rocks area that involved extensive discussions with the City of Wanneroo, the DPI, the Public Transport Authority (PTA) and Main Roads Western Australia (MRWA).

The transport planning for Yanchep-Two Rocks focuses on how transport is able to support and facilitate sustainable growth and development. In this regard, the objective is to ensure that wherever possible, the design of Yanchep-Two Rocks allows for movement by foot, bicycle or public transport to be as easy and convenient as using a car. This does not mean excluding the car, but rather striking a balance to create attractive, vibrant, safe and stimulating places.

The following key principles have guided the planning of the transport elements contained within the DSP:

- Maximise accessibility and choice by catering for a variety of transport modes through best practice integration of land use and transport planning;
- Reduce car dependency by providing more opportunity to travel by public transport and good facilities for walking and cycling;
- Reduce car travel by providing a better balance between jobs and the workforce within Yanchep-Two Rocks, than has occurred in the remainder of the North West corridor;
- Apply transit-oriented design near stations and along transit corridors, including clusters of mixed uses in walkable neighbourhoods and activity centres focussed around public transit stations;
- Encourage public transport use through efficient bus/rail interchanges, regular services and accessible stops and stations;
- Make connections an essential part of place-making by ensuring all routes respond to their context and portray a distinctive urban character;
- Develop a permeable, legible and fine grained street network that is highly interconnected so as to reduce total vehicle kilometres travelled and consequently lower emissions and energy use;
- Eliminate six lane roads (other than the freeway on the periphery of the area) and minimise four lane roads, whilst maintaining high capacity priority routes; and
- Provide for safe, direct walking and cycling routes.

FIGURE 21 TRAFFIC VOLUMES



Estimated Transport Demand
The long-term transport demand to, from and within Yanchep-Two Rocks has been estimated based on the following:

- a long-term population forecast of 155,000 people;
- 55,000 jobs within Yanchep-Two Rocks;
- a total trip generation rate of 4.2 daily trips per Yanchep-Two Rocks' resident, comprising 3.4 home-based trips within Yanchep-Two Rocks, 0.3 home-based trips outside Yanchep-Two Rocks and 0.5 non home-based trips;
- 75% of jobs within Yanchep-Two Rocks filled by Yanchep-Two Rocks residents;
- non-home based business and commercial trips being 15% of home-based generated trips within Yanchep-Two Rocks; and
- average mode share for public transport being 9%.

Each of these assumptions has been extensively discussed with the DPI's transport planning section and tested against the Strategic Transport Evaluation Model (STEM) outputs.

In the long-term, when Yanchep-Two Rocks is fully developed, it is estimated there will be 669,000 trips per day to, from and within Yanchep-Two Rocks by all modes of transport – cars, public transport, walking and cycling. The breakdown of estimated trips by mode is shown in the Estimated Trips Made per Day Table. These estimates suggest that about 77% of all trips are expected to be fully internal to Yanchep-Two Rocks.

A workforce to population ratio similar to that which exists today has been assumed, however, it is possible that with an aging population this ratio will decrease. If this occurs, the internal/external trips will be less and the fully internal trips will be more, resulting in an overall decrease in vehicles kilometres. The modelling outputs are therefore considered to be conservative.

The mode shares developed by SKM, following discussion with the DPI's transport modelling section, are shown in the Estimated Mode Shares Table.

At the request of the DPI, MRWA has undertaken modelling for Yanchep-Two Rocks using its Regional Operations Model (ROM). The ROM has allocated traffic volumes onto the proposed road network.

Whilst MRWA was able to amend the mode share for work trips to conform to DPI and SKM future estimates, it has not been able to modify the mode share for the other 80% of trips. The overall conclusion is that the traffic generation estimated by the MRWA ROM is too high for trips fully internal to Yanchep-Two Rocks. However, it is recognised that ROM is a strategic 24 hour model designed to produce an order of magnitude traffic estimate on individual streets. Allowing for variation on individual streets we consider the traffic estimates provided by ROM will be adequate to access the road network generally. The road type and cross sections proposed for individual streets will need to take account of the transport modelling, however also need to address a range of other issues. Where traffic volumes, as estimated by ROM, exceed desirable levels for meeting community and urban design objectives, it may be necessary to manage the traffic rather than seek to accommodate traffic estimates that are considered likely to be too high.

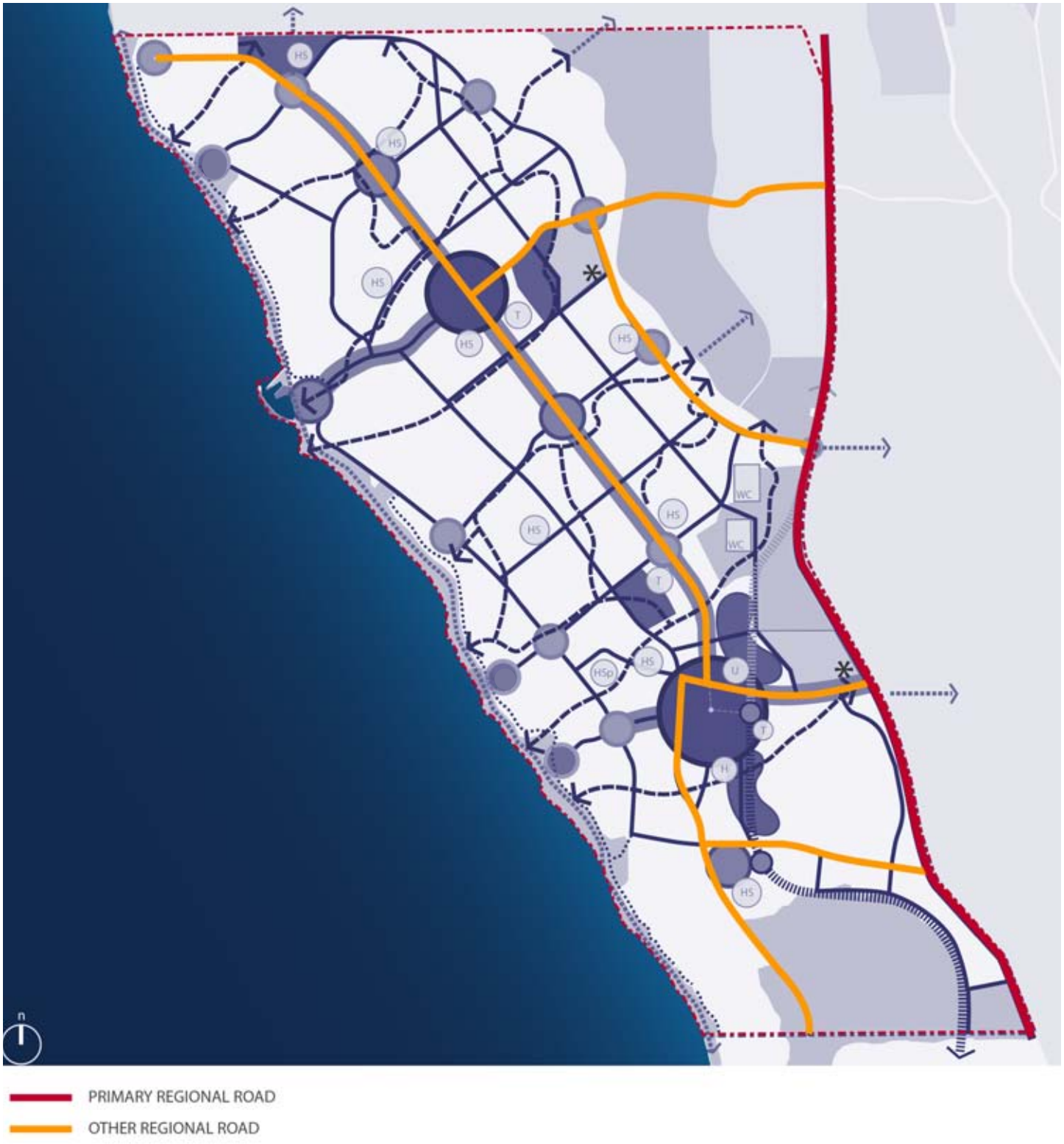
Table 3 Estimated Trips Made per Day

Mode	Total	Fully Internal to Yanchep - Two Rocks	Internal/External	Percentage Trips Internal to Yanchep - Two Rocks
Public transport	60 500	34 500	26 000	57%
Car driver	357 000	255 000	102 000	71%
Car passenger	134 000	110 000	24 000	82%
Walk and cycle	117 500	117 500	0	100%
Total	669 000	517 000	152 000	77%

Table 4 Estimated Mode Shares

Mode	Fully Internal to Yanchep - Two Rocks	Yanchep - Two Rocks To/ From External	All Trips To/From/Within Yanchep - Two Rocks
Public transport	7%	17%	9%
Car driver	49%	67%	53%
Car passenger	21%	16%	20%
Walk and cycle	23%	0%	18%
All Modes	100%	100%	100%

FIGURE 22 REGIONAL ROAD NETWORK



05 TRANSPORT + ACCESS

Regional Movement Network
The DSP identifies the major urban developments, regional roads and key land features which affect the regional transport network as it relates to Yanchep-Two Rocks.

It is projected that most trips to Yanchep-Two Rocks will come from the Perth urban area to the south, however a growing number will also come from the north and east in the longer term. To the north of Yanchep-Two Rocks, the Gingin Coast Structure Plan projects there will be significant growth, with the Shire of Gingin's population forecast to grow from 2,000 to 16,000 by about 2031. To the east, the planning in the North-East Corridor Extension Strategy (WAPC, 2003) accommodates a further 30,000 people by 2021. It is proposed that this population be contained within three nodes, including 5,000 in the Bullsbrook area, 10,000 in a new settlement within the Upper Swan district, and a further 10,000 people in a new settlement south of Bindoon.

Yanchep Beach Road and Wanneroo Road currently connect the Yanchep-Two Rocks region to the remainder of the metropolitan area. As the area develops, the further road linkages (extension of Marmion Avenue and the Mitchell Freeway) and the extension of the northern suburbs railway will ensure Yanchep-Two Rocks is well connected to the south. The railway is discussed below under 'Public Transport'.

The Mitchell Freeway is planned to extend north to connect with Wanneroo Road. It will function as the inter-regional highway connecting Yanchep-Two Rocks with the remaining metropolitan area to the south and with the Shire of Gingin and beyond to the north. Projections suggest the Mitchell Freeway will carry approximately 60,000 vehicles per day south of Yanchep Beach Road once Yanchep-Two Rocks is fully developed. MRWA has advised that there is provision for the Mitchell Freeway to be six lanes in the long term. Whilst this would provide more than sufficient capacity to cater for these volumes, it is likely that there will continue to be capacity limitations on the freeway further to the south. This is a major reason for significant employment creation within Yanchep-Two Rocks and for the extension of the northern suburbs railway to increase corridor capacity.

Yanchep Beach Road, located east of the Mitchell Freeway, provides an important link between Yanchep-Two Rocks and Wanneroo Road and other activity centres within the City of Wanneroo. The long term estimated traffic flow on Yanchep Beach Road of 11,000 vehicles per day could be accommodated on a two-lane road with protected turn lanes. However, because of the rural nature of this road, it may be preferable to upgrade to a four-lane dual carriageway road in the long term, if warranted. The road reservation is wide enough to accommodate this widening.

The estimated long-term traffic flow along Marmion Avenue will be just over 30,000 vehicles per day which is well within the capacity of this road. Marmion Avenue and its continuation along the transit boulevard will be reserved 'Other Regional Roads' in the MRS and it is proposed for the east/west connecting roads between the Mitchell Freeway and Marmion Avenue/Transit Boulevard to also be reserved for Other Regional Roads. This would ensure a degree of connectivity between the Primary and Other Regional Roads in the Yanchep-Two Rocks area.

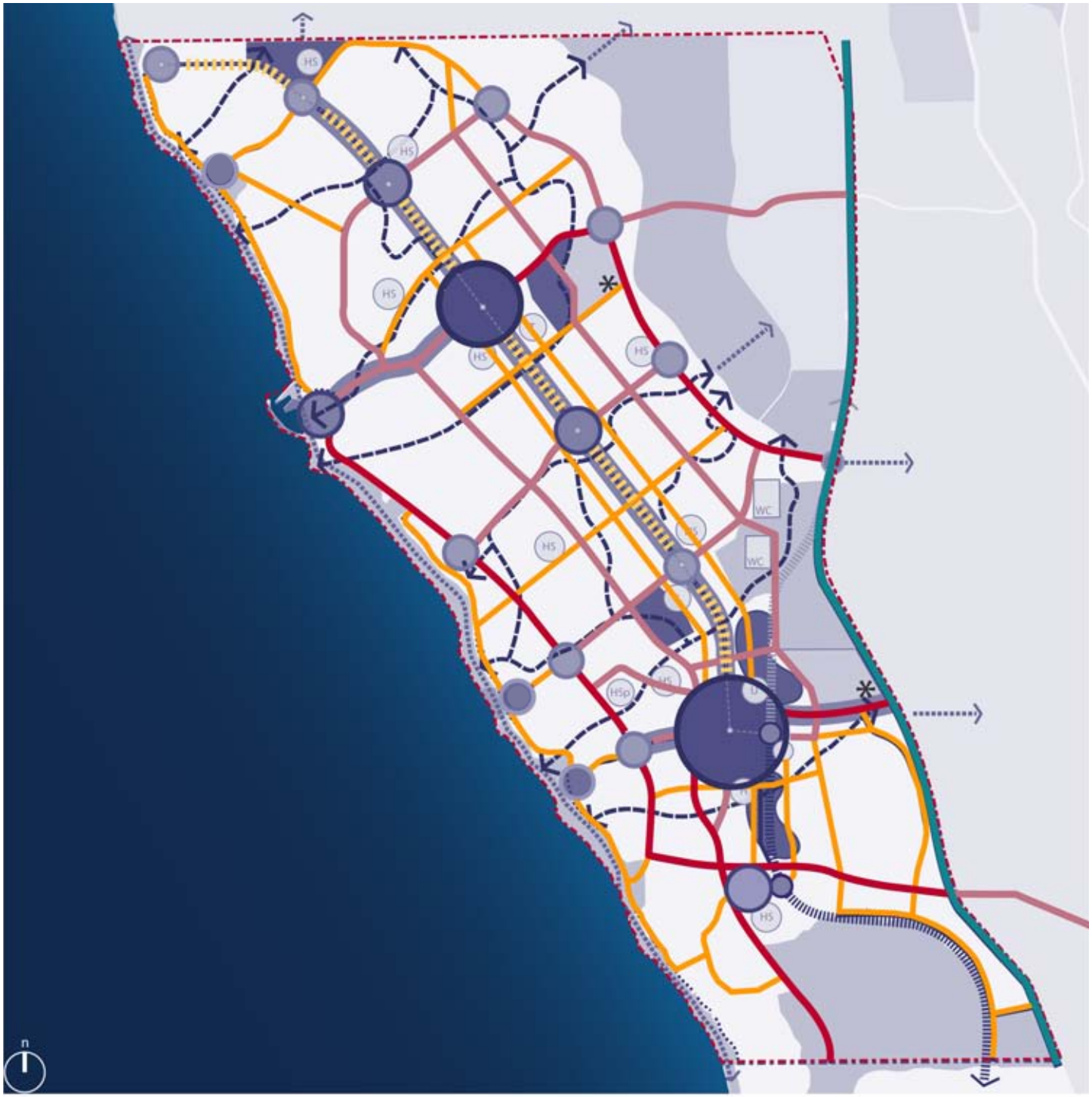
There is currently no direct east-west road link between Yanchep-Two Rocks and Gingin / Muchea.

Although Gingin is only 35 kilometres away, current road travel is about 50 kilometres (Wanneroo Road to Yanchep Road to Gingin Brook Road). A similar situation exists for Muchea where the direct distance is approximately 30 kilometres, whilst travel by road is about 55 kilometres (Old Yanchep Beach Road to Neaves Road to Brand Highway).

Whilst opportunities to improve east-west linkages are constrained by the Gnangara water mound, the potential exists to create a more direct connection between Yanchep-Two Rocks and the Brand Highway using alignments of the formal tracks (unsealed roads) in this area. Clover Road is relatively direct and the most feasible option. It provides a connecting link between Wanneroo Road and Brand Highway and access to the Gingin Airstrip. In the future, Clover Road could be upgraded to provide a regional road connection between Brand Highway and Wanneroo Road, immediately adjacent to Yanchep-Two Rocks.

Immediately north of Yanchep-Two Rocks is the Gnangara Park/ Wilbinga nature reserve, which eliminates the opportunity to create a more direct north-south road to Guilderton (west of the current Mitchell Freeway extension). There is however, the potential for a formal entry into the Wilbinga nature reserve from the Yanchep-Two Rocks area, where an interpretive centre and the Coastal Plain Walk Trail can be accessed.

FIGURE 23 ROAD HIERARCHY



5.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that should flow through to the preparation of LSPs.

The DSP provides a mixed use Transit Boulevard to form a central spine that traverses the length of the site and binds together the various elements, including the major activity centres, mixed use development and transit services. This Boulevard forms a logical extension to Marmion Avenue and its central position maximises the catchments available to the major activity centres and mixed uses that will be developed within this corridor. The central location of the corridor will also inject amenity further east, recognising that communities to the west will readily leverage from the amenity of the coast.

A hierarchy of mixed use activity centres, ranging in scale from a large central city area through to local neighbourhood centres and coastal places, will be multi-functional and networked by major transport connections, allowing synergies to form between centres and providing maximum accessibility.

Integral to the structuring of the public realm is a series of east west social/ pedestrian/ cycle linkages extending between the coast and Yanchep National Park and traversing across the mixed use Transit Boulevard. These linkages are carefully configured to provide connectivity between neighbourhoods and other major places.

Internal Road and Street Network

The Road Hierarchy Plan (Figure 23) outlines the network of non-local streets that provides clarity as to how traffic will be distributed throughout the Yanchep-Two Rocks district.

This network forms a grid that connects the activity centres and major external connections (Mitchell Freeway, Marmion Avenue and Wanneroo Road) and underpins the structure of the overall DSP design. The network comprises the following road types:

- Primary Distributor – Provides for major regional and inter-regional traffic movement and carries large volumes of fast moving traffic (i.e. Mitchell Freeway);
- District Distributor A – Carries traffic between industrial areas, activity centres and neighbourhoods and generally connects to Primary Distributors;
- District Distributor B – Performs a similar function to type A District Distributors but with reduced capacity due to flow restrictions associated with access to and from roadside parking adjoining properties;
- Local Distributor – Carries traffic within a cell and links district distributors at the boundary to access roads. Its route discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to, or servicing, the area;
- Access Roads – Provides access to abutting properties with the design standards that are pedestrian and cycle friendly; and
- Multi Lane Transit Boulevard - discussed in detail overleaf.

As demand for north/south travel will be greater than east/west travel, the spacings of north south district distributor roads has been reduced from the original Concept Design to 1km spacings. These routes will cater for overall traffic demand, without unduly increasing traffic volumes on individual roads.

ILLUSTRATION 11
CROSS SECTION - DISTRICT DISTRIBUTOR A

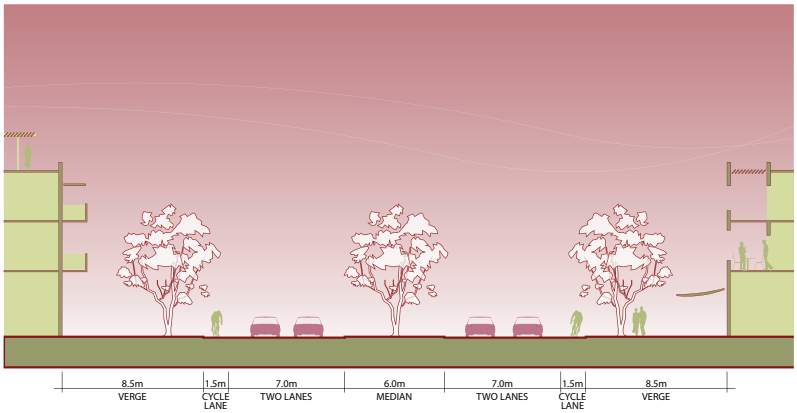


ILLUSTRATION 12
CROSS SECTION - DISTRICT DISTRIBUTOR B

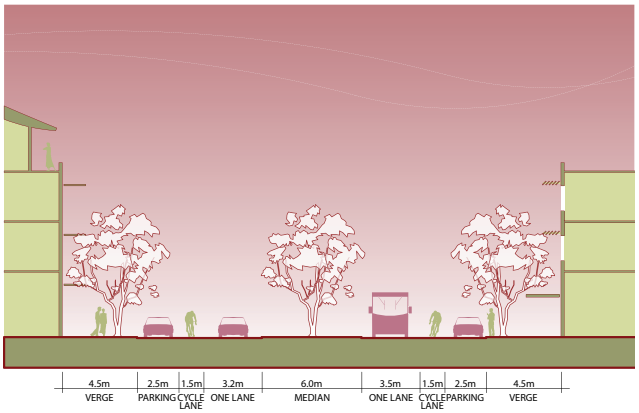


ILLUSTRATION 13
CROSS SECTION - LOCAL DISTRIBUTOR OPTION 1

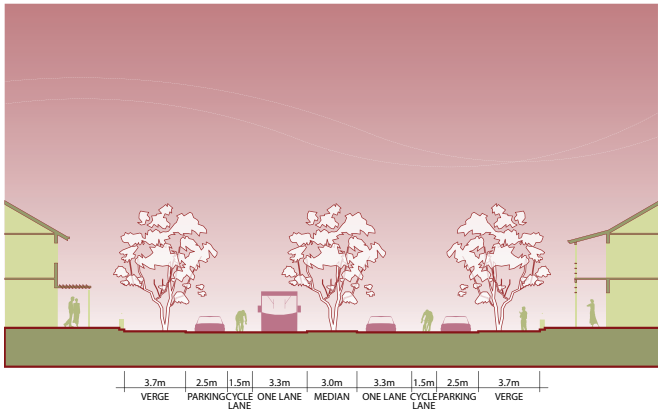
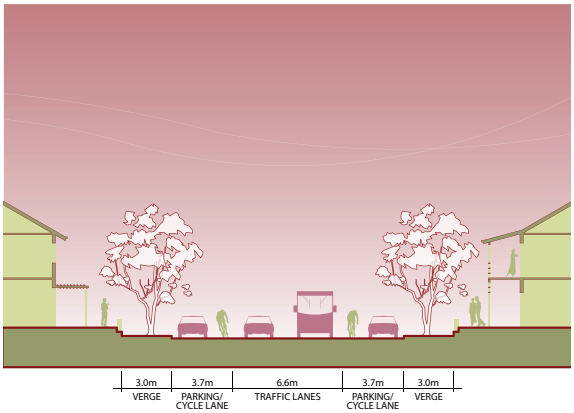


ILLUSTRATION 14
CROSS SECTION - LOCAL DISTRIBUTOR OPTION 2



Multi Lane Boulevard

Jacobs, McDonald and Rofe in "The Boulevard Book - History, Evolution, and Design of the Multiway Boulevard" present the following guidelines for choosing the location of boulevards:

"Boulevards are appropriate where there is a need to carry both through traffic and local traffic, where there is good reason for the through traffic to move faster than the local traffic and/or where there is real or potential conflict between the two traffic types.

