

PART 2
EXPLANATORY SECTION







PART 2: EXPLANATORY SECTION CONTENTS

CONTENTS

1.0 INTRODUCTION

- 1.1 Overview
- 1.2 Project Team
- 1.3 Transect-Based Code
- 1.4 Report Content and Structure
- 1.5 Land Description
- 1.6 Project History

2.0 PLANNING CONTEXT

- 2.1 Strategies
- 2.2 Schemes
- 2.3 Structure Plans
- 2.4 Policies + Guidelines

3.0 EXISTING CONDITIONS

- 3.1 Location
- 3.2 Existing and Surrounding Land Uses
- 3.3 Topography
- 3.4 Vegetation and Flora
- 3.5 Fauna
- 3.6 Geology and Geomorphology
- 3.7 Surface Hydrology and Groundwater
- 3.8 Indigenous Heritage

4.0 JINDEE DESIGN

- 4.1 Project Vision + Design Principles
- 4.2 Design Outcomes

5.0 ECONOMY AND EMPLOYMENT

- 5.1 Introduction
- 5.2 Types of Employment
- 5.3 Regional Context: Challenges for Economic Development within NW corridor
- 5.4 Jindee Context: Contribution to Sub-Regional Employment Targets
- 5.5 Local Economic Drivers
- 5.6 Transitioning Provisions
- 5.7 Summary

6.0 COMMUNITY DEVELOPMENT

- 6.1 Introduction
- 6.2 City of Wanneroo Population Forecasts
- 6.3 Jindee Community Profile
- 6.4 Founder for Community
- 6.5 Early Initiatives and Priorities
- 6.6 Community Infrastructure Provision

7.0 IMPLEMENTATION: STANDARDS AND CONTROLS

- 7.1 Jindee Controls and Approvals Framework
- 7.2 Part 1 - Statutory Section
- 7.3 Jindee Design Code

1.1 OVERVIEW

This Local Structure Plan (LSP) applies to portion of Lot 9036 and portion of Lot 3054 Marmion Avenue, Jindalee (hereinafter referred to as 'Jindee'). The proponent for the LSP is Estates Development Company (EDC). The LSP has been prepared to satisfy the Part 9 requirements of the City of Wanneroo (CoW) District Planning Scheme No. 2 (the Scheme) and to coordinate the future subdivision and development of this land to deliver a high quality environment for living, working and recreating.

A very clear vision exists for Jindee that originated from the collaboration that occurred between the CoW, (the then) Department of Planning (DoP), EDC and other participants at the 2002 Jindee Design Charrette, culminating in the 2007 Jindee Innovation Agreement setting out the intention of all parties to work together to implement an alternative regulatory planning approach.

The vision is to create a compact, walkable, mixed use village that captures the essence of coastal living in Western Australia as reflected in the successful established settlements of Cottesloe, Rottnest and Fremantle. The village will have close physical and visual connections with the adjacent beach and surrounding natural landscape and will demonstrate a viable and more sustainable alternative to the homogeneous suburban development that extends along much of the Perth's coastline.

To achieve this vision, the LSP applies to Jindee a comprehensive form-based code, the Jindee Design Code ('the Code') that is designed to achieve predictable built results consistent with the specific outcomes intended by the Jindee vision. The Code is provided for in Schedule 1 of Part 1.

In contrast to the focus that conventional zoning has on land use, the Jindee Code is concerned primarily with the built form outcome, addressing the relationship between building facades, streets and landscape to achieve the intended character of development. The Code is also distinct from design guidelines, in that the provisions are regulatory, not advisory.

The form-based code for Jindee is also Transect-based in that it is modelled on the Transect as the organising principle for all design decisions. The Transect aims to deliver a range of distinctive environments, from the intensely urban, through to the sub-urban, and highly naturalistic. These environments have been carefully designed to closely respond to the underlying natural characteristics of the project site.

The standards and controls contained in Part 1 of this LSP are therefore highly prescriptive, detailed and enforceable. This is essential to achieving a predictable development outcome that is consistent with the principles of the underlying project vision. This second part of the LSP is for explanatory purposes, giving further context to the statutory requirements of Part 1.

1.2 PROJECT TEAM

The original LSP prepared in 2012 has been the product of a multi-disciplinary project team comprising of the following specialist consultants:

- Studio LFA - Urban Design
- Roberts Day - Town Planning
- Blackwell and Associates Pty Ltd - Landscape Architects
- RPS - Environmental Consultants
- Wood & Grieve Engineers - Engineers
- Bruce Aulabaugh - Traffic Engineering
- MP Rogers - Coastal Engineering

The project team responsible for the delivery of the Jindee project includes the following:

- Studio LFA - Urban Design
- Hatch Roberts Day - Urban Planning
- Emerge and Associates - Landscape Architects/ Environmental Consultants
- Strategen - Environmental/ Bushfire
- Stantec (formerly Wood & Grieve) - Civil Engineers
- Uloth + Associates (Darren Levey) - Traffic Engineering

1.3 TRANSECT-BASED CODE

The LSP applies a Transect-Based Code to Jindee that is derived from SmartCode®; a model Form Based Code ordinance devised by urban design consultancy, Duany Plater-Zyberk and Company.