They are appropriate for streets that, by virtue of their size and/or location, can become significant elements in the city. They have a potential to become special places.

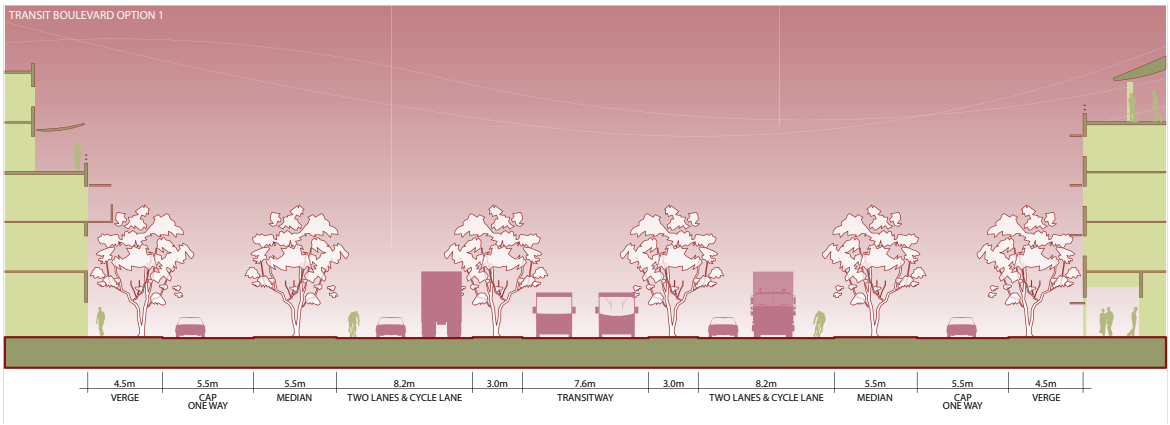
Boulevards are appropriate where there is either a significant volume of pedestrians who need to cross the street or a potential desire to do so. Commercial streets, streets with high residential density, streets that incorporate public transit, or streets with a significant presence of public institutions are examples."

A multi lane boulevard is proposed for Yanchep-Two Rocks to link the Strategic Metropolitan Centre with the Secondary Centre and provide an attractive and viable setting for mixed–use development. It will perform many functions, including:

- Provide priority for public transport, including light rail in the longer term;
- Accommodate reasonably high traffic volumes along the main employment corridor;
- Provide some short-term on-street parking to support businesses;
- Provide for safe movement of bicycles; and
- Provide a quality pedestrian environment to support adjacent land use, including retail, office, cafes, open space and residential.

A central dedicated transitway will form the backbone of the corridor that will be capable of accommodating light rail in the future. The segregation of transit from other transport allows the transit to operate on a busy street in a time-efficient manner and minimises conflict with other traffic. This zone is typically approximately eight metres wide.

ILLUSTRATION 15
CROSS SECTION - TRANSIT BOULEVARD OPTION 1



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Flanking either side of the transitway will be dedicated traffic lanes for through traffic.

Two parallel and local distributor streets will be constructed on each side of the boulevard. These closely spaced streets will provide access to most of the on-street parking required to support adjacent mixed use development, including commercial, retail and residential uses, without breaking up the street frontage along the boulevard.

Landscaped linear park elements will separate the faster-moving thru-lanes from the slower frontage road. This area may comprise pedestrian paths, kiosks, and other street furniture that forms an extension of the footpath space.

The area immediately in front of the boulevard-facing buildings will form the pedestrian zone. The treatment of this area will vary depending on the character of adjacent development and land use. For instance, where commercial uses exist, a large space (potentially five metres wide) may be provided to encourage cafe seating and the extension of other ground-floor uses onto the street. A plaza landscape treatment may also be applied incorporating street furniture, urban landscaping and special paving.

While the boulevard will be pedestrian-friendly for its entire length, the sectional character of the street will vary depending on adjacent uses and other site specific factors. For instance, north of the northern town centre, the mix of uses adjacent to the Transit Boulevard will comprise a greater proportion of residential and the traffic and public transit volumes are expected to be lower. A narrower street cross section is therefore proposed for this segment.

As estimated traffic volumes along the northern sections of the boulevard decrease to about 10,000-15,000 per day, it may be desirable to limit through traffic to one lane in each direction by the provision of parking on both sides of each carriageway. The proposed cross section provides this flexibility.

ILLUSTRATION 16
CROSS SECTION - TRANSIT BOULEVARD OPTION 2

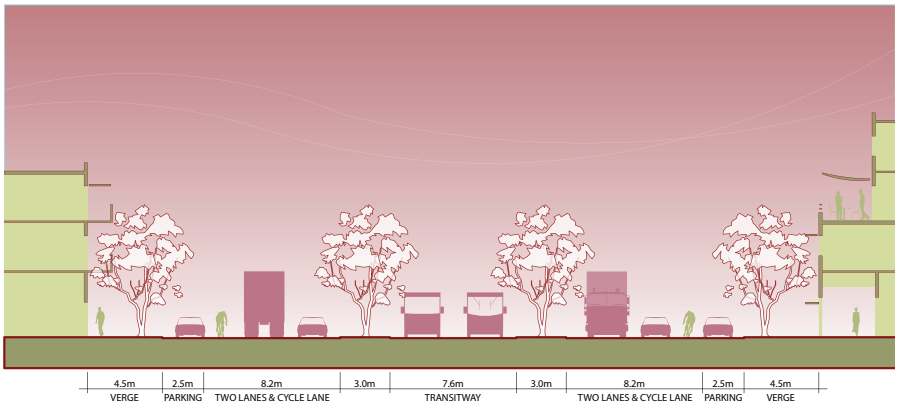


ILLUSTRATION 17
SUCCESSFUL TRANSIT BOULEVARD ACHIEVE A MINIMUM 50% OF ROAD RESERVE WIDTH FORMING PART OF PEDESTRIAN FRIENDLY REALM

Couplets

Couplet configurations may be used to reduce the severance at busy city and town centres created by high volumes of pedestrians. The overall road design is however flexible enough to support a more conventional road design through some or all of the activity centres.

Typically, retail uses choose to locate at the crossing of two arterial roads, but all too often these intersections are sprawling expanses of asphalt with multiple turn lanes in every direction and are, as a result, very anti-pedestrian. Exacerbating this problem are the massive expanses of uninterrupted surface parking required by retail operators to ensure visibility from the intersection. This problem can be remedied, however, by splitting the arterial streets into a double one-way couplet system that creates traditional development blocks at the crossing. This approach has several benefits for creating pedestrian-oriented retail and mixed-use activity centres:

- Pedestrian-Friendly Environment
  Vehicle turn-lanes are reduced, street kerb-to-kerb distances are reduced and pedestrian crossing distances are shortened. Unlike a typical arterial intersection, one-way couplet streets can support on-street parking on both sides, or on one side when a transit lane is provided. In addition to providing more parking, on-street parking slows traffic and creates the opportunity for corner crosswalk nib-outs. Narrower streets mean adjacent buildings are better able to shape the street space in a manner that is of a human scale and comfortable for pedestrians.

- Vehicle Circulation
  Turn lanes are reduced and traffic light wait times are commensurately reduced. Convenient on-street parking is a benefit for motorists. Travel speeds are reduced, but shorter signal timings mean that travel times through the activity centre are also reduced.

- Enhance Retail Visibility
  Shops are located immediately adjacent to the intersection, affording them the maximum possible exposure to arterial traffic. Double couplet crossings create numerous coveted corner-retailing locations.

- Traditional Development Blocks
  Arterials that split to cross each other as a double one-way couplet system also create a standard development pattern that puts a building or a park within the couplet street system, instead of a wide expanse of asphalt as would be produced by a typical arterial intersection.

Two different cross sections are suggested for the couplets. Option 1 is the generic cross section along the length of the couplet. Option 2 is the proposed cross section at traffic signals where transit stops are required.

A right side transit lane can operate satisfactorily for trams, light rail or purpose designed vehicles with right side loading and unloading. However, if buses are permitted to use the transit lane, as will be the case in the initial years of operation, provision will need to be made for a platform for left side loading and unloading.

Whilst the Transit Boulevard has been created to develop energy and vitality along the mixed-use corridor, the couplets may be introduced through the major activity centres to reduce segregation and create pedestrian friendly streets.

Together, the Transit Boulevard and couplets where used will contribute to unique transit oriented development along the main mixed-use corridor of Yanchep-Two Rocks.

ILLUSTRATION 18
CROSS SECTION - COUPLET OPTION 1

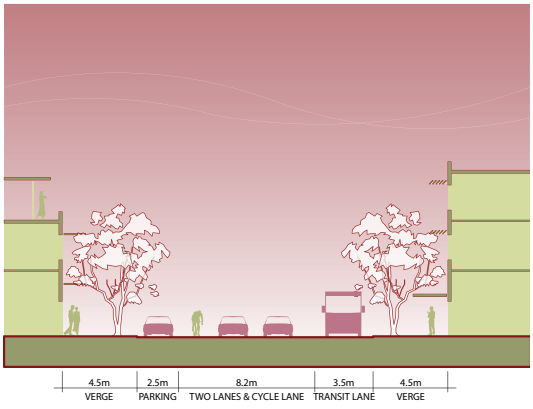
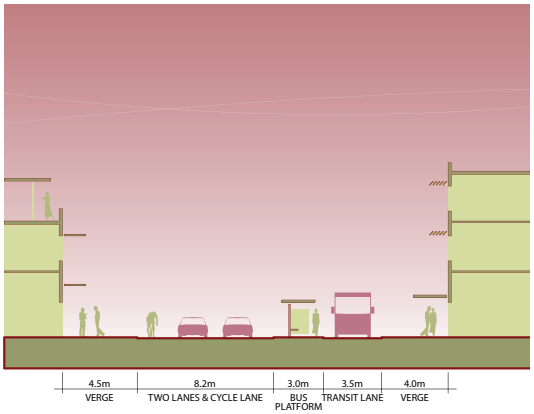


ILLUSTRATION 19
CROSS SECTION - COUPLET OPTION 2



Gateway Treatment
Marmion Avenue to the south of Yanchep Beach Road is proposed to be a typical district distributor road with wide verges and median linking Yanchep-Two Rocks to Alkimos. There is the need to establish a transition of Marmion Avenue as it enters the Yanchep Strategic Metropolitan Centre and the Transit Boulevard. This will be achieved through a gateway treatment that will be applied to the section of Marmion Avenue north of Yanchep Beach Road linking with the Strategic Metropolitan Centre.

The gateway treatment is proposed to have marginally narrower lane and median widths to assist in reducing traffic speed on approach to the Strategic Metropolitan Centre. The service roads will accommodate street parking to cater for adjacent mixed-use development along this important entry point to the Yanchep-Two Rocks.

ILLUSTRATION 20
CROSS SECTION - GATEWAY OPTION

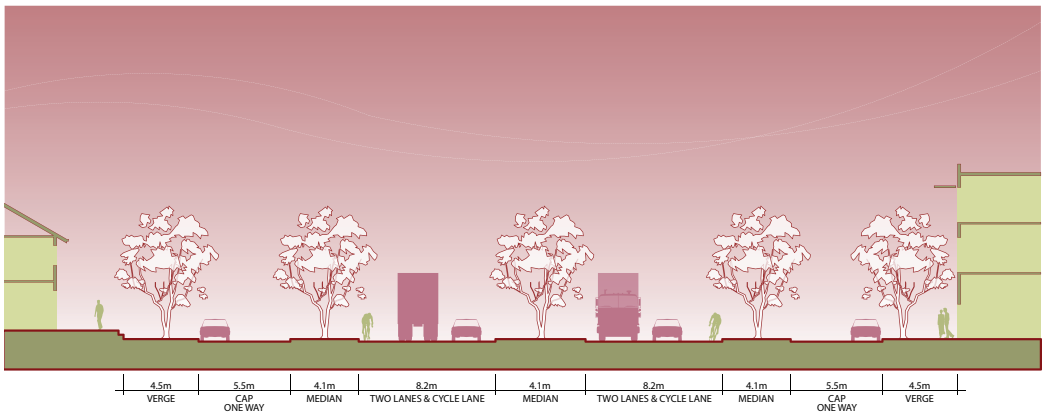
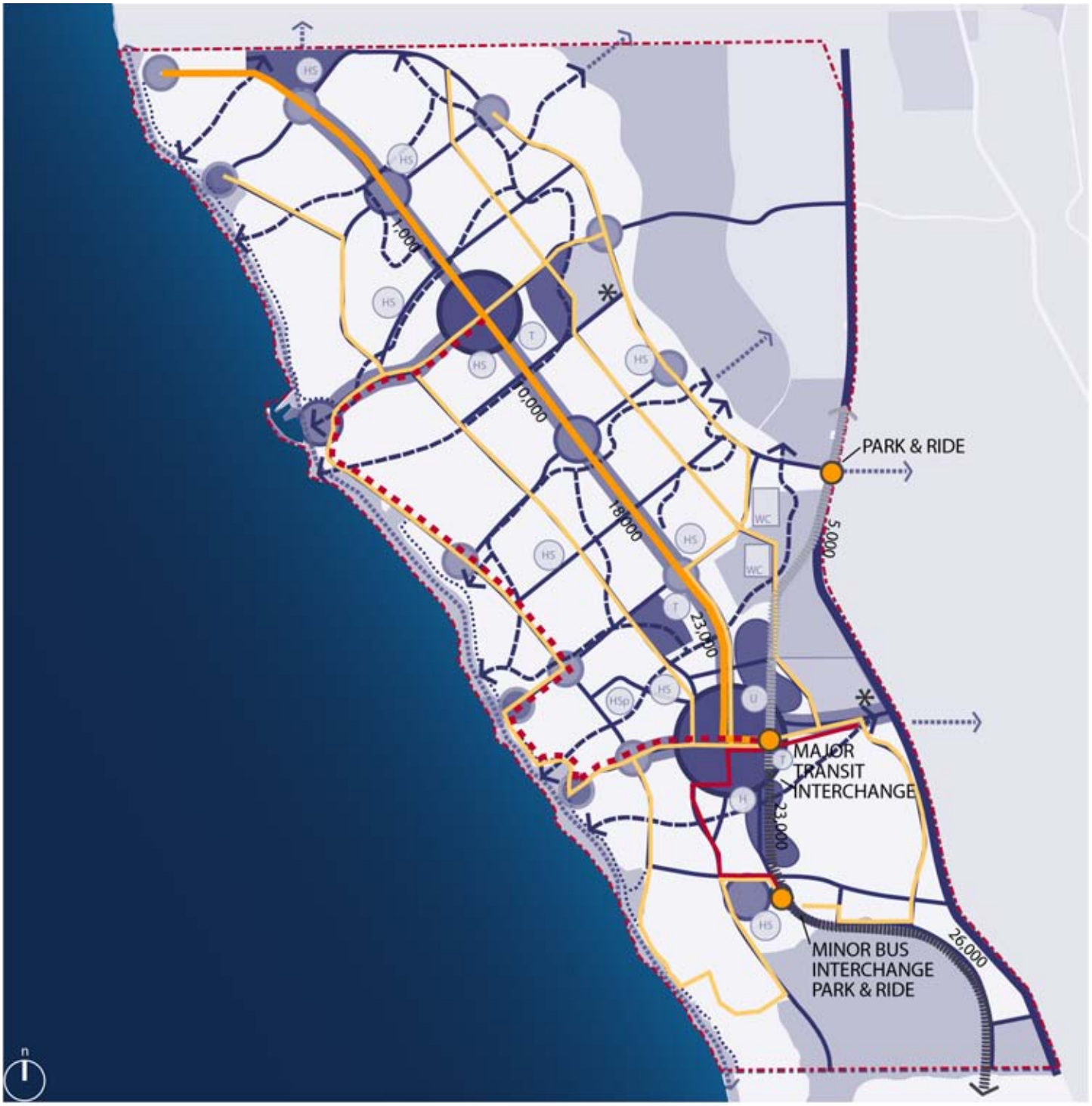


FIGURE 24 PUBLIC TRANSPORT



Public Transport
The overriding aim for the public transport system at Yanchep-Two Rocks is for a fully integrated, efficient and convenient system, which is connected with land use and offers convenient and coordinated transfers between different modes.

Three main elements are:

- the extension of the Perth Metropolitan rail system to the Yanchep-Two Rocks area;
- a surface light rail, streetcar or bus way system linking the Strategic Metropolitan Centre with the Secondary Centre and the northern coastal village; and
- an integrated feeder bus system linking residential neighbourhoods to the activity centres and to the regional rail system.

It is estimated there will be over 60,000 public transport trips each day based on a public transport mode share of 7% within Yanchep-Two Rocks and 17.3% for trips external to Yanchep-Two Rocks. The estimated patronage on the railway and along the transit boulevard is shown in Figure 24.

These mode share projections were developed in consultation with the DPI to mainly provide conservative upper-level estimates for car driver trips against which to assess road infrastructure, and do not necessarily represent the extent of public transport travel in the long term. If oil prices continue to increase, or alterative fuels become a necessity, we may well see a substantial increase in car driving costs. In the long-term this may result in higher levels of public transport patronage and walking and cycling than indicated in the current estimates.

The public transport infrastructure proposed - metropolitan rail connection to Perth, busway or light rail along the transit corridor and feeder bus routes on the street system - is capable, with progressive rolling stock expansion, to meet double the projected demand should the need arise. This is considered to be a prudent and robust approach to structure planning for a large area like Yanchep-Two Rocks.

In 2005, the DPI commissioned GHD to undertake a rail definition study for the railway through Alkimos to Yanchep (GHD, June 2005). The report confirmed the alignment shown in the DSP up to the Strategic Metropolitan Centre. Since that time, SKM has further developed the rail alignment to the north of the Centre in consultation with New Metro Rail and the DPI. Whilst the alignment shown in the DSP has been accepted as appropriate by the PTA, further detailed investigation will be required at LSP stage to resolve the alignment, taking into consideration amongst other matters the potential impacts on the Bush Forever site.

It is proposed that 'park and ride' facilities be provided at both the Yanchep Beach Road and the northern train station. The Strategic Metropolitan Centre station will be a major public transport interchange centre station. Key features of the stations are summarised in Table 5. It is generally accepted that the early provision of rail facilities contributes to increased public transport usage. Based on estimated development of the DSP area it is considered that railway would need to be constructed no later than 2020, but desirably would be provided by around 2015.

Surface Light Rail or Bus Way System
About 57% of the total projected 60,000 daily public transport trips are likely to be made wholly within the Yanchep-Two Rocks DSP area. Over half of the remainder are likely to use some part of the public transport system within Yanchep-Two Rocks.

The DSP provides for a high density of mixed-use development along a transit boulevard designed on a north/south alignment through the DSP area. The form, type and density of land uses along this corridor, including the major activity centres, are predicted to result in high use of public transport. The high use will require a frequent service, which in turn will result in even greater use of the service.

It is estimated that over 20,000 trips per day will be made along the southern portion of the transit corridor. This would translate into peak hour patronage of between 3,500 and 4,000 trips per hour, with about 2,500 of these in the peak direction. As noted above, public transport trips per day could potentially be much greater in the longer term. The demand for travel projected above would require buses running at a frequency of about one minute or light rail at a frequency of four to five minutes. Whilst either system could meet the demand for travel based on these estimates, there would be some operational problems with large numbers of buses at the Strategic Metropolitan Centre transit interchange and potentially at the proposed far side bus stops along the transit corridor.

There are some other advantages with a light rail system. Firstly, the infrastructure associated with light rail provides a sense of permanence that gives confidence to those wishing to invest in property adjacent to the light rail corridor. This can often result in higher quality, higher density development than would otherwise be the case. The second advantage with rail systems, including light rail, is that they typically generate 10% to 15% more patronage than buses for like systems. This is often referred to as the 'sparks' effect. It is clear that any decision to implement a light rail system at Yanchep-Two Rocks will be a matter for the State Government in the future. The DSP has made provision for a busway system to be introduced first, which can be upgraded to light rail in the future.

Table 5 Rail Station Features

Feature	Yanchep Beach Road Station	Strategic Metropolitan Centre Station	Northern Yanchep - Two Rocks Station
Park & Ride	Approx 700 bays	In the short term - approx 700 bays	Approx 1000 bays
Public Transport Interchange	Minor bus interchange	Major interchange with high frequency transit and bus	None considered at this stage but could be reviewed later
Other	High density TOD around station	Major city centre station - high density TOD around station	High density TOD around station

Feeder Bus Services

The regional rail and light rail/busway corridor will be supported by a network of feeder bus services. This will foster a fully coordinated transport system, which incorporates integrated ticketing and comfortable and convenient transfers for passengers.

The proposed feeder bus routes have been developed in consultation with the PTA and are shown conceptually in Figure 24. By identifying these routes at the DSP stage, it is possible for the bus routes to be properly designed and for there to be sufficient certainty available to developers and investors to encourage appropriate land uses (i.e. grouped housing, aged persons accommodation) to locate near bus routes.

The bus route network provides good coverage of the DSP area, with routes passing close to or through the activity centres. Most of the bus routes are proposed in the district distributor B category roads, which are predicted to carry around 10,000 to 12,000 vehicles per day at full development. Bus stops will be located close to the major intersections and may be provided in dedicated embayments or on the through carriageways, depending on sight distance criteria or a desire to provide an element of bus priority.

There are also two bus routes that are proposed to travel along district distributor A roads. The two roads are dual carriageway and projected to carry 12,000 to 22,000 vehicles per day, which is sufficiently low to allow buses to stop in the through lanes rather than dedicated bus embayments.

A small number of routes would operate on local distributor roads where is would generally be acceptable for buses to stop on the travel lane rather than within indented bus bays, so as to provide an element of traffic calming.

A major public transport transit interchange is proposed at the Yanchep Strategic Metropolitan Centre and a conceptual plan for this facility was developed during the rail alignment definition study in 2005 (Illustration 21). A smaller public transport interchange is proposed at the Yanchep Beach Road rail station.

In the longer term the Strategic Metropolitan Centre, adjacent mixed-use employment areas, tertiary education sites, hospital/health campus and train station, may be linked by a CAT type service. The indicative route for this service is depicted on Figure 24, and will be finalised at the LSP stage.

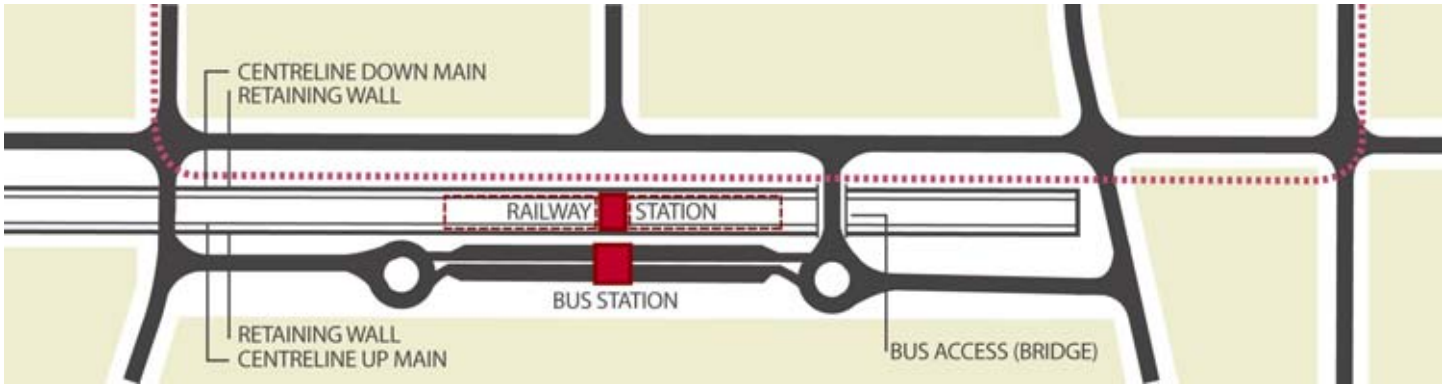


ILLUSTRATION 21
YANCHEP CITY CENTRE RAIL STATION

Non-Motorised Travel
The DSP, and subsequent more detailed LSPs, is designed to achieve a high level of accessibility and amenity for pedestrians and cyclists. All activity centres and other major destinations will be designed to encourage walking and cycling and will be guided by the principles outlined in Section 5.3 Guidance for LSPs.

Cycling
The mode share of cycling can vary markedly in different areas, depending on the quality and perceived safety of the cycling network. The average mode share of cycling in Perth is currently about 3%. With the provision of a high quality cycling network, it is considered that the mode share of cycling could be increased to about 6% of all internal trips in Yanchep-Two Rocks - about 31,000 cycling trips per day.

The major network of shared paths comprises:

- Principal Shared Paths - The highest level of off-road bicycle and shared use facility. They will generally be constructed to a width of 3.0 metres and may incorporate grade-separated crossings over major roads.

- Regional Recreation Paths - Generally provided along the coastal foreshore reserve and will generally be constructed to a width of 3.5 metres.

- Other Shared Paths - Provided along major road networks and constructed to a width of 2.5 metres i.e.:
    - district distributor A roads - both sides
    - district distributor B roads - both sides
    - local distributor roads - one side

Two principal shared paths linking Yanchep-Two Rocks to communities further south are proposed - one along the Mitchell Freeway and the other along Marmion Avenue. It is normal in Perth to construct principal shared paths along freeways and railways. However, to the south of Yanchep Beach Road, the railway and the freeway are very close together. For this reason a principal shared path along Marmion Avenue would be of more use than a shared path along the railway. It is possible that this path could transfer to the railway reserve further south in Alkimos Eglinton.

A regional recreational path is to be provided along the entire ocean frontage of the DSP area. Experienced cyclists generally prefer to use the road system rather than shared paths. Provision for on-road bicycle lanes is proposed for both sides of distributor A and B roads and the transit boulevard, on all local distributor roads and along the left side of the one-way couplets.

Walking
The pedestrian infrastructure will be designed to cater for all members of the community including people with disabilities and parents with prams. It is envisaged that walking trips will comprise about 17% of all trips within Yanchep-Two Rocks or about 86,000 trips per day.

Walking will also be a significant proportion of many public transport trips and some car trips (e.g. walk trip to and from car parks). A survey undertaken for Perth Walking (2000) found that "56% of those who use public transport to get to work also walk for 15 minutes as part of their trip".

Taking account of these additional walking trips is it estimated that the real number of walking trips in Yanchep-Two Rocks at full development will be more than 100,000 trips per day.

Details of pedestrian infrastructure will be incorporated into LSPs. Refer to Section 5.3 for further guidance.

5.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through LSPs.

The access and movement network will be further refined and implemented through detailed design of LSPs. A number of regional transport aspects outlined in Section 5.2 will be implemented through LSPs and as such, that section should be read thoroughly prior to LSP preparation.

The principles guiding the subsequent detailed planning will be aimed at promoting a sustainable framework for the movement of people and goods that is focused on amenity, connectivity, efficiency, safety and integration:

- Connected -Connections that link people with where they want to go. Pedestrians and cyclists will have access to dedicated pedestrian and cyclist routes that are accommodated within the social/ pedestrian/ cycle linkages, along the coastal foreshore and incorporated into the design of nearly all streets. The interconnected network of streets will provide direct routes and a choice of connections to key destinations.

- Convenience - Direct routes and crossings that are easy to use. Activity centres and other destinations will be located within easy walking distance of homes, businesses and public transport. Pedestrian and cycle routes will be legible and give priority to pedestrians. The couplet system will assist pedestrian crossing within the major activity centres and minimise the time pedestrians/ cyclists have to wait to cross streets. Most streets will be designed for shared use, where traffic is encouraged to operate in a slow speed environment.

- Attractive and Comfortable Routes - All routes will be safe and of a high quality. This will be achieved through the provision of quality footpaths, lighting, landscaping, public art and built form. Furthermore, active uses will be encouraged to front onto pedestrian/cycle spaces.

These principles will be guided by the recommendations of LN and include:

Streets

- Streets to be designed to accommodate pedestrians, cyclists, motorists, buses (where appropriate), street trees/landscaping, car parking, utility services and sustainable urban water management;
- Design of all streets to consider character and land use integration as well as function and to incorporate attractive streetscapes that complement adjacent development;
- Street design/geometry to support street function and encourage appropriate driver behaviour. This will entail establishing a clear distinction between arterial routes and local streets, whereby local streets are to be designed for efficient use of land and slower traffic movement, including narrower pavement and lane widths and reduced kerb radii;
- Active uses to front all streets to promote safety, visual interest and street activity;
- Network of streets to be highly interconnected so as to distribute traffic, reduce travel distances and promote walking/cycling;
- Street design to be site responsive with regard to vegetation, topography and orientation to allow climate responsive design; and
- On-street parking capacity to be incorporated into the design of most streets, to reduce off-street parking requirements and to assist with traffic calming.

Pedestrian/Cyclists

- Street layouts to be designed using 'ped-shed' analysis to ensure efficient walkability to major facilities;
- Pedestrians to be provided with a safe, convenient and legible movement network, principally on the street network;
- Footpaths to be provided on most streets and to be afforded a high level of surveillance and amenity. This may entail generous pavement widths, large shady street trees, good lighting and provision for universal access;
- Where possible footpaths to be separated from the street pavement and aligned close to the property boundary to enable design to take into account pedestrian amenity including weather protection and street lighting;
- Intersection designs to give priority to pedestrian safety and crossing and at-grade pedestrian crossings to be incorporated into street design where warranted, unless topography dictates otherwise (i.e. grade separation);
- Experienced and less experienced cyclists to be provided with a safe, convenient and legible cycle network incorporating on-road and off-road routes, bicycle head-start treatments at intersections and bike parking facilities (including at public transport stops, workplaces and other major destinations); and
- The network of local streets and pathways to be designed to provide safe conditions for pedestrians and bicycle access to schools.

LSPs will provide a comprehensive network of pedestrian routes that link mixed-use activity centres and other major destinations with neighbourhoods and transit stops. It is envisaged the network will comprise the following:

- A 2.5 metre shared paths on both sides of district distributor A and B roads;
- A 2.5 metre shared path on one side and a 1.5 metre footpath on the other side of all local distributor roads;
- Access streets to incorporate a 1.5 metre footpath on both sides, except where the street has very low traffic volumes and provides limited or no connectivity;
- A minimum footpath width of 2.0 metres in the vicinity of schools, universities, shops or in other locations with high levels of pedestrian activity;
- Wider paths in the mixed use office / retail areas of major activity centres and along the transit boulevard that are designed specifically to meet anticipated demand (to be addressed more specifically in LSPs); and
- Pram ramps to universal access design standards at all intersections and at mid-block pedestrian crossings.

Ped-shed analysis is to be undertaken to assess the walkability of local neighbourhoods.

Public Transport Use

- Bus stops and routes designed to be safe and easily accessible to patrons on foot - located on neighbourhood connectors or integrator arterial and within 400m of residents;
- Urban structure and form to support public transport use, including higher density residential and mixed used development adjacent to public transport stops and street network and pathway configurations that support pedestrian/cyclist access to public transport; and
- Where railway lines (including light rail) traverse urban development, sufficient crossings to be provided to integrate urban development on both sides.

The integration of public transport infrastructure and services is particular important for the LSP and Centre Plans for the Yanchep Strategic Metropolitan Centre, adjacent mixed-use employment areas, tertiary education sites, hospital/health campus and train station. A major public transport transit interchange is required at the Strategic Metropolitan Centre and a conceptual plan for this facility was developed during the rail alignment definition study in 2005. A smaller public transport interchange is proposed at the Yanchep Beach Road rail station. These plans should incorporate a route for a CAT type service. .

Noise Amelioration

Traffic noise may be a problem for residences located adjacent to the Freeway. However, a considerable amount of noise will be able to be ameliorated by lowering the freeway carriages behind a noise bund. Main Roads to be requested to undertake further design options.

06 ECONOMY, EMPLOYMENT + ACTIVITY CENTRES

Table 6 Additional Resident Working Population to 2021

Additional Employed Persons 2021	Population Change (2006-2021)	Estimated New Workers Living in the Yanchep City Centre 2006-2021 (based on proportions by age)
Persons 15-19yrs	5 500	2 513
Persons 20-24yrs	8 700	5 848
Persons 25-34yrs	16 200	10 938
Persons 35-44yrs	8 500	6 045
Persons 45-54yrs	12 200	8 661
Persons 55-64yrs	10 900	4 859
Persons 65 and over	14 050	804
Total		39 667
Estimated Additional Resident Yanchep-Two Rocks Workers 2021		10 390
Yanchep-Two Rocks Proportion of City of Wanneroo Total Additional Resident Workers 2021		26.2%

Table 7 Estimated Job Projections

Stage	Existing	1	2	3	4	5
Year of Completion		2015	2021	2033	2046	2058
Total Dwellings	1 827	5 169	9 806	25 006	48 406	66 966
Total Population	3 448	10 901	21 560	56 296	110 628	154 091
Workforce Residing	2 119	5 522	10 390	26 251	51 060	70 361
Jobs - Population Based	**150**	**1 123**	**2 895**	**8 929**	**20 482**	**29 446**
Jobs - Knowledge Based	**-**	**1 350**	**2 623**	**7 686**	**15 902**	**25 544**
Total Jobs	150	2 473	5 518	16 614	36 383	55 000

06 ECONOMY, EMPLOYMENT + ACTIVITY CENTRES

6.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

Economic development and employment provide the basis for the quality of life enjoyed by Western Australians. Employment provides people with income and the means to purchase goods and services that can positively contribute to their quality of life such as food, housing, health care and leisure. The absence of appropriate levels of income through unemployment or under-employment can result in reliance on welfare systems, poverty and social hardship.

The City of Wanneroo is currently characterised by low employment self-containment. That is, the majority of the resident population commutes out of the area for work each day. Australian Bureau of Statistics Journey to Work data (2001) reveals that more than three out of every four resident workers commute outside of Wanneroo and even when looking at a more regional level, two out of the three workers residing within the North-West Corridor leave the region for work each day.

Low employment self-containment issues range from social and economic issues associated with having to spend significant time and money commuting long distances to work, the ability of the transport system to handle significant community demands, security problems, pollution and energy demands caused by transportation requirements, through to expenditure leakages out of the local economy. With the population of the City projected to continue to grow at a significant rate over the next 30 years and the high level of activity within the development industry at the present time, the City of Wanneroo will face compounding environmental, economic and social problems if the trend is not improved (City of Wanneroo Employment Policy).

As such, there is a need to focus resources and efforts into proactive business investment and growth programs to grow jobs as the population grows and to create 'strategic' employment (ie jobs in knowledge intensive and creative businesses beyond normal population servicing jobs that provide for the daily and weekly needs of residents) to match employment quality and diversity to the diversity of occupations, skills and qualifications of residents so there are greater opportunities for people to work within the region instead of traveling outside of the region.

Economic Development Strategy

The City of Wanneroo's primary economic goal is to decrease the amount of people having to travel outside of the region to access suitable employment opportunities. Achievement towards this goal will be assisted through implementation of the City's Economic Development Strategy.

The Economic Development Strategy is designed to build upon the project initiatives already in place to introduce new initiatives in line with the 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 are:

- Redressing the balance so that the City has desirable centres of employment;
- Investing in 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
- Ensuring basic infrastructure is in place to allow businesses to prosper and grow.

Employment Policy

The City of Wanneroo's Employment Policy is designed to encourage and retain local employment within the City and ultimately the North West Corridor. The policy is driven by the City's low employment self-containment, which has resulted in many 'dormitory suburbs'.

The Policy contains a schedule of strategies at district, local and subdivision level to indicate the type and scale of initiatives expected for development of various scales.

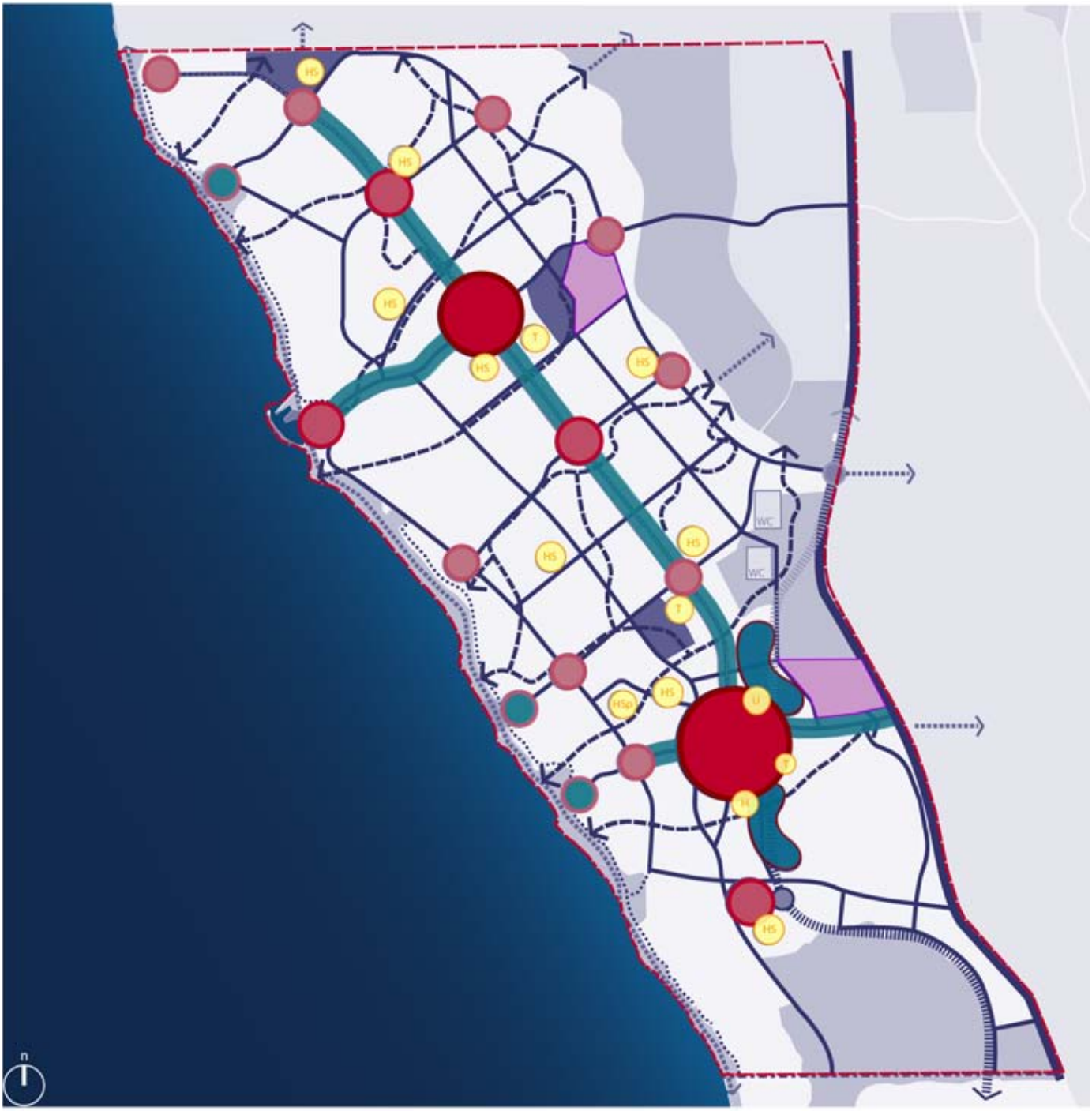
The City's Smart Growth Assessment Tool sets an employment self-sufficiency target of 40% at the DSP level. It is projected that Yanchep-Two Rocks will achieve 75% employment self-sufficiency.

Projected Employment, Workforce Breakdown

Table 6 shows the estimated number of people in the workforce by age for the City of Wanneroo and Yanchep-Two Rocks. These figures are based on current worker to population ratios for the City of Wanneroo and project staging estimates for Yanchep-Two Rocks, extending through until 2058. The figures indicate that the DSP will contribute approximately 26% of all new jobs in the City of Wanneroo over the next 10-15 years.

Table 7 shows the estimated number of jobs generated within the DSP area during the various development stages. The table shows an ultimate workforce residing in Yanchep-Two Rocks of 70,360 persons and a total of 55,000 jobs.

FIGURE 25 EMPLOYMENT PRECINCTS



6.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that should flow through to the preparation of LSPs.

Key Guiding Principles

The DSP is based on the following principles designed to support the economic development of the Yanchep-Two Rocks community:

- The development of an economic base for the community which supports very high levels of employment self sufficiency across a wide spectrum of job types and skill levels, including advanced skill and knowledge intensive economic activity;
- A built environment of sufficient scale and diversity to support and facilitate the economic base;
- Economic development programs to ensure all elements required to develop the economic base are in place; and
- A planning and development regime to ensure the elements required for the economic base at Yanchep-Two Rocks are properly configured to ensure their longevity and sustainability.

Table 8 Breakdown of Major District Employment Areas

Main Employment Areas	Approximate Land Area (ha)	Indicative Floor Area (m^2)	Total Employment (jobs)
DISTRICT EMPLOYMENT AREAS	978	1 743 572	49710
Industrial	*112*	*378 390*	*3 920*
Mixed Use Corridor	*258*	*214 980*	*8 810*
Mixed Use Employment	*91*	*333 700*	*10 630*
Activity Centres (Regional, District and Neighbourhood as depicted on plan)	*517*	*816 502*	*26 350*
HEALTH AND EDUCATIONAL FACILITIES	456	185 430	2 610
Primary Schools - assume 62 @ 4ha each (includes public + private)	*248*		
High Schools - assume 14 @ 10ha each (plan only depicts 9 public + 1 private)	*140*		
University and Tafe - assume 4 @ 15ha each	*60*		
Health campus/ hospital	*8*		
HOME BASED BUSINESSES			2680
Total	1434	1 929 002	55 000

06 ECONOMY, EMPLOYMENT + ACTIVITY CENTRES

Total Employment and Employment Self Sufficiency
Yanchep-Two Rocks is an essential element in the growth of the City of Wanneroo. It will be the economic anchor for the north-west corridor, providing a concentration of employment that will include a focus of high-level economic activity not viable in other parts of the City that will help to create an acceptable level of employment self-sufficiency for the City.

At full development, Yanchep-Two Rocks will have in the order of 67,000 dwellings housing 155,000 residents (including existing dwellings and residents). Approximately 72,000 residents will be in the workforce.

It is estimated that 55,000 jobs will be provided. This equates to an employment self-sufficiency rate of 75% and will establish Yanchep-Two Rocks as the major employment anchor for the NW corridor with concentrations of economic activity sufficient to reverse the daily mass outflow of people commuting from the edge of the city to jobs within central Perth.

Population-based employment can be expected to make viable approximately 29,500 jobs on site. These jobs will primarily be based on the provision of local and regional services, including education and health services and retail employment. Work is continuing on programs to ensure an additional 25,500 knowledge based jobs are created from incentives associated with the IDEAS project. It is anticipated that Yanchep-Two Rocks will contribute approximately 26% of all new jobs in the City of Wanneroo over the next 10-15 years.