The Transect-Based Code provides a unified development control approach that is consistent with the sustainable planning principles of Smart Growth and the timeless principles of quality urbanism and compact neighbourhood design.

The Code applies the Transect as the organising principle for all design elements. The Transect was first conceived by Alexander Von Humboldt at the close of the 18th century as a geographic cross-section of a region to reveal a sequence of natural environments. Its purpose was to study the many elements that contribute to habitats where certain plants and animals thrive in a symbiotic relationship to the minerals and microclimate.

The extrapolation of this technique to the human environment, as depicted in the urban to rural Transect developed by Andres Duany and Douglas Duany in the early 1980's provides a framework to identify a range of habitats that vary by their complexity and intensity from the most natural to the most urban.

By applying the ordering system of the Transect to Jindee, every element of the built environment is able to find its place, depending on its character, in a continuum of environments ranging from the most natural to the most urban. This allows designers to specify different urban intensities that look and feel appropriate to their locations within the neighbourhood structure, and ensure the built form is responsive to the environment in all circumstances.

In addition to the MRS reserves, Part 1 allocates the following five transect zones to Jindee:

T2 Natural Living - consists of lots of sufficient size to enable the retention of the natural features such as vegetation or topography. These areas are more 'natural' in character' than 'sub-urban' or 'urban'.

T3 Sub-Urban - sub-urban in character, consisting of low density residential areas, adjacent to higher zones that contain some mixed use.

T4 General Urban - consists of medium-density residential and a wide range of building types including terraces, detached dwellings and apartments. Has a more formal character including reduced setbacks, raised kerbs and regular planting.

T5 Urban Centre - urban in character, consisting of higher density mixed use buildings set close to wide footpaths and a tight network of streets.

T6 Urban Core - consists of the highest density and height, with the greatest variety of uses and civic buildings of regional importance. It has larger blocks and buildings are set close to streets.

Public Open Space - public spaces are also allocated and will be designed to complement the character of the adjacent Transect Zone.

Each Transect Zone is accompanied by specific development standards to control the design of the built form, landscape and thoroughfares. The Code standards for each of the Transect Zones will deliver a diversity of environments within Jindee that are clearly distinguishable from one another by the intensity of their physical and social character; the relationship created between the natural and built environments; and the complexity of land uses.

This will create a range of environments through which people experience Jindee, providing an antidote to the one-size-fits-all development that is prevalent in the post-war development of many western cities today.

N A T U R A L | | | | | T R A N S E C T | | | | | U R B A N



MRS RESERVES (PART 1) T2 NATURAL LIVING T3 SUB URBAN T4 GENERAL URBAN T5 URBAN CENTRE T6 URBAN CORE

PRIVATE LESS DENSITY	MORE DENSITY	PRIVATE
	..... PRIMARILY RESIDENTIAL USE	PRIMARILY MIXED USE.....
	..... MORE GREENSPACE	MORE HARDSCAPE.....
PUBLIC DETACHED BUILDINGS	ATTACHED BUILDINGS.....	PUBLIC
	..... ROTATED FRONTAGES	ALIGNED FRONTAGES
	..... YARDS & VERANDAHS	STOOPS & SHOPFRONTS.....
Civic DEEP SETBACKS	SHALLOW SETBACKS.....	Civic
	..... ARTICULATED MASSING	SIMPLE MASSING.....
	..... LOWER BUILDINGS	TALLER BUILDINGS
PUBLIC GENERALLY PITCHED ROOFS	GENERALLY FLAT ROOFS.....	PUBLIC
	..... LIMITED SIGNAGE	BUILDING MOUNTED SIGNAGE.....
	..... ROADS & LANES	STREETS & ALLEYS.....
PUBLIC INFORMAL PATHS	DEDICATED FOOTPATH.....	PUBLIC
	..... OPPORTUNISTIC PARKING	DEDICATED PARKING
	..... LARGER KERB RADII	SMALLER KERB RADII
Civic OPEN SWALES	RAISED KERBS.....	Civic
	..... LOW VOLT LIGHTING	HIGH VOLT LIGHTING
	..... MIXED TREE SPECIES	SINGLE TREE SPECIES
Civic LOCAL GATHERING PLACES	REGIONAL INSTITUTIONS.....	Civic
	..... PARKS & GREENS	PLAZAS & SQUARES
	..... INFORMAL PLANTING	FORMAL PLANTING.....