It is anticipated that while the Yanchep-Two Rocks development will provide 55,000 local jobs, a proportion of these jobs are likely to be occupied by persons living elsewhere in the City of Wanneroo. Therefore, the job provision at Yanchep-Two Rocks assists significantly in meeting the 72% employment self-sufficiency target set for the North West Corridor overall.

Provision of Sufficient Land Suitable for Employment Uses
One of the critical variables in economic development is the advance identification and planning of appropriate employment accommodation. If land is not identified and preserved, these areas can be lost to other non-employment generating uses.

The Plan identifies the following areas where employment is intended to be a primary or significant use including:
- Mixed use Strategic Metropolitan and Secondary Centres;
- Mixed use District and Neighbourhood centres;
- Mixed use Coastal nodes;
- An extensive mixed use Employment Corridor connecting Yanchep Strategic Metropolitan Centre to the Secondary Centre;
- Locations for at least one university;
- Three locations for other tertiary education;
- Two dedicated mixed use employment areas;
- Industrial zones for activities requiring special services and buffers;
- Secondary schools; and
- A planning framework conducive to creating a significant quantity of home-based businesses.

Syme Marmion & Co. has considered the role and function of each of the projected employment generating areas and has concluded that the Yanchep-Two Rocks DSP could be expected to yield in the order of 1.9million m2 of floor space and accommodate 55,000 jobs. This analysis validates the capacity of the DSP to accommodate sufficient jobs to achieve the 75% self-containment target.

Employment is expected to be distributed through the centres in the DSP as illustrated in Tables 8 - 10. It is anticiapted that the activity centres alone have the capacity to accommodate approximately half of the total employment generating floorspace, or in the order of 816,000m2, which would accommodate approximately 26,000 jobs.

Overall, the activity centres, mixed-use corridors and employment districts planned for Yanchep-Two Rocks have the spatial capacity to accommodate sufficient jobs to achieve the 75% employment self-sufficiency target that has been established for the project. This level of employment self sufficiency within the project area will sharply distinguish Yanchep-Two Rocks from the dormitory coastal suburbs further south and create a sustainable employment anchor for the North-West corridor.

The spatial arrangement of activity centres and mixed-use corridors reflects the principles of the new economy, which seeks to maximise networks of relationships and communications for the advancement of knowledge, innovation, economic growth and, ultimately, profits. This approach is consistent with Network City (WAPC, 2004), which aims to integrate land use and transport by creating a network of activity centres across the metropolitan area linked by transit based activity corridors.

It is anticipated there will be a wide spectrum of economic activity in these areas, including:

- Local retail;
- Regional retail;
- Local services;
- Regional services;
- Manufacturing to meet local and regional needs; and
- Externally oriented economic activity (ie. economic activity that brings new money into the region, state or the nation).

The latter is the key to the achievement of high employment levels at Yanchep-Two Rocks. Types of externally oriented economic activity potentially viable at Yanchep-Two Rocks are:

- Health;
- Education;
- Biosciences;
- Environmental Technology;
- Information and Communications Technology;
- Advanced Manufacturing;
- Arts and Tourism; and
- Finance.

These are the key sectors targeted by the Yanchep-Two Rocks economic development initiatives.

Table 9 Employment by Industry Type

Employment Type	Employed Persons	%
Agriculture, Forestry & Fishing	220	0.4
Mining	100	0.2
Manufacturing	6 150	11.2
Electricity, Gas & Water	350	0.6
Construction	4 500	8.2
Wholesale Trade	2 570	4.7
Retail Trade	10 300	18.7
Accommodation, Cafes & Restaurants	2 800	5.1
Transport & Storage	1 000	1.8
Communication Services	2 500	4.5
Finance & Insurance	2 000	3.6
Business Services	9 230	16.8
Government Admin & Defence	1 300	2.4
Education	4 000	7.3
Health & Community Services	4 000	7.3
Cultural & Recreational Services	2 000	3.6
Personal & Other Services	2 000	3.6
Total	55 000	100

Activity Centres

The location, size, composition and design of the activity centres has been guided by the following principles.

Location

The activity centres are distributed throughout the project area to ensure that almost all residents are no more than 5km from a regional centre, 2 km from a district centre, 800m from a neighbourhood centre and 400m from a local centre.

Considering the scale of the project area and the diagrammatic nature of the plan, only the regional centres, district centres, coastal tourist centres and key neighbourhood centres have been depicted on the DSP. These centres are located on major transport routes where they can capitalise on the 'movement economy' of passing trade. Many of the centres are connected to other centres by mixed-use transit corridors and will be serviced by a dedicated transit service, allowing for higher residential and employment densities than elsewhere in the project.

In order to ensure residents have access to neighbourhood and local centres within a reasonable walking distance, additional neighbourhood and local centres will need to be provided beyond those shown on the DSP. More detailed planning at the LSP stage will be required to determine the appropriate number, size and location of the additional centres, taking into consideration factors such as movement networks, residential densities, open space, recreation and school sites.

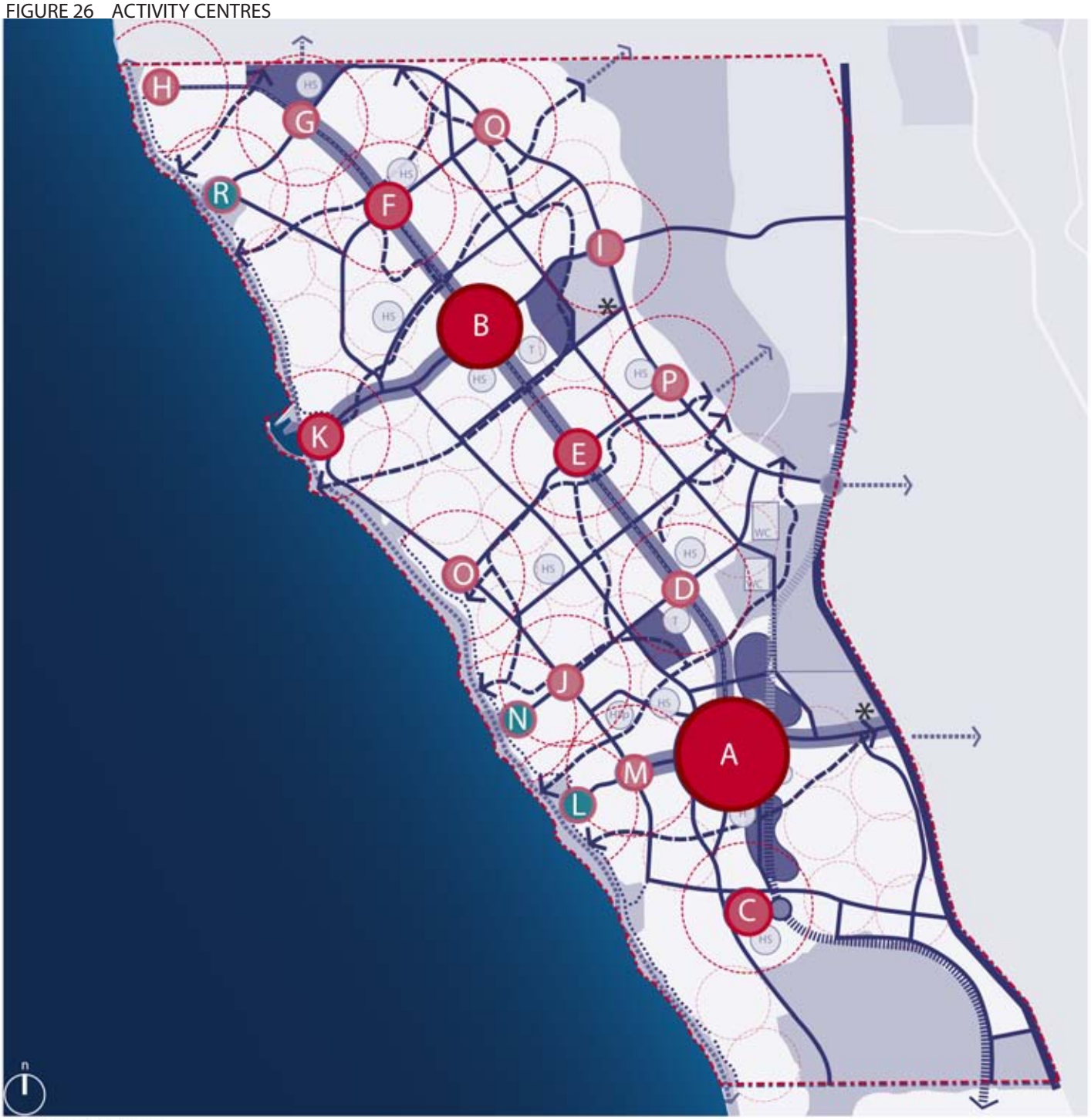
Size and Composition

Activity centres may be of size and diversity that serves a regional or district function; the tenancies and accommodation types may be focussed towards a tourism-based economy; they may be designed to cater for the weekly needs of the residents within the immediate neighbourhood; or they may just comprise a deli or cafe, possibly associated with a public space or recreational area.

An appreciation of the centre hierarchy and the functions performed by each centre is important to inform planning decisions regarding land use, floorspace, residential density, transport and infrastructure as well as private and public investment decisions.

Clear centre hierarchy is also important to ensure that the entire needs of communities are catered for. For example if a district centre is not large enough it may be unable to support the full range of uses necessary to service the district, resulting in residents having to travel further to a true district or regional centre. Conversely if neighbourhood centres are too large there will invariably be a lesser number of them, resulting in reduced walkability to local services.

FIGURE 26 ACTIVITY CENTRES



As discussed above, the DSP only depicts the regional, district, coastal and key neighbourhood activity centres. Additional neighbourhood and local centres will need to be identified and provided at LSP stage.

For each of the centres shown on the DSP, Urbis has calculated the supportable retail floorspace based on assumptions regarding residential densities within and around the centre, spending levels of the surrounding residents and the likely 'leakage' to other centres both within and outside the DSP area.

In addition, Syme Marmion and Co. has calculated the estimated floorspace of a broader range of employment generating land use categories including industry, storage, community services, entertainment/recreation and accommodation, providing an indication of the total size of the centre.

These analyses together provide a picture of how a commercially viable network of centres could develop which provides a sufficient distribution and quantity of services to meet the needs of the community and contributes to achieving the overall employment self sufficiency targets for the DSP.

This development scenario provides a basis for establishing centre hierarchy. However in some cases the indicative centre size does not clearly suggest whether a centre would be more appropriately classified as a neighbourhood or district centre. Furthermore, the range of assumptions on which the investigations are based are likely to change as consumer preferences, demographics, lifestyles, technology and other influences on retailing continue to evolve over the 50 year life of the project. Therefore whilst the investigations provide a starting point, they are not adequate for establishing a long term centre hierarchy.

It is clearly problematic in establishing any long term centre heirarchy for such a large region that is to develop in stages over a long period of time considering the numerous variable assumptions. At LSP stage, there will be a better understanding of the residential densities, demographics and other factors influencing the activity centres, therefore the DSP needs to provide sufficient flexibility for LSPs to refine the centre compostion to suit the needs of the community.

To provide more flexibility the DSP makes provision for additional neighbourhood and/ or local centres that are not shown on the plan. More detailed planning at the LSP stage will be required to define the hierarchy for these centres and to determine the number and location of additional neighbourhood and/ or local centres. Section 6.3 provides guidance for LSPs to undertake this investigation whilst achieving the overall objectives for the DSP area.

Table 10 Indicative Breakdown of Activity Centres

Activity Centre	Type	PLUC 5 Indicative Retail Floorspace (m^2 nla)	Indicative Total Floorspace (m^2 nla)	Indicative Employment (jobs)
A	Strategic Metropolitan Centre	71,800	458 867	15 001
B	Secondary Centre	43,700	130 592	4 139
C	District	11,700	24 177	871
D	Neighbourhood	7,200	14 103	517
E	District	9,400	18 133	669
F	District	9,900	18 133	681
G	Neighbourhood	7,500	14 470	534
H	Neighbourhood	3,700	10 537	306
I	Neighbourhood	5,600	10 440	390
J	Neighbourhood	5,900	11 173	415
K	District	10,900	26 651	957
L	Coastal	1,600	27 241	460
M	Neighbourhood	4,700	17 098	484
N	Coastal	1,600	3 741	136
O	Neighbourhood	1,900	15 230	293
P	Neighbourhood	1,000	2338	85
Q	Neighbourhood	2,100	4909	179
R	Coastal	2,100	8669	231
Total		202,300	816 502	26 347
Other	Neighbourhood/ Local	30,600		

Note:

Locations of Centres A-R depicted on Figure 26.
Location, number and size of 'Other' centres to be determined through Local Structure Plans.
Coastal Centre floorspace shown is supportable by residents and local visitors - additional floorspace may be supportable by tourist activity
Refer section 6.3 for guidance on location and hierarchy of activity centres.

Design Principles
A key tenet of the Strategic Cooperation Agreement is that excellence in urban design and a quality lifestyle are essential to attracting investment and employment to the region.

The principles informing the design of the activity centres at Yanchep-Two Rocks will aim to create centres that:
- Are clean, green and attractive with excellent public transport, parks and pedestrian infrastructure;
- Offer people a unique sense of place, pride and belonging;
- Are equitable, safe and inclusive;
- Provide excellent standards in health, education, recreation/ entertainment and housing;
- Are stimulating, creative and diverse;
- Have a high concentration of mixed uses, including housing and other uses that enable activity to be stretched beyond daytime office/retailing hours;
- Implement best practice urban design, architecture and building.

Land Use
Mixed use development will characterise each centre. This will enable:
- More convenient access to facilities and services;
- Positive relations to be forged between compatible uses;
- Travel-to-work congestion and associated resource consumption to be minimised;
- Greater opportunities for social interaction;
- Visually stimulating streetscapes with a mix of building typologies; and
- A safer environment with 'eyes on the street' and active street life;
- An environment conductive to the emergence of economic clusters, capturing the benefits of agglomeration economies.

The highest concentration of activity (particularly the retail core) will emerge naturally within these centres along principle routes or points of convergence, namely the mixed use corridor and public transport nodes. The size of the core area will depend on the activity centre's position in the overall hierarchy, which is driven partly by the size of the catchment, overall densities and the nature of the street network.

Main-street fronting retail layouts will feature strongly, instead of enclosed shopping centre formats. Larger stores and 'big-box' units that need to be accommodated within the centre will be modified to be compatible with fine-grained urban settings. This may entail mixing uses horizontally and vertically or by wrapping the perimeter streets with smaller units and externalising more active uses.

The transition zone, towards the edge of the activity centres, will be a fertile ground for the mixing of land uses that bridge the core of the activity centre with the surrounding neighbourhoods. It is within this zone that the most dynamic mix of use will occur, including shops, storage facilities, workspaces (including live-work) and housing coexisting side-by-side or within the same building.

Street Network
The street network of the activity centres will be interconnected and generally conform to the time-honoured way of achieving efficient connections, which is to create a grid. The grid may be modified in response to topography or to accommodate specific land uses or buildings. An interconnected network of streets will ensure ease of access for all transport modes and sustain a variety of building types and uses that can adapt over time.

Some of the regional and district level activity centres may be designed around a one-way couplet configuration as their underpinning framework. This configuration has been successfully applied by Calthorpe Associates to many mixed use projects in the United States. Couplets split the arterial streets into a pair of narrow one way streets that creates traditional development blocks at the crossing. This configuration avoids major arterials traversing the centres, allowing for improved pedestrian crossing conditions and opportunities for pedestrian oriented retail and mixed use activity.

Within the activity centres, the street will be a prominent component of the public realm and be designed for people not just vehicles. The character of the street will also play an important role in successful place-making. This represents a notable departure from conventional engineering led approaches to street classification based on vehicle capacity, which regards streets solely as conduits and not as public places within their own right.

The street network will also be configured to optimise the solar design of buildings and public spaces.

06 ECONOMY, EMPLOYMENT + ACTIVITY CENTRES

Urban Form
Although the density profile of centre development will vary, it is envisaged that the building mass and height will be concentrated towards the core of centres and around public transport access points, parks and in other locations where the scope is available to frame positive public spaces.

The built form and landscaping will seek to work with the values that exist within the site and to build distinctive identities for each centre. In this regard, landmarks and prominent vistas will play important roles in creating visual cues that reinforce the identity attributed to each centre.

Public Realm
Diversity, safety and accessibility will be fundamental to the provision of a stimulating and attractive public realm that caters for the needs of all users. Where relevant, the east-west social/ pedestrian/ cycle linkages will be enmeshed into the centre design and provide an important function in connecting the centre with its catchment area.

Residential Catchments
The vitality of the activity centres will be contingent on access to a robust residential catchment featuring sufficient residential densities both within the centre and adjacent areas. Access to the centres from these catchments via the appropriate siting of public transport services and walkable neighbourhood structures will therefore be a key design consideration at local structure planning stage.

The DSP delineates 400 metre (5 minute walk) and 800 metre (10 minute walk) walkable catchments to all activity centres. It is evident that a significant proportion of the future residential population will be within walking distance of a centre.

In addition to the range of activity centres depicted on the DSP, suitable sites for local activity centres will be identified at the LSP stage, taking into account the local road network and the location of other facilities, including community sites and primary schools. The 400 metre ped-sheds to these centres will encompass many of the neighbourhood areas that fall outside the walkable catchment areas for the larger activity centres.

ILLUSTRATION 23
ACTIVE GROUND FLOOR USES CONTRIBUTE TO VIBRANT MIXED USE AREAS

ILLUSTRATION 22
INDICATIVE LAYOUT YANCHEP OF CITY CENTRE ~ DESIGN PROVIDES FOR A HIGHLY INTERCONNECTED URBAN ENVIRONMENT

Summary of DSP Activity Centres

Yanchep Strategic Metropolitan Centre

Location

The Yanchep Strategic Metropolitan Centre is located towards the south of the Yanchep-Two Rocks study area. It will be the focal point of the main employment anchor for the north of the Metropolitan area, second in importance only to the Perth CBD. It is significantly distant from the Perth CBD and has sufficient regional population to ensure that this role is viable and sustainable.

This Centre contains the railhead station for the northern suburbs rail line and will also have direct access to the Mitchell Freeway. This facility is expected to be the railhead for many years to come and therefore its ability to efficiently transfer passengers from rail to bus/light rail through appropriate siting and design will be of utmost importance. The location will also support and encourage active street front commercial activity and be within walking distance of the amenities in the Centre.

Land Use

The Centre will contain and integrate the institutional hospital and university uses with the general mixed-use employment areas. Projections undertaken by Syme Marmion & Co. indicate that the Centre together with the adjoining mixed use areas will accommodate in the order of 792,000m2 of commercial/community oriented floorspace, which would house some 25,635 jobs. This is close to half the number of the total jobs planned to be accommodated within the Yanchep-Two Rocks project. With a workforce of this size, catering for the significant daily inflow and outflow of commuters through the provision of an efficient transport system is a paramount consideration for the design of this centre and the adjacent employment areas.

Density

The Yanchep Strategic Metropolitan Centre will be the densest and most urban of all centres outside of the Perth CBD and its functions will be more wide-ranging and of a much larger scale than Joondalup and other subregional centres. A substantial amount of retail, commercial, government, civic, entertainment, community-based business and employment, and medium and high density housing will be actively encouraged to locate within this centre.

Despite the scale of employment uses in the Centre, it is anticipated that residential housing within the centre will achieve an urban density of 50 du/ha within the 800m ped shed. This will allow a large number of residents to live in close proximity to the employment, services and other facilities available within the Centre. Further from the centre, residential densities will reduce, however remain relatively high compared with densities found in conventional suburbs of Perth. The projected residential population of Yanchep-Two Rocks, combined with a strong residential catchment that extends beyond the DSP area, will ensure that this Centre will be both a local and regional destination.

The development of the Strategic Metropolitan Centre as a major activity centre and employment anchor for the North-West Corridor will require the coordination of all spheres of government and the private sector. Cooperation and partnerships will be essential to achieving the timely and coordinated provision of 'soft' and 'hard' infrastructure and to enable effective ongoing governance, marketing and management of this significant project.

Urban Form

The urban structure of the Strategic Metropolitan Centre will comprise a traditional urban grid of streets and blocks surrounding a shared city square. Block sizes near the centre will be smaller than those at the edge. This flexible pattern will allow for both smaller building types (shops, housing) and larger building footprints (department store, major retail).

The streets and footpaths will have an urban quality including appropriate street furniture, paving treatments and landscaping that serve to create a high quality urban space.

The urban quality of the centre will be reinforced through the incorporation of multi-storey buildings, which are typically built right to the footpath. Building mass and architectural treatment will be varied to reflect differing land uses and to create a dynamic streetscape.

Because of the higher density and more close-knit development pattern, open space will be formal in character and include small urban squares and intimate hardscape plazas that will contrast with the main town square. The landscaping treatments will be designed to shape space and provide shade.

Secondary Centre

Location

The Secondary Centre will be second in size to the Strategic Metropolitan Centre. It will anchor the northern end of the mixed use transit corridor and service the northern communities of Yanchep-Two Rocks. It will also enjoy relatively direct access to the freeway.

Land Use

As with the Strategic Metropolitan Centre, the dynamic mixed-use character of the Secondary Centre will allow it to accommodate a wide variety of land uses, including large and small scale retail, office and employment uses, educational institutions, civic amenities, transit facilities, medium and high density residential uses (many that have ground-floor commercial activity) and other amenities and attractions with regional appeal that require the services and transit connectivity of a regional centre environment.

Density

Residential housing within the Centre is projected to achieve an urban density of 50 du/ha. within the 800m ped shed. This density of development will give way to a less dense urban form as one moves away from the centre.

Urban Design

The urban design treatments applied to this centre will be similar to those described for the Yanchep Strategic Metropolitan Centre.

District Activity Centres

Location

The DSP makes provision for nine district centres that are relatively evenly distributed to service the nearby neighbourhoods. The centres will be the focal point for the adjacent residential neighbourhoods and are located at the intersections of important regional roads (District Distributors), which typically occur on a 1km grid (topography permitting), providing the retail uses with the exposure required to thrive. The location of these centres at the intersection of these major routes also allows direct connections between the district and coastal centres.

Land Use

The District Centres will be mixed-use Centres comprising a highly walkable collection of shops, restaurants, housing and commercial uses.

As a local destination for surrounding neighbourhoods, these mixed-use activity nodes will mainly cater for local needs and typically include one or two supermarkets, small shops and services and a range of housing types. A local school or recreation/community centre may also be located within the District Centre for ease of access and to reflect its pivotal role in community life.

Density

The DSP makes provision for medium and high density residential development within the District Activity Centres achieving an average density of 30 du/ha within a 400m ped shed.

Urban Design

In terms of scale, the District Centres are anticipated to comprise a collection of four to six blocks that may surround a district park. One or more of the blocks will be bigger than the others to accommodate the functional requirements of a supermarket. As with the regional centre, couplets of one-way streets may be incorporated into the street network design to eliminate turn lanes, making vehicle circulation easier and reducing pedestrian crossing distances.

With respect to the built form, the District Centres will be the most urban at their core, where multi-level buildings will frame the central public space. Structures around this park will typically have no setback from the footpath. Buildings may have arcades from the footpath to connect to surface parking behind.

The public space is typically a formal green space with a focal element (such as a fountain or sculpture) that serves as a gathering place for residents from adjacent neighbourhoods. Cafes and restaurants can take advantage of this amenity by creating outdoor seating areas. Away from the centre, open spaces will become less formal, in some instances taking the form of regional open space that is connected with the broader natural environment.

Two Rocks District Centre

The District Centre proposed at Two Rocks will be based on a tourism and resort economy and therefore will perform a different function to that of the other District Centres. It will feature restaurants, small shops and other location specific service businesses like surf shops and marina supplies. A full range of residential uses, from apartments to townhouses, will also be accommodated within this centre. The urban design character will seek to optimise the relationship of the centre with the marina and coast, including orienting streets and creating open space configurations to optimise coastal views. The built form, building materials and landscape treatments will complement and reinforce the coastal location.

The Two Rocks marina may also have a marine and maritime industry servicing function and may incorporate some commercial and marine industrial uses, for example boat lifting and servicing.

Coastal Tourist Activity Centres

Location

The Coastal Tourist Activity Centres are proposed at locations where the landform is relatively gentle, can accommodate sensitively placed development and benefit from direct east/west connections to the major mixed-use inland centres. Development at the water's edge will be well positioned to form symbiotic relationships with the inland development along the transit boulevard.

Land Use

The Centres will be specialised centres, designed to perform different functions from the other centres and will have a greater focus on tourist and other visitor markets. These centres will provide gateways to the spectacular coast and nodes for consolidated urban development. As reflected in the Urbis retail report these coastal centres have the capacity to accommodate tourism related retail above the conventional retail designated for each centre.

The uses accommodated within the Coastal Tourist Activity Centres will have a strong tourism/resort component, and may include leisure oriented retailing, cafes/restaurants, tourist accommodation, entertainment, as well as convenience retailing for local residents. A marina, in association with tourist accommodation, as well as retail and entertainment uses, will be the focus for the more northern of these centres. The presence of marinas at these centres will be a catalyst for the growth of small businesses and encourage a greater level of visitation to these centres.

Density

A full range of residential housing types will be developed at an average projected urban density of 25 du/ha within the 400m ped shed. Maximising the potential to accommodate dwellings in these centres will ensure the centres remain vibrant and sustainable all year round while increasing the accessibility of these centres. Intensification of densities in these centres provides the opportunity for medium and high density development to be achieved including opportunities for apartments and medium rise development along the coast.

Urban Design

The urban design of these Centres will be of the highest quality to capture distinctive local identities and reinforce associations with the coast.

ILLUSTRATION 24
COASTAL TOURIST ACTIVITY CENTRES SHOULD ESTABLISH A STRONG RELATIONSHIP WITH THE COAST

Neighbourhood Centres

Location

The Neighbourhood Centres are located at the intersection of important regional roads (District Distributor) roads and away from the District Activity Centres to enable an accessible distribution of centres for the various residential neighbourhoods. Additional Neighbourhood Centres may also be identified at LSP stage, having regard to the principles in Section 6.3.

Land Use

The Neighbourhood Centres will be mixed use, and include small-scale retail, local offices, restaurants and community uses. Streets will radiate from the centres to offer direct connections from the adjacent mixed use neighbourhoods. Building design and landscape treatments applied to each Centre will be appropriate to the specific location with respect to materials, facade treatments, roof design and architectural detail.

Density

A full range of residential housing types will be developed at an average projected urban density of 25 du/ha within the 400m ped shed. This level of housing will inject activity into the centres beyond business hours and foster convenient and sustainable travel patterns for local residents.

The Neighbourhood Centres will be the most urban at their core, where multiple storey buildings with an urban quality may be organised around a central green or hardscaped public space. In all centres, blocks will be small and streets generally oriented for passive solar access and to capture prominent vistas of the natural landscape or urban structures.

Local Centres

Location

Local Centres, whilst not specifically shown on the DSP, are intended to be located in the heart of each neighbourhood unit, comprising approximately a 400m radius area. The centres can be located adjoining parks, recreation areas or schools or simply on the corner within a residential area. Due to their flexible placement it is more appropriate to determine their location(s) at LSP stage.

Land Use

Local Centres might comprise a small supermarket; deli; cafe; newsagent; and/ or a small community or recreational facility and generally contain less than 1000m2 floorspace. The DSP makes provision for a total of approximately 30,600m2 for Local Centres or additional Neighbourhood Centres.

Density

The Local Centre should be associated with some higher density housing compared to the rest of the neighbourhood to maximise its use and to make it more identifiable to residents and visitors as the local civic hub.

ILLUSTRATION 25
NEIGHBOURHOOD CENTRES SHOULD ACCOMMODATE A DIVERSE RANGE OF USES APPLIED IN A MANNER APPROPRIATE TO THE SETTINGS

Employment Generating Areas Outside Activity Centres
The two industrial zones, the mixed use employment areas, tertiary education sites and the hospital site, have the potential to generate significant employment. Consequently, access to and from these sites using all modes of transport, including public transport, has been a fundamental consideration in their location. The location of the employment districts will encourage potential synergies to develop between uses, particularly the hospital, university, the mixed use employment areas and the Strategic Metropolitan Centre.

The two dedicated light industrial areas have been located to service the northern and southern communities of Yanchep-Two Rocks and the new communities emerging further south. The boundaries of these industrial areas are clearly defined by major transport reservations and regional reservations to avoid encroachment by other land uses and to allow for a degree of buffering.

Mixed Use Corridors
Three mixed use corridors are proposed:
- a southern corridor that traverses the Yanchep Strategic Metropolitan Centre, extending east to the Mitchell Freeway and west to the neighbourhood centre;
- a northern corridor that extends between Two Rocks and the Secondary Centre; and
- the main north-south mixed use transit boulevard.

Location
The mixed use corridors will be a highly flexible DSP element that will allow a variety of land uses to locate in a pedestrian-friendly, transit–supportive, slow speed environment. The location of Activity Centres at select locations along the corridors will support viable public transport services and the intensification of corridor land uses. It is envisaged that eventually the corridors will evolve into linear mixed-use neighbourhoods, where ground floor commercial is encouraged to the extent local market conditions allow. It is also predicted that a pattern of use will emerge, where employment generating uses such as offices and other commercial activities are concentrated towards the edge of Activity Centres and near transit stops. In other places further away from the centres, the character of the corridor is likely to be more residential in nature with apartments or townhouses looking onto the leafy boulevard. Different development patterns will occur along the corridors including buildings with surface parking behind, buildings with structured parking, high and low buildings and small and large blocks.

Southern East-West Corridor
The southern corridor will link the Mitchell Freeway extension and the Strategic Metropolitan Centre and will accommodate some larger template buildings, such as larger format retail showroom uses, that cannot be comfortably accommodated within the Centre but which rely on good exposure. It may also include general commercial and service uses which are not appropriate for full integration into residential precincts, but do not require the buffer protection provided by the industrial zones. Unlike the other mixed use corridors identified in the DSP the southern corridor will need to provide efficient and direct access to the Mitchell Freeway and hence the road design will need to accommodate this requirement while supporting good access to the businesses that will line the road. In this location a variation on a standard District Distributor road design is anticipated, rather than the multi-use boulevard, that will traverse the length of the site.

To the west of the Strategic Metropolitan Centre, the corridor is anticipated to accommodate office based commercial business in a mixed use environment with a significant residential component.

Northern East-West Corridor
The northern corridor will cater for a mix of uses, medium to high density residential, offices and other commercial uses that benefit from good accessibility and proximity to the Secondary Centre and Two Rocks marina.

North South Transit Boulevard
The main north-south mixed use corridor traverses the full extent of the site and hosts several activity centres. It will be the most intensely developed corridor and the backbone for the project's mixed use development, with sectional variations in character depending on adjacent land uses. It is envisaged that the section of the corridor extending between the southern boundary of the DSP area and the Secondary Centre will comprise the greatest concentration of commercial and employment generating uses, whereas further north the mixed use corridor will have a stronger residential character.

This multi-use boulevard will provide an attractive setting for street facing employment and residential buildings, while at the same time accommodating transit and local and sub-regional traffic. Key elements of the boulevard will include :

Frontage Road
A narrow lane on either side of the busier through-lanes providing space for on-street parking and safe access to adjacent properties. It is intended that these roads will support safe pedestrian use, and be configured to slow traffic.

Dedicated Transit Lanes
These lanes will be at the very centre of the boulevard and provide a dedicated area for the public transit allowing transit to operate on a busy street in a time-efficient manner that minimizes conflict with other traffic.

Landscaped Medians
Landscaped linear park elements will separate the faster-moving lanes from the slower frontage road. These medians may contain pedestrian paths, kiosks, and other street furniture forming an extension of the footpath space.

Pedestrian Zone
The area immediately in front of the boulevard-facing buildings will be the pedestrian zone. This footpath area is typically given a plaza landscape treatment with street furniture, urban landscaping and special paving. Space will be provided in this zone to encourage cafe seating and other extensions of ground floor uses to spill into the street.

Building Streetwall
Taller three and four storey or higher mixed-use buildings will shape the space of the street and line it with active uses that support and benefit from the transit accessibility. The buildings will typically have little or no front setback and be buffered from the noise of through-traffic by the frontage roads and landscaped median.

Open Space Conditions
In select locations, the buildings will give way to landscaped parks and plazas that provide gathering places and attractive green interludes to the otherwise relatively intense urban form. Open space will intercept the boulevard in various places, offering social/ pedestrian/ cycle connections east to the national park and west to the beach.

Mixed Use Employment Areas
Location
Two major mixed use employment areas of 40ha and 50ha are proposed to the south and north of the Yanchep Strategic Metropolitan Centre. Although, these areas are shown diagrammatically on the DSP as distinct from their surrounds, they will be designed, through the LSP process, to be integrated with the adjacent areas.

Southern Mixed-Use Employment Area
The southern area will be released first to cater for those initial businesses seeking a quality employment address that allows for the clustering of complementary activities. This area is within walking distance of the Strategic Metropolitan Centre and the major multi-modal transit facility (where riders will be switching from light rail/bus to heavy rail connections that will give access to the wider metropolitan region). It is also located in proximity to the proposed hospital site and to significant areas of housing.

Northern Mixed-Use Employment Area
The northern employment area will be released as part of a subsequent stage and will also be within walking distance of the Strategic Metropolitan Centre and near the main north-south mixed use transit corridor. The main university is also proposed to be located adjacent to this area. The university will be a major anchor and catalyst for other research and development and high-tech businesses to locate in this area.

Land Use
These areas will cater for a range of employment generating uses in technical and knowledge-based activities including research and development, offices and the clustering of employment activities attracted through the IDEAS project.

Although incidental to the main employment function, these areas will also accommodate a small component of housing that will achieve a 24 hour presence of people. Residential building typologies specifically designed to accommodate both living and working will be encouraged in the buffer zones to this area to allow a seamless transition between employment areas and adjacent residential areas.

Urban Design
To compete globally in attracting a highly skilled workforce to the region, these employment areas must provide a quality and captivating environment for working and living. These areas will therefore showcase excellence in urban design and deliver 'state of the art', sustainable infrastructure that demonstrates the latest technology in services, communications, built form and general project delivery. In this regard, research and technology will be embedded in the urban infrastructure as well as in the industries that choose to locate within these business areas.

Local Structure Planning
The success of these areas will be advanced by a strategy developed at the LSP stage to ensure that they satisfy employer/employee expectations and raise the bar in terms of workplace standards. Matters that may be covered by the strategy include best practice standards for the provision of quality work spaces, access to education and learning facilities, leading communications technology, cycling, health and fitness facilities, child care provisions, health and wellness facilities, transport services to accommodate the significant inflow and outflow of people, public realm/open space and marketing. Guidelines will also be developed at the LSP stage that detail street block layouts, building design criteria, building typologies (including adaptable buildings) and mixed use development provisions to contribute to high quality urban design, architecture and built form.

Education and Hospital
Location
Four tertiary education sites are proposed to be clustered within the major Activity Centres and where practical, collocated with major district/regional open space and transport nodes. These include:

- a large university potentially located to the north and adjacent the Yanchep Strategic Metropolitan Centre could anchor the northern Mixed Use Employment Area;
- a tertiary site near the eastern edge of the Strategic Metroplitan Centre site and near the multi-modal transit facility and health campus;
- a tertiary site adjacent to the Neighbourhood Centre located to the north of the Strategic metropolitan Centre and collocated with Regional Open Space; and
- a tertiary site adjacent to the Secondary Centre and collocated with Regional Open Space.

The health campus/hospital site, comprising approximately 8 hectares is likely to be located to the south of the Strategic Metropolitan Centre and on the mixed use corridor. This site is strategically located close to the train station. The facility will become a major source of jobs in the community and with health care becoming a leading growth industry internationally, colleges are increasingly developing programmes that prepare students for careers in this field. Thus, a close spatial relationship between the health campus and tertiary education sites is highly desirable.

Urban Design
The tertiary education and health campus sites are shown diagrammatically on the DSP as relatively large, standalone sites, however when built they will be integrated with the activity centres and possibly even scattered throughout the centres to ensure they become an integral part of the centres. They will also be connected with a quality public transport service.

Access to appropriate learning and the provision of quality health care/wellness services is a centrepiece of the IDEAS project and will contribute to a dynamic workforce within the region and prosperous business development. These sites will therefore be a cornerstone for the project, generating significant employment and providing the source for 24-hour activity, creativity, learning, innovation and urban vitality.

Design guidelines will be prepared at the LSP stage to promote the highest level of urban amenity and state-of-the art functionality for these strategic facilities. University buildings in particular, will be iconic symbols that will form an integral part of the place identity attributed to Yanchep-Two Rocks.

Industrial Areas

Location

Two industrial zones are proposed to service the northern and southern sectors of the DSP area.

The southern industrial area is isolated from residential neighbourhoods and enjoys good highway access and will be suited to accommodate large-scale warehousing and distribution uses.

The northern area, which enjoys proximity to a district centre and is surrounded by mixed use neighbourhoods, will be more suited to smaller-scale, light industrial, warehousing, storage and service industries that are needed to service the local population. The northern site is well accessed by existing roads creating the opportunity, if required for the site to be developed early in the overall development of the DSP area.

Land Use

These areas will accommodate lower density light industrial uses that cannot be easily accommodated within Activity Centres due to the potential for land use conflicts associated with emissions requirements for noise and light buffer and traffic generation. They will perform an important economic function in terms of servicing the needs of local communities, employment generation and wealth creation.

The more detailed planning for these areas will be focussed on accommodating industrial uses and recognising the needs of these uses to have good accessibility by a wide range of transport modes including heavier vehicles and public transport.

It is specifically intended that these zones, as reflected in the provisions of the City of Wanneroo District Planning Scheme, will not contain any non-industrial uses that can be readily integrated into the general urban areas. This is particularly important given recent trends for non-industrial uses to locate in land set aside for industry which is contributing to an increasing shortage of land suitable for bona fide industrial activities.

Urban Design

Design guidelines will be prepared at LSP stage for these areas to ensure that development is of a high standard and complies with relevant development criteria including car parking and access, landscaping, setbacks, building materials and management of emissions.

Economic Development Policies

The following economic policies have been formulated to ensure the establishment of a robust economic base for Yanchep-Two Rocks.

Strategic Co-operation Agreement

In 1999 the Western Australian Planning Commission became a joint signatory with the State Government, Tokyu Corporation, City of Wanneroo and Yanchep Sun City Pty Ltd to the Strategic Co-operation Agreement (SCA) (1999). The Agreement outlines joint initiatives and co-operation between the parties to progress development and employment creation at Yanchep-Two Rocks. As part of the SCA, a joint employment creation feasibility initiative called the IDEAS Project was established between the parties.

IDEAS Project

The IDEAS project is a response to the need for a strategic model for government and private sector cooperation which identifies a suitable framework for employment growth in the North-West Corridor. The strategy identifies administrative and regulatory resources required to facilitate and complement specific industry led employment initiatives. It aims to formulate a socially responsible economic development strategy which can be practically implemented and which leverages the natural competitive advantages of Perth in a regional and global context.

Through the IDEAS project there is an active enterprise attraction and facilitation program. This program focuses on the development of identified industry clusters, through the following three complementary business development strategies:

- Business attraction incentives;
- Export development; and
- Local employment and training initiatives, supporting the development of local industries and the facilitation of employer/education/employee alliances.

The clustering concept promises a series of benefits including:

On-site Benefits

- Labour productivity gains resulting from the clustering of knowledge-based processing, R&D and service activities; reduced commuting time and stress due to proximity of work places and residential areas, teleworking and home-based professional services, enhanced quality of life, social and cultural interaction and an enhanced sense of well-being;
- Productivity gains and profit margins for producers resulting from clustering of activities, access to hi-tech facilities, R&D and service sectors, higher returns and reduced costs in service industries based on internet connections and teleworking; development and marketing of educational services and products, development and marketing of R&D outputs, software, consultancy services and other professional and business services and the attraction of tourists and other visitors to the site;
- Gains from cost savings in residential construction resulting from improved integrated overall site planning and development, and more efficient design and use of infrastructure;
- Benefits of improved lifestyle and residential amenity reflected in the higher property prices and the quality of life enjoyed by residents; and
- Better use of public transport.

Off-site Benefits
- Regional benefits from job creation (direct and indirect) reducing regional unemployment and utilising otherwise unused labour resources;
- Attraction of tourists, new residents and other visitors to the region through the unique character of the development;
- Spin-off benefits on a nationwide scale using the IDEAS Project as a demonstration model for developments in other areas;
- Productivity improvements in related industry sectors in other regions, resulting from development and application of R&D, value-adding to natural resources, marketing and technical support; and
- Potential benefits to the nation if similar developments are replicated on a large enough scale, through alleviation of potential congestion costs and containment of other costs required to maintain quality of life in the major metropolitan areas as the nation's population increases.

Initial Projects
Negotiations are advanced to either the contract, or Memorandum of Understanding stage for the provision of an initial 850 jobs, with advanced concept planning for a further 200 jobs in Capricorn Village and adjacent eastern mixed use area.

Infrastructure Development
The extension of Marmion Avenue to Yanchep Beach Road was completed in 2008 and was pre-funded by the Capricorn Village Joint Venture.

Negotiations are underway for the early provision and upgrading of an optic fibre connection to the site and high pressure natural gas. This will be an essential infrastructure item for the initial projects in the Mixed Use Areas.

Home Based Business
Home based business and small-scale enterprises are an important element of any economy and they will be encouraged and facilitated in the DSP area in the following ways:

- a proportion of lots will allow dual-use occupancy;
- design guidelines to allow and encourage building forms which easily accommodate home based businesses;
- Using residential areas adjoining industrial areas as buffer zones, allowing mixed residential and small scale light industrial and service activity in those zones.

Tourism
Tourism is an important element of economic activity at Yanchep-Two Rocks and will be a major source of employment. It is estimated that approximately 2,200 hotel rooms across a range of categories will ultimately be viable throughout the Yanchep-Two Rocks development. This includes small scale accommodation that might be located immediately adjacent to Yanchep National Park. There may also an additional 200-250 backpacker beds.

Tourist accommodation will be mostly located in the following key locations:

- Capricorn Coastal Node;
- Two Rocks Coastal Node;
- Yanchep Strategic Metropolitan Centre; and
- Secondary Centre

Approximately 150-250 caravan bays will be required in the Yanchep-Two Rocks/Alkimos area, including those areas adjacent to the Yanchep National Park. The Department of Conservation and Land Management (CALM) has well advanced concept plans for the expansion of some tourist activities including camping and caravan areas in the Yanchep National Park. Consequently, planning at Yanchep-Two Rocks should allow for one, and possibly two, caravan parks, including any replacement for the Club Capricorn caravan park. Further consideration by CALM and WAPC, through a separate study, should be given to the provision of these sites for camping and caravanning within the extensive areas of Parks and Recreation Reserve within, and surrounding, the DSP area. A general location for an interim caravan park is subject to further investigation and may include sites outside the DSP area.

6.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through Local Structure Plans and Activity Centre Structure Plans.

Local Structure Plans (LSPs)

In most instances, LSPs will contain one or more activity centres. More detailed investigations will be required at this stage to refine the hierarchy, number and location of all activity centres within the LSP area from regional through to local.

For centres identified as District/ Neighbourhood in the DSP, LSPs should have regard for the following when determining the status of the centre:

- Almost all residents will be located within approximately 2km of a District Centre and within 800m of a Neighbourhood Centre;
- District centres should be of sufficient size to enable the full range of uses to be accommodated in order to serve its district function;
- Neighbourhood Centres should not be of a size that will prohibit other viable Neighbourhood Centres being located within adjoining 800m ped-sheds;

In determining the number and location of additional Neighbourhood and Local Centres, LSPs should aim to ensure almost all residents will be located within approximately 800m of a Neighbourhood Centre and 400m of a Local Centre;

LSPs should demonstrate that the activity centres can sustain a sufficient number of jobs in order to meet the overall employment self sufficiency target.

Activity Centre Structure Plans (ACSPs)

ACSPs should provide detailed design direction to achieve quality development and sustainable outcomes. ACSPs should be guided by the following criteria:

Mixing of Land Uses

ACSPs will incorporate an urban structure and design guidelines that allow for the compatible mixing of land uses (including noise abatement).

Land Use / Transport Integration

The design for each Activity Centre will achieve maximum integration between public transport services and land use.

Connected

The design of Activity Centres will provide for strong connectivity with surrounding neighbourhoods via safe and convenient routes for pedestrians, cyclists and motorists. Within the centres pedestrians and cyclists will be provided with safe, comfortable, legible and direct routes to a range of different destinations.

Safe Environments

An audit of each ACSP will be undertaken to ensure urban design leads to safe and secure places.

Creative Centres

ACSPs will incorporate strategies to promote creative and exciting cultural centres. This may include community/public arts and landscape and urban design initiatives to give each centre its own distinctive identity, and by fostering partnerships with local government, cultural organisations, universities/technical colleges and others to institute cultural planning as an integral part of the development of each centre.

Housing Diversity

ACSPs will be designed to accommodate diverse and affordable housing including Homeswest, community housing and private sector provided affordable housing located near support infrastructure, including public transport, education, health and employment.

State of the Art Design

The ACSPs will detail street blocks, building layout plans and building design criteria and nominate a series of building typologies (including adaptable buildings) that will contribute to high quality urban design, architecture and built form. The ACSPs will also offer detailed design direction with respect to the treatments of the street environments (landscape treatment, public art etc).

Employment Creation

ACSPs will confirm there is adequate land for employment generating uses to achieve the number of jobs projected in the broader LSP.

Streetscape Character Assessment

A street type, capacity and character plan will be produced as part of the ACSP for each centre that considers the multi-functional role and desired character of each street.

Parking Strategy

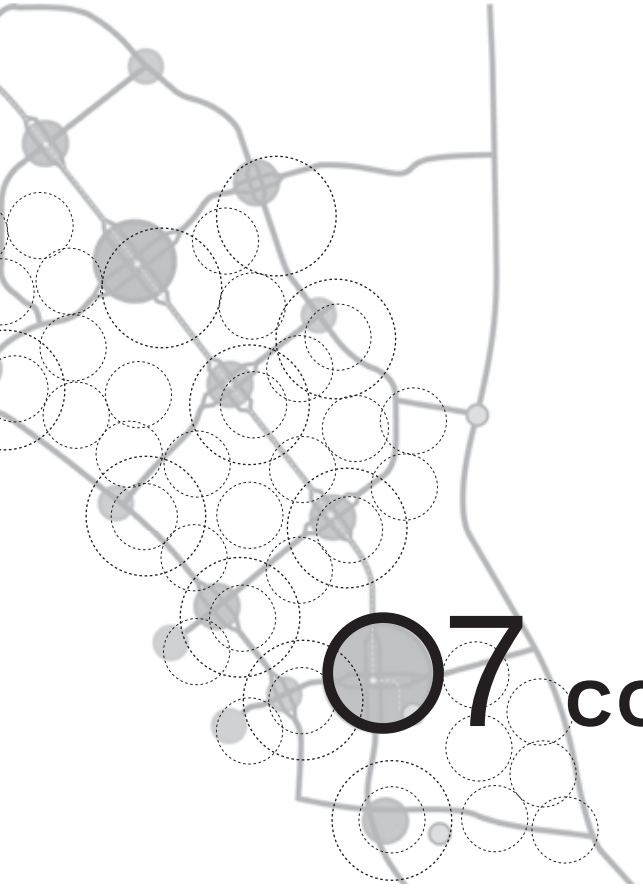
Car parking strategies will be produced for the Activity Centres that address parking provision requirements, parking design considerations and management. Most streets will be designed to accommodate on-street parking.

Public Realm Strategy

The design and treatments applied to the public realm of Activity Centres and the management of these areas will be given detailed attention at the ACSP stage. Key objectives will include versatility to adapt to different users, provision of complementary uses around spaces, safety and access, diversity (i.e. including plazas, squares, parks);and place making.

Staging

A staging plan will be prepared to set out the framework for progressing the servicing and development of each Activity Centre. In acknowledging that elements of a centre will not develop until the project has reached sufficient maturity, the plan may incorporate mechanisms to facilitate appropriate interim uses, introduce strategies that enable intensification of land use over time, or allocate to certain sites or precincts 'deferred development' status.



07 COMMUNITY DEVELOPMENT

07 COMMUNITY DEVELOPMENT

7.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

Population and Demographics

Age Structure

The Age Structure graph shows the population by age cohort at 2006 and the forecast increase in population by age to 2021 in the City of Wanneroo.

It is evident that the population of 20-29 year olds is expected to more than double between 2006 and 2021. The graph also shows that the population of persons aged 60+ is expected to more than double over the next 15 years.

Household Structure

WA Tomorrow population projections for the City of Wanneroo suggest how household size and structure will change by the year 2021.

The proportion of *Lone Person* households will increase to over 19% of households and *Couple Families with No Children* will make up about 24% of all households. At the same time whilst there will be a reduction in the proportion of households with children (*Remainder Family Households)*, there will be a substantial increase in total numbers. This is illustrated in the Household Structure graph.

As a result of these shifts in household structure, the average size of new households is expected to be approximately 2.74 persons per household. This will result in an overall average household size of 2.79 persons per household for the City of Wanneroo by 2021.

Yanchep - Two Rocks will develop within this demographic context.

Educational Attainment

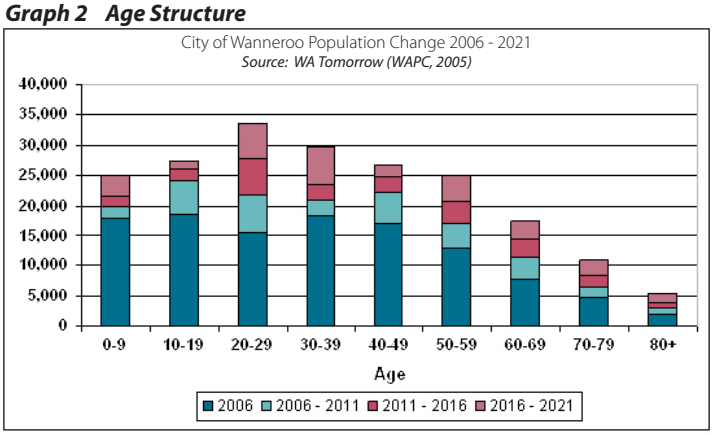
An analysis has been undertaken of the highest level of schooling achieved by persons living in the City of Wanneroo, compared to City of Wanneroo coastal suburbs, the City of Stirling and the Perth metropolitan area. Key outcomes of the analysis are –

- 33% of persons achieved year 12 or equivalent in the City of Wanneroo compared to 45% in Stirling and 42% in the Perth Metropolitan area. City of Wanneroo coastal suburbs are not significantly different to the City of Wanneroo as a whole, with only a slightly greater proportion achieving year 12 level in the coastal suburbs.
- 5% of persons in the City of Wanneroo have a Bachelors Degree compared to 12% of persons in the City of Stirling and 11% in the Perth Metropolitan area. City of Wanneroo coastal suburbs are not significantly different to the City of Wanneroo as a whole in terms of tertiary qualifications. Provision for two university campus sites and knowledge-based industries within the Yanchep-Two Rocks DSP should contribute to higher tertiary education levels within the district.

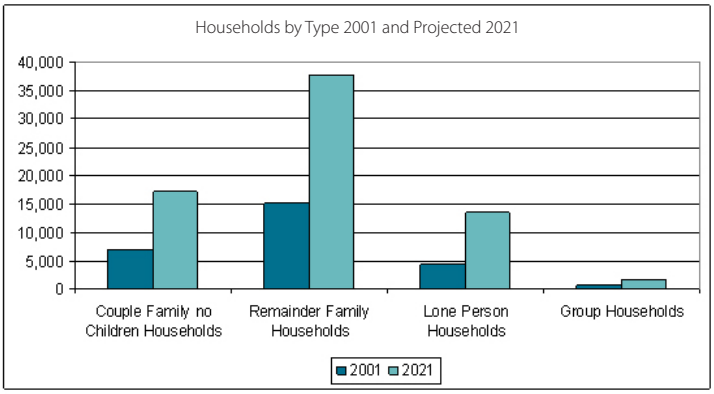
Summary

- The population of the City of Wanneroo is forecast to nearly double over the next 15 years.
- By 2021, it is predicted that Yanchep-Two Rocks will provide housing for almost one third of the growth in the North West sector. However, after this time and once Alkimos-Eglinton is fully developed, Yanchep-Two Rocks is expected to accommodate the majority of North West corridor population growth.
- For planning purposes, the long term persons per dwelling ratio for Yanchep-Two Rocks is expected to be approximately 2.3 persons.
- It is forecast that Yanchep-Two Rocks will be fully developed by around 2060, accommodating a residential population of approximately 155,000 persons.
- Education attainment within the City of Wanneroo is currently lower than the Perth Metropolitan average. Provision for tertiary education and knowledge-based industry, which is a priority for the planning of Yanchep-Two Rocks, should assist to elevate minimum education attainment levels.

Graph 2 Age Structure



Graph 3 Household Structure



07 COMMUNITY DEVELOPMENT

Social Infrastructure
Regional community and human service infrastructure includes a broad range of built facilities designed to accommodate public health, education, entertainment and recreation services. Such facilities include hospitals and health centres, cemeteries, high school and tertiary education facilities, aquatic centres, indoor sport and recreation centres, libraries, golf courses and performing arts centres. These facilities provide services to regional catchments and are focal points for economic and social activity. They also stimulate social cohesion, community development, health, education and employment.

A planned and orderly approach to delivering social infrastructure that has regard to community need projections, minimises the chance of duplication and ensures optimal use of limited resources. Projections for regional community infrastructure requirements for Yanchep-Two Rocks have been determined on the basis of feedback from in-depth interviews and small group workshops with key stakeholders, analysis of demographic data and the community needs assessments undertaken by the Community Facility Planning Reference Group.

This Reference Group, which came together over the course of 2004 / 2005, included representation from the City of Wanneroo, Department of Sport and Recreation, DPI and the Yanchep-Two Rocks project team. It is anticipated that regular meetings of the Reference Group may be convened to coordinate the more detailed planning and implementation of community infrastructure as Yanchep-Two Rocks is progressively developed.

The projected facility and service requirements documented under this section are based on the information available to the project at the time of the preparation of the DSP. The objective is to anticipate regional facility requirements so that they can be accommodated in the overarching DSP design.

Given the extensive time horizon of the Yanchep-Two Rocks, there will inevitably be some adjustments to community infrastructure requirements due to changes in the delivery of community infrastructure and shifting community needs and expectations. Notwithstanding this potential for adjustment, the following values will be consistently applied to guide community infrastructure provision at Yanchep-Two Rocks:

- equity and fairness - all future residents shall enjoy access to social infrastructure regardless of their social or economic circumstances;
- diversity - a range of services and facilities shall be provided to cater to the needs of a diverse community;
- timing - the provision of community facilities shall be coordinated to correspond with community need; and
- quality - the facilities and services provided to the Yanchep-Two Rocks community shall be of high quality and embrace a sophisticated delivery approach.

Key Principles for the location and provision of social infrastructure
Regional social infrastructure requirements have been forecast for the future community of Yanchep-Two Rocks. These projections have been based on population forecasts and other relevant standards and locational criteria for community facility provision. The following principles have been applied to guide the location of community facilities:

- Located near regional and district activity centres
  Regional community and human service facilities are key destinations with regional catchments. These facilities should preferably be located within, or in proximity to, regional and district activity centres where there is good accessibility to public transport, the regional road network and other facilities and services. Within these centres there is also the opportunity for relationships to emerge with other uses.

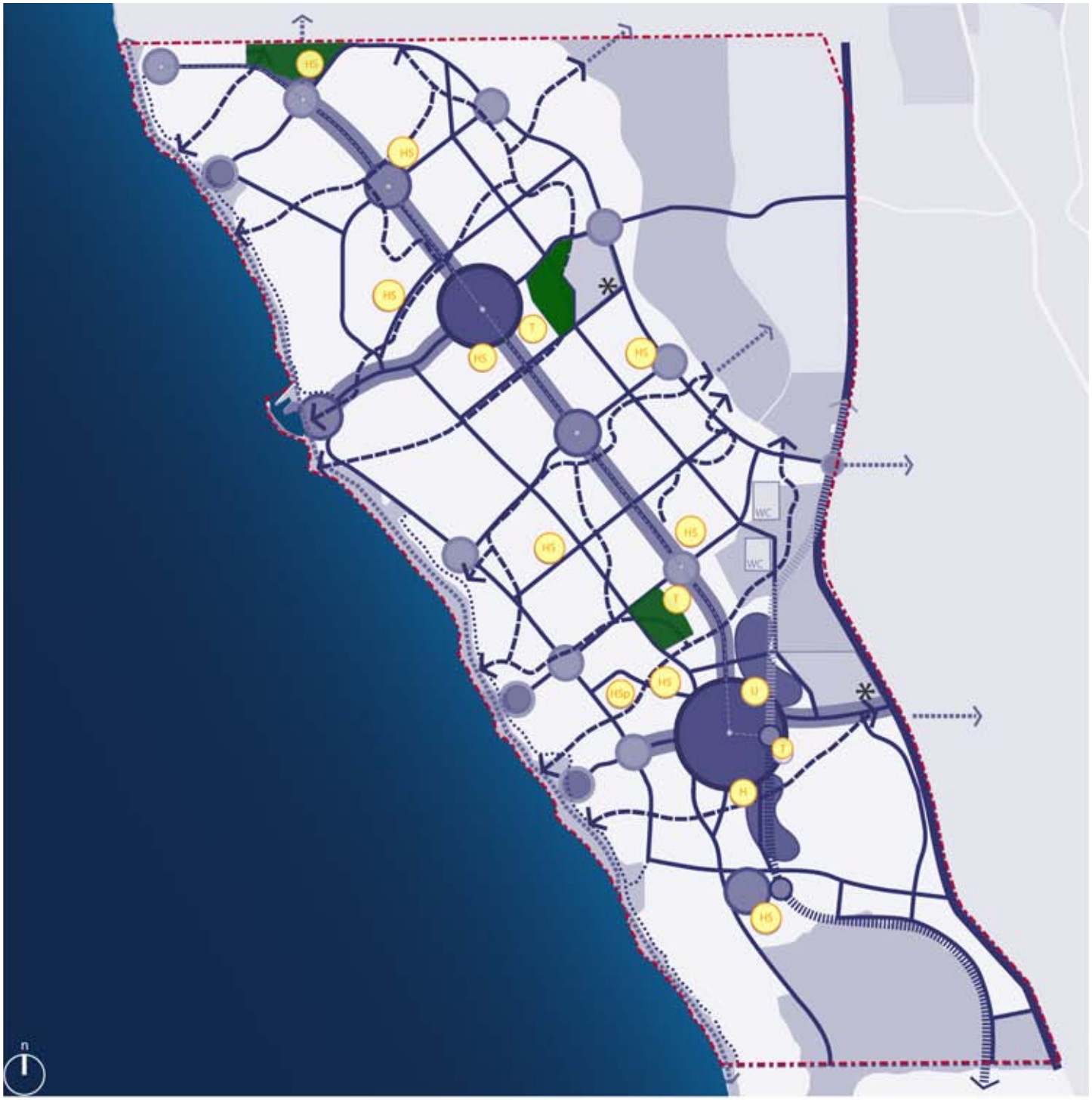
- Integrated with surrounding areas
  The design of community facilities should be integrated with adjacent development. This encourages synergies to emerge between uses and for the facilities to function as an integral part of the wider community. This approach of integration, as opposed to stand-alone campus structures, also activates surrounding streets and improves accessibility and safety.

- Co-location to enable shared-use of facilities
  Where synergies exist between the function of facilities, collocation provides benefits in terms of access, service delivery and development and operational cost efficiencies. Collocation enables shared-use of facilities, efficient provision of supporting infrastructure (i.e. car parking) and provides opportunities for joint initiatives across service providers. The Yanchep-Two Rocks DSP will, therefore, aim to maximise opportunities for collocation of compatible social infrastructure and services where it is appropriate.

- Flexibility
  The planning for the Yanchep-Two Rocks DSP involves anticipating the needs of communities in the project area over the next 50 years and possibly beyond. This presents challenges for the planning of facilities and community engagement in terms of forecasting changing community needs and methods of infrastructure provision. As such, the DSP predicts at a broad level, community facility requirements for the future Yanchep-Two Rocks community having regard to population projections, community facility provision standards and advice from relevant government agencies.

  It is likely that as the project advances, there will be adjustments to community facility/service requirements. In this regard, the more detailed planning of social infrastructure occurring at the LSP stage may result in some departures to the DSP. Furthermore, the facilities themselves will be encouraged to embrace flexible designs so that they are able to adapt and respond to changing community needs over time. Future planning and provision of community facilities should be guided by the City of Wanneroo "Acquisition and Development of Community Purpose Sites" Policy.

FIGURE 26 SOCIAL INFRASTRUCTURE



7.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that should flow through to the preparation of LSPs.

Regional/District Community Infrastructure

Regional and district level social infrastructure will provide a focus for community building and provide opportunities for learning, recreation, health, entertainment and leisure.

A needs assessment has been undertaken that identifies the requirement for the following regional community facilities:

- 100ha - 140ha of regional open space within the Yanchep-Two Rocks and Alkimos-Eglinton catchments, preferably 4 parcels of 20ha-40ha (4-8 ovals) colocated with tertiary providers. The DSP provides a central 40ha parcel of regional open space and two 30ha parcels which will service the northern and southern halves of the region. The remainder is proposed to be provided in the Alkimos-Eglinton DSP.
- 9 public high schools (10ha size);
- 5 private high schools;
- 4 tertiary education institutions (i.e. universities/TAFE);
- 1 health campus (8ha) within the southern townsite for hospital, health and ambulance services and co-located with the railway station;
- 1 regional indoor aquatic and sports facility integrated with the northern town centre and co-located with a tertiary provider;
- 1 district aquatic and recreation facility in the vicinity of the southern City Centre and co-located with a high school;
- 2 regional libraries (within the northern town centre and the Yanchep City Centre) co-located with tertiary providers/high schools;
- 1 performing arts centre in the Yanchep City Centre co-located with a tertiary provider/high school;
- 1 18 hole public golf course (approx 50 ha) as a stand alone single purpose facility not co-located with any other regional infrastructure to be located in the broader Yanchep-Two Rocks / Alkimos-Eglinton area. The DSP has not provided a public golf course due to the proximity to the existing 18 hole private golf course. It is considered more appropriate to locate this facility within Alkimos-Eglinton or other nearby landholdings.

Careful consideration will be given to locating these facilities, where necessary, within the boundaries of the Yanchep-Two Rocks DSP area. However, the catchment areas for some of these facilities extends beyond the Yanchep-Two Rocks DSP area, therefore, it is essential that the sites chosen are highly accessible and preferably located near activity centres and co-located with compatible infrastructure.

The sites for regional and district level facilities that do not require significant land (such as regional libraries, performing arts centre and aquatic facilities) will be identified at LSP stage. The location and nature of the local facilities will be determined through further community needs assessment at local structure planning stage.

Health Campus
The Western Australian Department of Health has recognised the future need for a health campus site in the upper north-west corridor to accommodate future hospital and health services required for the region's growing population. The DSP makes provision for an 8ha hospital site depicted in a location within, or adjacent to the Yanchep Strategic Metropolitan Centre. The actual location of the site will be resolved during more detailed structure planning for the centre and negotiation between health providers, the government and landowner.

The proposed location in the Strategic Metropolitan Centre allows the Joondalup Health Campus to maintain a viable service catchment area and permits the equitable distribution of health services across the north-west corridor generally.

The site has excellent accessibility to public transport services and also to the regional road network and has the potential to link with compatible uses, including other health and research and development industries proposed to be accommodated within the Strategic Metropolitan Centre and mixed use employment areas. It is envisaged that other health/wellness oriented services may co-locate with the hospital, including specialist medical suites and an ambulance service.

Leisure and Recreation
Active Recreation Playing Fields
Regional active open space will be required to service the Yanchep-Two Rocks and Alkimos/ Eglinton communities. Land within the Yanchep-Two Rocks DSP area that is currently contained within MRS regional reserves is subject to Bush Forever and other environmental constraints and therefore, not available for formal active recreation. Therefore, the DSP provides three large portions of regional open space, in addition to the standard 10% POS.

A 40ha regional reserve is actually located adjacent to the northern Town Centre and light industrial area.

The nominated site is relatively level and enjoys good access to public transport and the major road network. The site also provides a degree of buffering to the adjacent light industrial area and is connected via a social/ pedestrian/ cycle linkage to the Bush Forever reserve to the east.

The area is intended to cater for active recreation and could accommodate 6-8 playing fields and possible indoor recreation facilities. The potential exists for a teriary education facility and/or aquatic centre to be co-located with the reserve.

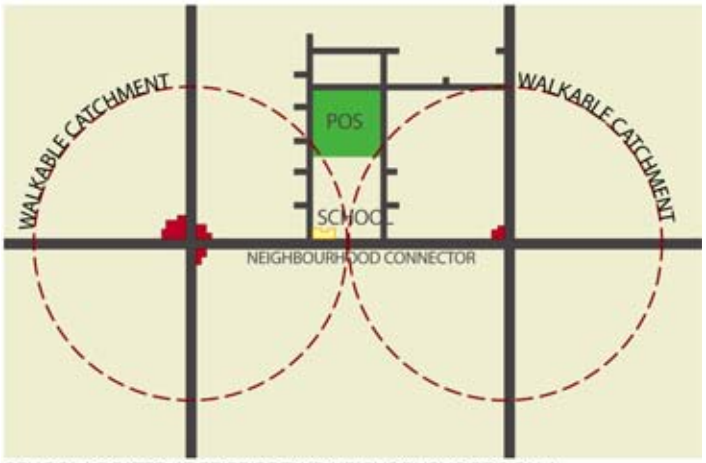
The DSP also proposes two 30ha parcels of regional open space to service the northern and southern districts of the DSP area and will accommodate a range of district level playing fields. Both areas are serviced by the transit corridor and integrated with the social/ pedestrian/ cycle linkage network. Further work undertaken through the preparation of local structure plans may result in the co location of these areas with education facilities to encourage improved efficiencies and greater usage.

Recreation / Aquatic Centres
The DSP makes provision for a regional indoor aquatic and sports facility integrated with the Secondary Centre. It is anticipated this facility will service a catchment that extends beyond the DSP area and therefore accessibility is a major consideration for its location. This facility could be co located with a tertiary education facility, which would allow its funding to be shared between the tertiary education provider/State Government and the Local Government.

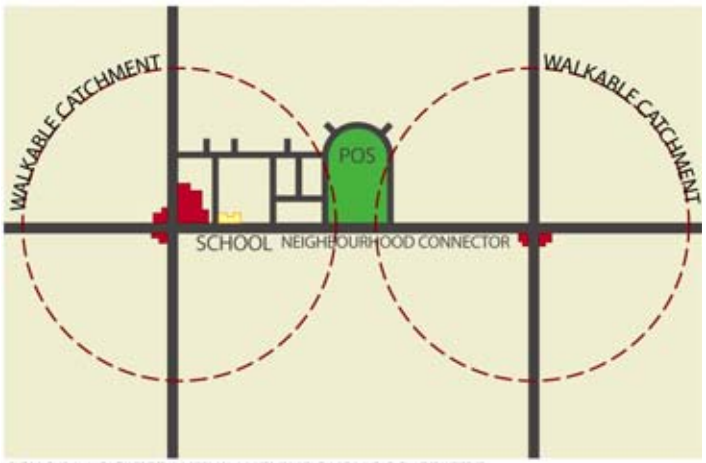
A second district aquatic and recreation facility is proposed in the vicinity of the Yanchep Strategic Metropolitan Centre and co-located with a high school. This facility will accommodate local and district level facilities and services that have capacity for shared use between the school and wider community. Responsibilities for the funding and development of this facility could be shared between the Local and State Government. The exact location of these facilities will be determined as part of the preparation of centre structure plans for both activity centres.

ILLUSTRATION 26
OPTIONS FOR LOCATION OF PRIMARY SCHOOLS IN NEIGHBOURHOODS

SCHOOL LOCATED AT EDGE OF NEIGHBOURHOOD



SCHOOL LOCATED AT EDGE OF TWO NEIGHBOURHOODS ON A NEIGHBOURHOOD CONNECTOR



SCHOOL LOCATED WITHIN NEIGHBOURHOOD CENTRE

Education

Primary and High School Sites

The WAPC's *DC 2.4 School Sites Policy* states that government primary schools should be provided at a rate of 1 per 1,500 to 1,800 lots and that government high schools should be provided at 1 per 4 to 5 primary schools.

Western Australia Tomorrow population projections show that between 2001 and 2006 the proportion of primary school aged children steadily declined in the Perth metropolitan area. If the majority of primary schools ultimately move to a year 1 to 6 system, then projections for 2031 indicate the proportion of primary school aged children will fall to 6.7% of the total population compared with 9.9% in 2001. In terms of the WAPC policy, this would equate to a ratio of 1 primary school per 2,000 to 2,300 lots.

Despite the possibility of changes in policy, the provision of schools and other tertiary level education facilities for the Yanchep-Two Rocks project is consistent with current policy.

The DSP makes provision for the location of 9 public high school sites, 5 private high school sites and 4 tertiary education sites within its boundaries. The high school sites are each 10ha in size and are in locations accessible to their catchment areas. As a result of previous local structure planning for Capricorn, one of the five private high schools has been designated on the DSP. The location of the four additional sites that will be required in the longer term will be accommodated through subsequent local structure plans.

Where it is practical, school sites are located close to the centre of a cluster of neighbourhoods so that the maximum number of students can walk/cycle to school. In other instances, the schools are located adjacent to mixed use activity centres. This arrangement allows the schools to be an integral part of the community where students can contribute to the vibrancy and cultural capital of the activity centres, support local businesses and benefit from the collocation of facilities. Likewise, the broader public can benefit from the accessibility of multi-use and shared use facilities such as performing arts venues, recreation resources, meeting rooms, IT facilities and learning centres/libraries.

Many of the designated school sites are also located adjacent to the social/ pedestrian/ cycle linkages. The incorporation of cycle/ pedestrian paths within the social/ pedestrian/ cycle linkages creates a safe and attractive route for students from their neighbourhood to the schools. This arrangement also allows school facilities to be easily accessed by the wider community.

Based on projected dwelling numbers, it is estimated there will be the need for approximately 45 primary schools and 15 private primary schools to service the growing Yanchep-Two Rocks community. These sites are not identified on the DSP as the planning for these facilities will occur at the local structure planning stage to enable optimum site selection and planning that allows for integration with the local movement network and potential collocation with other local/ neighbourhood level facilities.

Tertiary
The projected ultimate number of TAFE and university students living in Yanchep-Two Rocks and the broader North West Corridor needs to be considered against the likely ultimate population and the ratio of students to population for the wider Perth Metropolitan area. In the 2001Census there was 1 TAFE student per 34.3 people and 1 university student per 20.9 people.

The likely ultimate population for the North West Corridor (City of Wanneroo and City of Joondalup) is approximately 580,000 persons at 2058. Based on 2001 ratios, this population would include about 17,000 TAFE students and 28,000 University students. However, the ratios of TAFE and University students to population over time need to be considered. The historical ratios are shown below.

The ratio of university students to population has decreased from 1 student per 23.7 persons in 1991 to 1 student per 20.9 persons in 2001. Therefore the participation rate is increasing. Considering this trend, it is likely that the ultimate university student numbers could be up to 40,000 for the corridor by 2058. Depending on the size and type of campus, these numbers justify the need for 3 or 4 tertiary institutions within the corridor.

The ratio of TAFE students has remained at around 1 per 34 persons in 1996 and 2001. It can be assumed that if this ratio remains constant, then TAFE student numbers will total approximately 17,000. These numbers justify about 3 TAFE campuses in the corridor.

Table 12 Population per Student Ratio - Perth Metropolitan Area

	1991 Census	1996 Census	2001 Census
Tech or Further Educational Institution	30.3	34.2	34.3
University of other Tertiary Institution	23.7	22.3	20.9

The corridor currently accommodates an ECU campus, a small Curtin campus that is shared with the Australian Institute of University Studies and a TAFE all located at Joondalup. It is anticipated that over time the Curtin campus will move to a larger campus.

Based on the provision of existing tertiary facilities in the corridor and future demand for facilities it is anticipated that the north west corridor will require an additional 2 – 3 universities and 2 TAFE facilities.

In accordance with community needs projections, the DSP makes provision for four tertiary education sites (university / TAFE). It is anticipated that the remaining need would be satisfied as part of the development of other areas of the corridor including Alkimos-Eglinton. The facilities accommodated within Yanchep-Two Rocks will be clustered within and around the major Activity Centres and, where practical, co located with regional open space and transport nodes. The DSP identifies the following locations for each of these facilities:

- a large university site to the north and adjacent to the Strategic Metropolitan Centre that will anchor the northern Mixed Use Employment Area;
- a tertiary site near the eastern edge of the Strategic Metropolitan Centre site and near the multi-modal transit facility and health campus;
- a tertiary site adjacent to the Neighbourhood Centre located to the north of the Strategic Metropolitan Centre and co-located with Regional Open Space; and
- a tertiary site adjacent to the Secondary Centre and co-located with Regional Open Space.

The tertiary education sites are shown diagrammatically on the DSP as relatively large, standalone sites; however when built they will be integrated with the activity centres and possibly even scattered throughout the centres to be an integral part of the city/town. The exact locations for each of the following facilities will be determined after discussions with tertiary providers at detailed centre designs as part of LSP's. These tertiary sites have the potential to be either a TAFE or university campus.

The capacity of these tertiary facilities to offer a premier learning environment, particularly the major university at the Yanchep Strategic Metropolitan Centre, will be integral to the success of the IDEAS project and the capacity of Yanchep-Two Rocks to attract a dynamic and highly skilled workforce to the region. These facilities will, therefore, be a cornerstone for the project, generating significant employment and providing the source for 24-hour activity, creativity, learning, innovation and urban vitality.

Performing Arts
The DSP makes provision for a performing arts facility in the Strategic Metropolitan Centre co-located with either a tertiary provider or high school. This facility is anticipated to have a regional catchment that would extend beyond the project area. Funding and development of this infrastructure is likely to be a shared responsibility between local and State Government and possibly a tertiary provider.

Library/Information Centres
The DSP accommodates two regional libraries, one in the Strategic Metropolitan Centre and one in the Secondary Centre. As these facilities have a strong potential for shared-use, it is proposed they be co-located with either tertiary providers or high schools. This would allow responsibilities for funding and development to be shared between Local and State Government and possibly a tertiary/ education provider.

Coastal Facilities
Most of the coastline within the DSP area is largely undeveloped, although there are some facilities at the Two Rocks Marina and Yanchep Lagoon. As development progresses there will be increased demand for coastal facilities such as boating and marine recreational facilities and coastal beach and open space areas with associated facilities such as change rooms, seating and picnic areas, car parks, club rooms, cafes and so forth.

The precise size, nature and location of development nodes and coastal setback zones and the provision of recreation facilities and amenities will be addressed as part of the LSPs. Foreshore Management Plans will also be prepared as part of the LSP's to ensure that development adjacent to the coast provides a balance between protection of the environment and sustainable development.

7.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through LSPs.

The LSPs will demonstrate with greater precision, how the required community and human service infrastructure is to be provided to service the growing Yanchep-Two Rocks' community.

It is anticipated that a Community Facility Planning Reference Group will be convened to coordinate the more detailed planning and implementation of community infrastructure as Yanchep-Two Rocks is progressively developed.

It is likely that as development advances, there will be adjustments to community facility/service requirements. In this regard, the more detailed planning of social infrastructure occurring at the LSP stage may result in some departures from the DSP. Furthermore, the facilities themselves will be encouraged to embrace flexible designs so that they are able to adapt and respond to changing community needs over time. Future planning and provision of community facilities should be guided by the City of Wanneroo "Acquisition and Development of Community Purpose Sites" Policy.

The key principles that will guide the planning of social infrastructure in the LSP include:

- Recognition through the LSP design that social infrastructure provides focal points for community interaction and contributes significantly to the creation of community hubs/ precincts;
- Encourage major civic, cultural, community and education facilities to locate within activity centres and design these facilities as urban buildings that make efficient use of land and are integrated with other uses in the centres, rather than as campus layouts or institutions;
- Where practicable schools should be co-located with POS;
- Ensure community infrastructure can be easily accessed from the residential catchments by locating these facilities adjacent to social/ pedestrian/ cycle linkages, public transport hubs and major road linkages;
- Where appropriate, encourage partnerships that enable joint provision and shared-use of infrastructure;
- Pursue multi-purpose facilities with flexible design to maximise usage and accommodate changing community needs;
- Aim to achieve the highest standard of built form for all community infrastructure projects, including incorporation of landmark elements that create defining terminating vistas where warranted;
- Encourage community/civic buildings to front and activate adjacent streets;
- Demonstrate 'leading practice' sustainable building and landscape design through community/civic infrastructure; and
- Involve the wider community in the planning and development of social infrastructure throughout the local structure planning process and subsequent more detailed design / construct and management phase of project development.

08 RESOURCES, INFRASTRUCTURE + SERVICES

8.1 CONTEXT AND SITE CONSIDERATIONS

This section provides an overview of the key contextual and site characteristics that have informed the DSP design and its implementation.

Servicing infrastructure, including water, drainage, sewerage, electricity, gas and telecommunications, will be required to develop the Yanchep-Two Rocks district. These services will require the capacity to cater for an estimated residential population of 155,000 persons as well as future businesses, industry, community infrastructure and other activities typically found within a district of this scale.

A range of servicing infrastructure that will be expanded, upgraded and/or replaced as demand generated from the new development steadily increases over time currently supports existing settlements within the DSP. The challenge will be furnishing the project with a consistently high standard of servicing infrastructure that embraces sustainability in its many facets, employs the latest technology and has the capacity to support a progressive community of residents and businesses.

A detailed review of these existing services and analysis of the future servicing requirements for Yanchep-Two Rocks has been conducted by consulting engineers, Cossill & Webley Pty Ltd. The outcome of this analysis has been compiled from the Engineering Infrastructure report, which is included under Part 3 – Technical Reports of this DSP and summarised below.

Water Supply

The existing water supply infrastructure in Yanchep-Two Rocks is owned and operated by the Water Corporation (WC) and includes:

- local groundwater bores linked by collector watermains to storage tanks north-east of Two Rocks and east of Yanchep (within ROS); and
- distribution watermains linking storage tanks to reticulation systems within existing areas of development.

This existing infrastructure currently services 2,000 lots at Yanchep and Two Rocks and has spare capacity to service approximately 1,000 lots to a maximum service level of 45 metres at Two Rocks and 1,500 lots to a maximum service level of 45 metres at Yanchep. It is estimated this existing infrastructure could service development over the next five years.

Wastewater

The existing wastewater treatment facilities within the Yanchep – Two Rocks areas are owned by the WC and comprise temporary wastewater treatment plants (WWTPs) located on Pt Lot 50 Two Rocks and adjacent to Saint Andrews Estate. Disposal of treated wastewater for the Two Rocks plant is via leach drains on the adjacent Pt Lot 1000. The Two Rocks WWTP services part of the existing town centre only, with the remainder of this settlement being serviced by individual septic tanks.

The Yanchep WWTP services the Saint Andrews Estate, Ocean Lagoon Estate and Capricorn Village, with the remainder of Yanchep also serviced by septic tanks. Treated effluent is disposed of by spraying onto sand dunes on Lot 304, located to the west of Two Rocks Road. As part of the Capricorn Village, this site is being relocated east of Two Rocks Road to Lot 312.

The spare capacities of the existing WWTPs at Two Rocks and Yanchep are 200 lots and 900 lots respectively and existing odour buffers are 130 metres and 140 metres respectively. Odour buffers to interim future WWTPs in the area would be 350-500 metres.

Drainage

Integrated Urban Water Management (IUWM) is now a key part of the urban development process incorporating principles of integrating water and land use planning, considering all water sources in water planning, integrating water use and natural water processes and a total catchment integration of natural resource use and management (Ref. Stormwater Management Manual for Western Australia, DoE, April 2004). This will be defined through a Regional Water Plan prepared by the State Government in accordance with the requirements outlined in the State Water Plan 2007.

Stormwater drainage management is a major component of an overall IUWM plan for which achievement of the principles of the plan may be facilitated through 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 to improve water quality; and
- Water efficient landscaping.

Key Principles

The servicing strategy for the DSP applies the following guiding principles:

- Flexibility to cater for a range of future development growth rates and patterns;
- Flexibility to cater for potential advances in technology;
- Compliance with current government objectives for sustainability, including water sensitive urban design and urban water management; and
- Systems and networks of services that can be cost effectively staged to suit the rate and pattern of development.

Close liaison has been maintained with the relevant authorities in developing the servicing strategy to support the DSP.

8.2 DISTRICT STRUCTURE PLAN RESPONSE

This section sets out the DSP response to the site and contextual considerations and highlights where relevant, principles and elements that should flow through to the preparation of LSPs.

District Water Management – Design Objectives and Standards

Water management strategies from the district to local and subdivision level are predominantly designed to avoid or minimise any adverse impact on water quality and quantity that could affect existing water resource users (industrial and domestic supplies) or affect significant wetlands and other water dependent ecosystems. In this regard, the DSP area has a very small number of sensitive water users that need to be considered in water management strategies. For example, there are no commercial irrigators and there are no wetlands, creeklines or groundwater dependent ecosystems in the entire area that are hydrologically downstream of the proposed development. The WC currently has some local groundwater bores that provide potable water to lots at Yanchep and Two Rocks and plan to construct additional bores in the area as development increases. In addition, some private lots have domestic bores that use groundwater for reticulation purposes. There are, however, wetlands and groundwater dependent ecosystems to the east and hydrologically upstream of the DSP area that could potentially be affected by groundwater abstraction from the DSP area.

The DSP area is predominantly free draining. The existing sandy ground is permeable and the depth from the ground surface to the groundwater is significant. Therefore the, overall the land is highly suited to the implementation of water sensitive urban design management practices that promote infiltration.

The design objectives required to address water management issues in the DSP area are addressed below:

- Groundwater quality shall be maintained at pre-development levels (winter concentrations) or better;
- Post-development groundwater levels shall not be reduced relative to pre-development levels as a result of development;
- Stormwater shall be used to recharge the shallow aquifer thorough the adoption of 'Best Management Practices' which promote the dispersion and infiltration of runoff. These could include the use of porous paving for roads and carparks, the diversion of runoff into road medians and roadside swales, drainage soakwells from building roofs and private open space areas and the disposal of road runoff into infiltration basins within POS areas;
- Stormwater runoff shall be contained within the lots in all development areas including the activity centres and neighbourhoods;
- Drainage from public roads and lanes will be collected via conventional gullies or open swales depending on the nature of the adjacent land uses, the extent of traffic and pedestrian activity and other relevant considerations;
- The drainage collection and conveyance system shall be designed to cater for the runoff from storms with up to a 1 in 5 year recurrence interval. Infiltration basins will be designed to store runoff from up to 1 in 10 year storms;
- In all cases roads and POS will be designed to cater for the surface overflow for more severe storms than 1 in 10 year with building pad levels set at least 300 mm above the 1 in 100 year flood or storage level at any location;
- Uptake of nutrients in stormwater shall be maximised by the use of 'Best Management Practices' that promote the disposal of runoff via water pollution control facilities (including vegetated swales and basins, detention storages and gross pollutant traps), and the implementation of non-structural source controls (including urban design, street sweeping, community education, and low fertiliser landscaping regimes);
- Abstraction of groundwater shall demonstrate no impact on water levels within the wetlands and water dependent ecosystems to the east of the DSP area;
- A water consumption target of 100kL/person/year including not more than 40-60kL/person/yr of scheme water;
- Water delivery systems shall investigate alternative systems that avoid or minimise the use of potable water outside of homes and buildings;
- Water demand for active and landscaped POS shall be calculated;
- Negotiations for bore licences will be required;
- The reuse of wastewater and other fit for purpose water uses will be investigated by LSPs;
- Drainage and conveyance systems to be designed for storms up to 1 in 10 year ARI (2, 5 or 10 years as required by Liveable Neighbourhoods);
- At source infiltration shall be designed for 1 in 1 year storm events;
- Infiltration basins shall be designed for 1 in 100 year events (less Q1 runoff for a 1 year event); and
- Flood risk assessment (probable maximum precipitation flood scenario) may be required for high density areas.

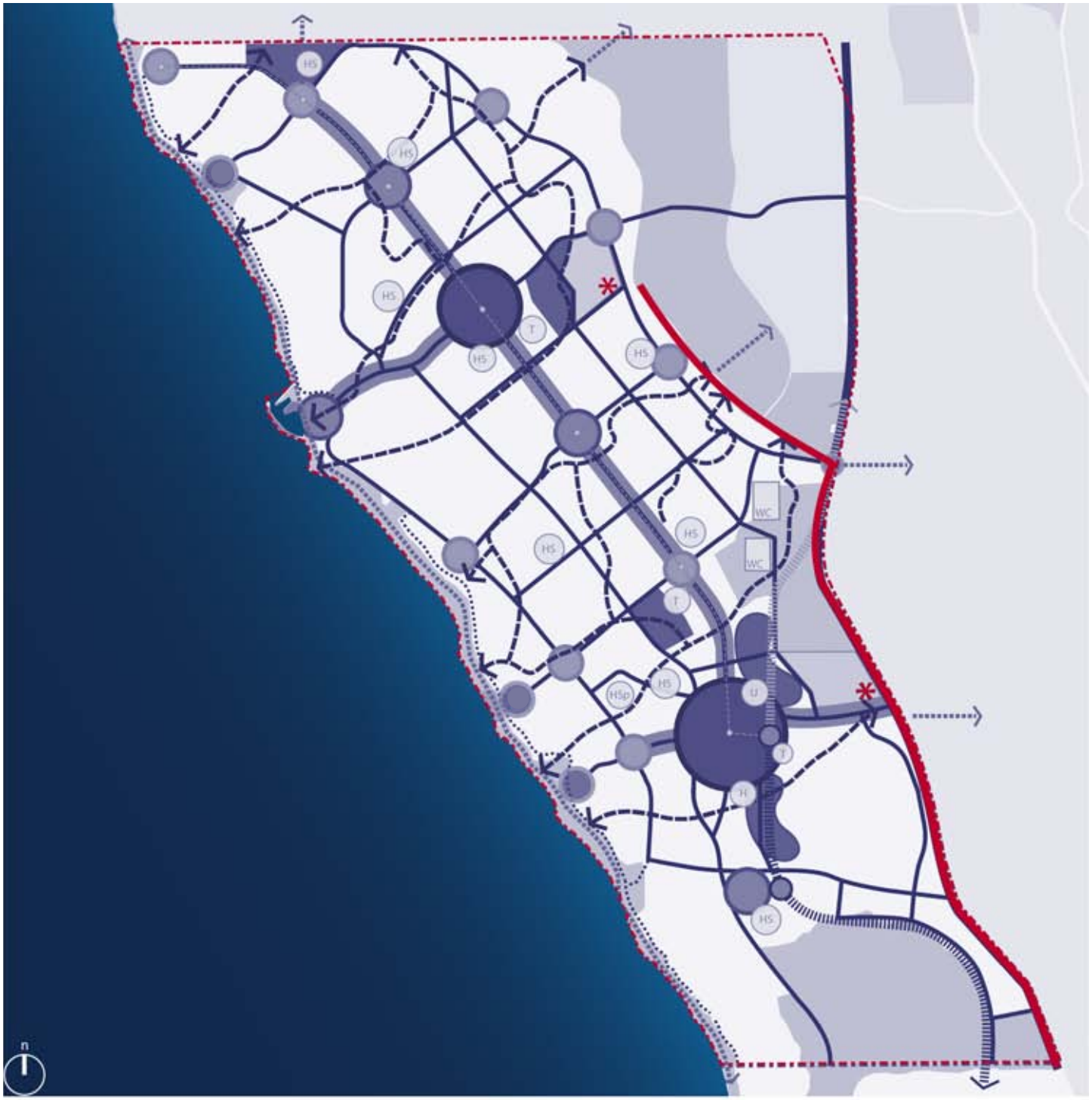
These design objectives and standards will be implemented through more detailed Local Water Management Strategies prepared and submitted with LSPs.

Wastewater

Short-term solutions to increase wastewater treatment capacity, which entail either the replacement of the existing plants with an interim WWTP to service both Yanchep and Two Rocks, or the construction of a pumping station in Yanchep and a pressure main connection to the proposed Alkimos WWTP, could service the DSP over the next 10 – 15 years. An interim WWTP would require a site comprising approximately 100 hectares, including an odour buffer and treated effluent disposal areas. Currently the preferred option is to use an interim pumping station near the corner of Marmion Avenue and Yanchep Beach Road to convey wastewater southwards to the future Alkimos WWTP which will in future be replaced by the Yanchep Main Sewer.

It is proposed for the ultimate sewerage system to comprise a series of pumping stations and pressure main connections to a gravity trunk sewer located north-south through the DSP area. The trunk sewer will be an extension of the proposed Yanchep Main Sewer through the Alkimos Eglinton area, which in turn will connect to the proposed Alkimos WWTP. This arrangement relies on frontal development of land and on establishing a connection with the Alkimos WWTP, which could be 10 – 15 years away. The Alkimos WWTP will serve the whole North-West corridor. The site of the Alkimos WWTP and a buffer are reserved in the Metropolitan Region Scheme for 'Public Purposes'. However, the buffer shown in the MRS is smaller than WC requires and options and alternative methods are therefore being considered to allow servicing of the whole planned Alkimos WWTP catchment including the North West corridor.

FIGURE 27 SERVICING PLAN



The WC has defined a preliminary alignment for the Yanchep Main Sewer based on existing topography. Cossill and Webley, having regard to topography and WC design criteria, has refined this alignment. As the sewer is expected to follow the urban development of some of the land along its alignment, it is important that the sewer is located within road reserves or public open space, to minimise the impact of its future construction on urban development.

Under the State Water Strategy the Western Australian Government aims to have Perth recycling 20 percent of its total wastewater by 2012. WC aims to achieve this target largely by recharging groundwater aquifers with treated wastewater (managed aquifer recharge) and it is proposed for the ongoing design and construction of the Alkimos WWTP to take account of this. At this stage, it is intended that use of the recharged groundwater will be restricted to irrigation, agriculture or industrial purposes. The State Water Strategy 2003 provides guidance on the preferred approach to integrating water planning with land use planning and approvals. Regional water plans will address water conservation measures in detail to achieve the targets set in the State Water Strategy 2003. The South-West Regional Water Plan is currently being prepared by the State Government.

Water Supply
The following interim arrangements are proposed to increase the capacity of the existing infrastructure to service the initial stages of Yanchep-Two Rocks development:

- Increase the combined capacity of existing infrastructure to some 12,000 lots with the construction of additional groundwater bores; and
- Achieve a higher level of service through the provision of new booster pumps or elevated storage tanks.

It is projected that these upgrades could service development over the next 10 – 15 years.

To service longer term growth, the following is proposed:

- A series of groundwater bores located throughout the area and linked by collector watermains to a central treatment plant and reservoir. The groundwater bores would require 50 x 20 metre sites and be protected by a 300 metre radius Well Head Protections Zones, wherein land uses are restricted and subject to special approval requirements. The watermains would generally be accommodated within road reserves or protected by easements;
- A treatment plant and reservoir on Lots 307 and 316, which are owned by WC and reserved for this purpose in the MRS. The plant would be protected by a 500 metre radius chlorine hazard buffer wherein land uses are generally restricted to open space and recreation for the first 350 metres and non-residential uses beyond this;
- A network of distribution watermains extending from the reservoir and connected to areas of development via reticulation systems. The distribution watermains would be mostly accommodated within road reserves or protected by an easement.

Electricity
The existing electricity supply servicing the Yanchep – Two Rocks district is from 22kV overhead feeder lines in Yanchep Beach Road and Two Rocks Road and a 22kV overhead line between Two Rocks and Wanneroo Road that link to the Western Power Corporation's (WPC) existing zone substation in Romeo Road, Alkimos.

The existing system has spare capacity to service 1,000 additional lots within the combined DSP area. Future urban development of the area could be supplied from the existing system, although its capacity is limited and will need to be upgraded. In the short term this may involve upgrading of the existing supply from the sub-station to the existing feeder lines followed by the provision of additional lines.

In the longer term, it will be necessary to extend 132kV transmission lines from the existing transmission network east of Wanneroo Road to supply two new zone substations within the DSP area. From this, a network of new 22kV feeder lines will extend throughout the development areas to supply the local network of padmount transformers, switchgear and low voltage lines.

The 132kV supply would be preferably located along the western boundary of the Mitchell Freeway reserve. This is to avoid unsightly, overhead transmission lines being installed through the Yanchep-Two Rocks area where quality urban design is of utmost importance to the success of the project and to the long-term sustainability of the community.

The zone substations will be substantial facilities occupying 1 – 1.5 hectare sites. WPC's preference is for these sites to be located centrally within the urban development area to maximise the efficiency of the 22kV feeder network. For Yanchep-Two Rocks, this would mean a site in the vicinity of the proposed Strategic Metropolitan Centre and a site in the vicinity of the Secondary Centre. Urban design and landscaping techniques will be applied to minimise the visual impact of these facilities. These sites, together with transmission line routes, are indicatively shown on Figure 27 and will be further defined as part of the LSP and subdivision planning processes.

Undergrounding of transmission lines will be investigated further at LSP stage where lines are adjacent to sensitive land uses such as schools and residential areas.

Gas
Natural gas supply is currently unavailable to the Yanchep-Two Rocks area. Provision of this service to Yanchep-Two Rocks will rely on frontal expansion of the existing system in the Clarkson-Butler area to the south, or non-frontal extension of the gas main through Alkimos-Eglinton. All gas pipelines will be located in road reserves.

Telephone
Existing infrastructure available to Yanchep-Two Rocks include optic fibre cables in Yanchep Beach and Two Rocks Roads that are linked to exchanges in Yanchep and Two Rocks. This system is owned and operated by Telstra and each telephone exchange has the capacity to provide an additional 1,000 lines.

To service the DSP area, new exchanges will be contained on sites of between 100-200m2. These sites will need to be located central to their service catchments and will be identified at subdivision planning stage.

The following may be implemented in the short-term to increase supply capacity:

- Upgrade existing exchange building at Yanchep to large Communications Concentrator Building to increase capacity to 10,000-12,000 services (i.e. spare capacity of 8,000-10,000 services).
- Upgrade existing exchange at Two Rocks to increase capacity to 6,000 lines (i.e. spare capacity of 5,000 services).

Broadband Communications
Broadband is now available as a result of upgrading by Telstra to the Yanchep-Two Rocks area. To service the development, broadband communication services should ultimately be via optic fibre cables in Marmion Avenue, connected through to the Perth central transmission/ receiver facilities by the optic fibre cable link to Joondalup. For initial development the services may be provided by interim microwave (wireless) systems until it is economical to 'roll out' the cable.

Based on recent experience with other large urban development projects, it is expected that the broadband system would be owned and operated by either licensed telecommunication carriers or the developers. A strategy for the implementation of a broadband network could involve:-

- Review of options and decisions regarding the ownership of infrastructure and services provision;
- Review options for telecommunications infrastructure and services models;
- Develop design specifications and implementation plans for staged infrastructure and services provision;
- Select infrastructure suppliers, carriers and service providers;
- Institute formal contracts for infrastructure supply and services provision.

Developers, in close consultation with both State and Local Government, will preferably implement this strategy to ensure that services infrastructure and provision is integrated at all levels. The formation of a 'Steering Committee' with participation from developers and government, particularly local government, would be a good first step in this process.

8.3 GUIDANCE FOR LOCAL STRUCTURE PLANS

This section synthesises the design and management elements to be reflected and implemented through LSPs.

The provision of infrastructure must be coordinated with the staging of development to ensure a stock of developable land in appropriate locations and the regular roll-out of homes to the housing market.

A Developer Contribution Plan will be finalised prior to the approval of LSPs and will set out the infrastructure relevant to the DSP and distinguish which items are to be delivered by third parties (Government agencies); by way of shared provision amongst landowners, the City of Wanneroo and WAPC (which will be subject to the developer contributions); and those individual items to be provided soley by landowners.

The DSP area is also subject to a Deed of Infrastructure between Tokyu Corporation and the WAPC relating to contributions, land vestings and construction of regional roads and paths.

More detailed planning for infrastructure will be carried out as per normal processes at the time of preparing LSP and subdivision plans. In particular, electricity zone substation sites, together with transmission line routes, will be further defined and undergrounding of transmission lines will be investigated where lines are adjacent to sensitive land uses such as schools and residential areas.

Local Water Management Strategies will be prepared and submitted with Local Structure Plans.

09 SMART GROWTH ANALYSIS

09 SMART GROWTH ANALYSIS

9.1 BACKGROUND

The City of Wanneroo has developed a Strategic Plan with four goals of environmental sustainability, healthy communities, economic development, corporate management and development. The Smart Growth Strategy and related Smart Growth Policy gives affect to these four strategic goals through the following six smart growth principles:

- Lifestyle and housing choice
  Smart Growth encourages the provision of a variety of housing types and the enhancement of lifestyle options,

- Effective use of land and infrastructure
  Smart Growth supports the effective use and development of land and buildings for the benefit of the local area,

- Long term health of the environment
  Smart Growth promotes development that minimises environmental impact, together with practices that conserve and enhance natural areas,

- Identity, equity and inclusiveness
  Smart Growth is creating opportunities to enhance and develop the identity of our places and our people,

- Long term economic health
  Smart Growth supports opportunities that enhance industry growth and promote job creation within our region,

- People and government
  Smart Growth encourages citizen and stakeholder participation in governance and development decisions.

Development proposals within the City will be reviewed in the light of the City's Smart Growth Strategy and Policy, Smart Growth Principles and related Strategies. To assist with this aim the, City has developed a Smart Growth Assessment Tool or SGAT, which is intended to facilitate the consideration and evaluation of development proposals based on an integrated assessment of the environmental, social and economic impacts of a development.

The assessment tool comprehensively combines all relevant City and State Government statutes. The SGAT provides precise definitions and measures for more generally stated City policies and strategies, resulting in greater clarity, both within and outside the City, of the City's expectations for development outcomes. It therefore fosters a consistent and coordinated response by the City, to major developments, and improves clarity for development proponents.

The SGAT is an aid to decision making and negotiation, but does not have statutory weight. It does not remove the need for judgement, compromise and negotiation, especially where large and complex proposals are considered. It does, however, identify areas in which proposals may be strong or weak and assign a measure of relative importance to them. Thus, it enables the costs and benefits of trade offs to be measured and provides a focus for further refinement of a development proposal.

The levels required to achieve a smart growth rating are contained in the Smart Growth Assessment Tool. Assessment was initially undertaken in 1995 on the St Andrews District Concept Plan, however, the current assessment has been based on the draft District Structure Plan (2007).

9.2 SELF ASSESSMENT RESULTS – DRAFT DISTRICT STRUCTURE PLAN (2007)

The overall self assessment SGAT result of 88% is a high score reflective of the comprehensive and rigorous planning process undertaken in the preparation of the DSP. The following review documents the results achieved for each section of the SGAT under the six smart growth principles.

Lifestyle and Housing Choice
The Lifestyle and Housing Choice results show that the current Plan falls short in some of the target densities. The Standard Area achieves the required target. Despite this, the overall score attained for this section of the SGAT is 79% which corresponds to a 4 star rating.

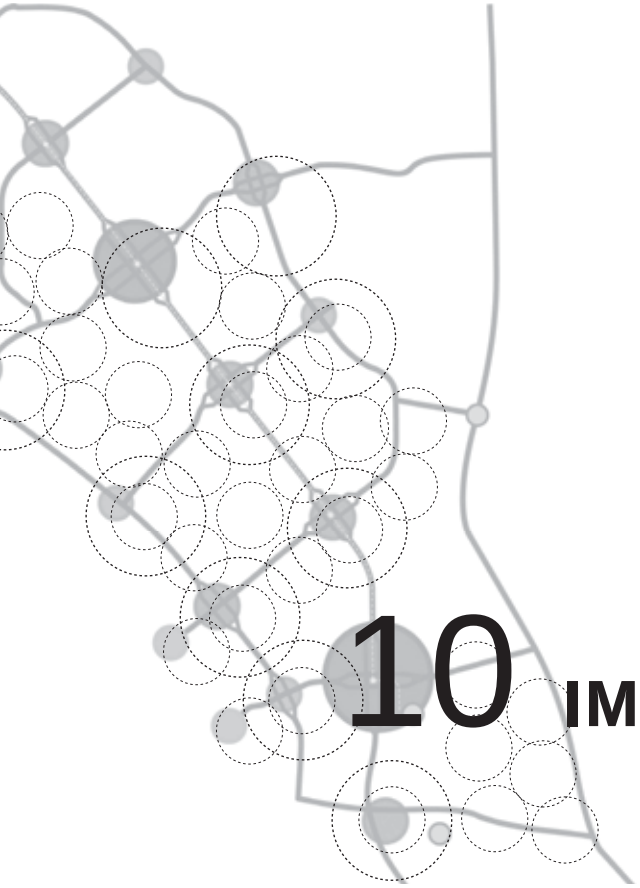
Effective Use of Land and Infrastructure
The self assessment score of 94% (5 star rating) appears to be reasonable and each of the answers given can be justified considering the commitments given in the DSP.

Long Term Health of the Environment
The DSP achieves a score of 73% for the Environmental Health section of the SGAT with a 3 star rating. There are no negative scores in the section and it is envisaged that the DSP will meet all requirements as indicated in this section of the SGAT.

Identity Equity and Inclusiveness
The results for the Identity, Equity and Inclusiveness section show a strong result of 96% and a 5 star rating. The DSP shows a strong commitment to Smart Growth strategies listed in this section of the SGAT.

Long Term Economic Health
The DSP provides a very substantial provision of employment in the region. A total of 55,000 jobs are planned for Yanchep-Two Rocks DSP area. This high level of employment contributes to an economic health SGAT score of over 100% due to the bonus points achieved by having an employment self sufficiency in the SGAT of 75%. This is significantly greater than the standard 40% SGAT requirement. On this basis the draft DSP achieves a 5 star rating for Economic Health.

People and Government
The SGAT results for People and Government show a score of 76% and a 4 star rating. The DSP reflects a commitment to the Smart Growth strategies outlined in the People and Government section of the SGAT.



10 IMPLEMENTATION

10 IMPLEMENTATION

10.1 STAGING OF DEVELOPMENT

At full build out, in approximately 2058, it is estimated that Yanchep-Two Rocks will accommodate in the order of 67,000 dwellings, approximately 155,000 people and 55,000 jobs. The staging of development shall be guided by the following criteria:

- To ensure as far as possible that the staging of development is aligned with the needs of the community, requirements to conserve the natural environment, the provision of sufficient employment and the needs of the local economy.

- To ensure as far as possible that the subdivision and development of land for residential purposes is accompanied by commensurate provision of infrastructure, services and employment to meet the needs of the community.

- District Staging is to be addressed, as part of an Economic, Employment and Community Development Plan, and should identify the link between employment provision and residential development, and will include a mechanism for review.

- LSPs are to indicate the manner in which the establishment of residential areas, activity centres, employment generating uses, transport systems, infrastructure, public spaces and community facilities within that LSP will be staged in a way that, to the extent possible, efficiently and effectively caters for the needs of the community, the creation of sufficient employment and that supports the growth of the local economy.

As such, staging of development will be included within the Community and Economic Development Plans prepared as part of Local Structure Plans.

10.2 DEVELOPMENT CONTRIBUTIONS PLAN

A 'preliminary' Developer Contributions Plan (DCP) has been prepared during the course of the DSP. The DCP outlines all items of infrastructure likely to be required in the DSP area. The DCP identifies those items which are to be delivered by:

1. third parties (eg the Mitchell Freeway extension and railway);

2. way of shared provision amongst the Landowners and the City of Wanneroo and WAPC et al (and which will be subject to a DCP); and

3. individual landowners and possible other parties, generally within the confines of their ownership boundaries (and secured through legal agreements with City of Wanneroo).

The process to finalise the DCP will be undertaken in collaboration with the City of Wanneroo prior to approval of any LSPs. This will take into consideration both the *Local Government Guidelines – Contribution Towards Community Infrastructure 2008*, WAPC's *Draft SPP 3.6 Development Contributions for Infrastructure* and the City of Wanneroo's *Acquisition and Development of Community Purpose Sites Policy*.

10.3 FUTURE SCHEME AMENDMENTS

The DSP establishes a district framework for urban development of Yanchep-Two Rocks. The MRS and City of Wanneroo DPS2 reservations and zones reflect the outcome of earlier structure planning for the site. In order to establish the proposed regional framework of development proposed through this DSP, a series of amendments will need to be progressed to both the MRS and the City of Wanneroo DPS2.

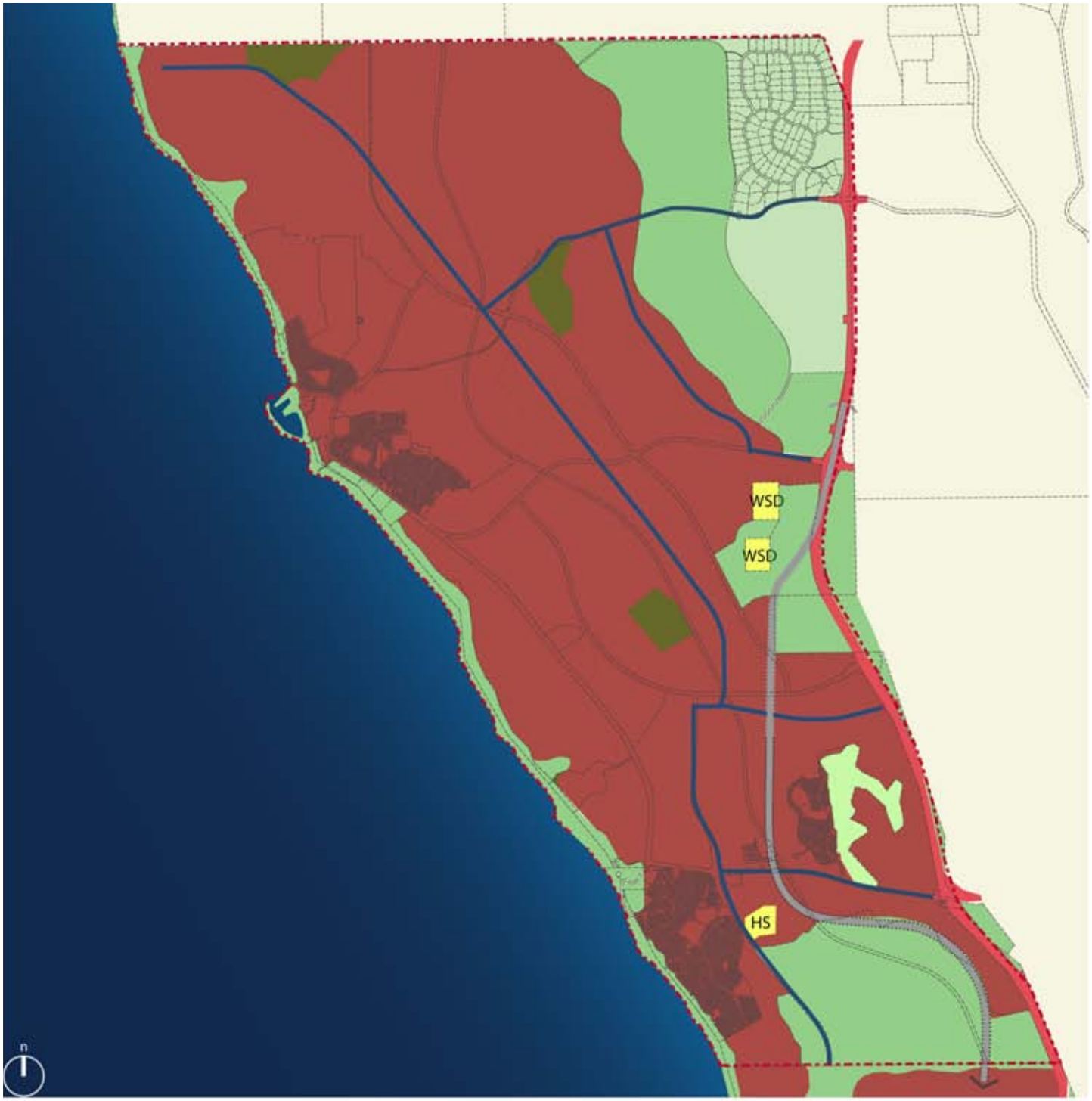
The following key elements of the DSP will be reflected in subsequent amendments to the MRS –

- Lifting of Urban Deferred status over the remaining Urban Deferred land;
- Reservation of areas identified for Regional Recreation on the DSP as Parks and Recreation Reserves;
- Reservation of the Transit Boulevard and main east west district distributor roads as Other Regional Roads, modified freeway interchanges as Primary Regional Roads and the rail reservation as Railways; and
- Minor modifications to the MRS to rezone land zoned Central Area and Industrial to Urban.

Formal applications for amendments to the MRS and City of Wanneroo DPS2 will be made under separate cover following final adoption of the DSP by the City of Wanneroo and the WAPC. The proposed amendments are included in Figures 28 & 29.

10 IMPLEMENTATION

FIGURE 28 PROPOSED MRS AMENDMENT



10 IMPLEMENTATION

FIGURE 29 PROPOSED TPS AMENDMENT