(Source: studio LFA, SmartCode v 9.2)

1.4 REPORT CONTENT AND STRUCTURE

The Jindee LSP is different to conventional structure plans, which are predominantly concerned with guiding land use, neighbourhood structure and subdivision layout. In addition to addressing these elements, the Jindee LSP also includes controls to regulate the design of buildings, the landscape and thoroughfares. The intent of this approach is to achieve certainty in the design outcomes and to deliver environments where all of the elements combine to create places of distinctive character.

The LSP is divided into three parts.

The Statutory Section (Part 1) allocates Transect Zones and Reserves; establishes the neighbourhood design and structure; and the relevant statutory controls including those pertaining to land use, residential density and thoroughfare reserves and hierarchy, and public open space provision. Part 1 also includes the Design Code that prescribes standards for the design of buildings, thoroughfares and landscape. Part 1 effectively contains the requirements that will guide the assessment of future Local Development Plans (LDPs), subdivision applications and development applications.

This Explanatory Section (Part 2) includes background information to give context and rationale for the standards and other requirements that appear in Part 1. This Explanatory Section contains: the project history and planning context; an examination of the site and its contextual setting; an explanation of the philosophy behind the project innovation; and a description of the project design principles and intended delivery outcomes.

The economic/employment strategy and community development initiatives at Jindee are also covered in this Part. Other strategies, plans, and policies that remain to be prepared and the timeframes for their preparation are set out under Table 6 of Part 1.

Part 2 concludes with an explanatory chapter that includes background information to give context and rationale for the standards and the requirements that appear in Part 1.

Supporting technical reports, including a Jindee Traffic/Transport Assessment, Environmental Assessment Summary, Local Water Management Strategy, Fire Hazard Assessment and Civil Engineering Servicing Report are provided under Part 3 of the LSP, which is presented in a separately bound document.

As part of the implementation and realisation of the vision for Jindee, Architectural Standards and a Pattern Book will sit outside the LSP and be administered by EDC through developer covenants and contracts of sale. These documents will elaborate on the Part 1 controls and standards.

ADMINISTERED BY CITY OF WANNEROO

LOCAL STRUCTURE PLAN

Part 1 - Statutory Section

ADMINISTERED BY WAPC / CITY OF WANNEROO

Statutory Provisions

Applies Transect Zones and Reserves to the Jindee LSP area and introduces statutory provisions to regulate and guide subsequent subdivision, development and land use.

Part 1 - Jindee Design Code

ADMINISTERED BY CITY OF WANNEROO

Regulating Plan Series

The Regulating Plan Series consists of the following plans:

- Transect Plan: identifies Transect zones, civic spaces and thoroughfare network
- Control Plan: identifies locations where:
 - certain private building frontages including shopfronts, arcades and galleries, are recommended;
 - control fronts (build-to-lines) are required to enhance corner and edge conditions;
 - terminated vistas and pedestrian paths and passages are required; and
- Public Open Space Plan: Identifies the public open space areas that will be ceded at the time of subdivision and reserved to satisfy the WAPC's 10 per cent requirement.

ADMINISTERED BY DEVELOPER THROUGH TOWN ARCHITECTS' OFFICE

Architectural Standards

The Architectural Standards will specify the materials and configurations permitted for walls, attachments, roofs and openings to ensure visual compatibility among the building types.

The standards draw from the vernacular and contemporary building traditions of the region, ensuring a suitable response to climate and contemporary building techniques.

Strategies and Policies

A number of strategies and policies may be prepared for Jindee to provide further guidance on operational aspects of the regulatory requirements that are in place for Jindee and to facilitate project delivery.

Known strategies to be prepared for Jindee include:

- Car Parking Strategy, which will allow for a flexible approach to the provision of car parking within defined parking precincts;
- Advertising / Signage Strategy that will establish acceptable criteria for the design and placement of various signage types.

These strategies and policies will be tailored to the vision of Jindee and seek to deliver best practice results and encourage continuous innovation.

Urban Standards

The Urban Standards regulate the design requirements for ten different building types and determines which types are permissible in each Transect Zone. A typology may be included in a number of Transect zones, that include subtle differences according to the level of urban intensity.

The design requirements prescribed in the Urban Standards for each building type are mostly concerned with those elements of building design that impact on the public realm, including the disposition of buildings on lots, frontage types, setbacks, encroachments and parking/access arrangements.

The Urban Standards are further refined through the LDPs, ensuring a site specific design response.

Thoroughfare Standards

The Thoroughfare Standards set detailed design controls for the elements within the space between fronting buildings, including verges, paths, planters/street trees, street lighting, parking, travel lanes and medians. The Standards adopt twelve main thoroughfare types which are assigned to each connection in the movement network and are based on local precedents. Each typology contains sub-types (eg. Avenue 1a, Avenue 1b) that include subtle differences, tailored to the particular context of the thoroughfare. In some locations, thoroughfare types will transition as they transgress Transect Zone boundaries. In other locations the Transect Zone will instead transition (usually mid-block at the rear lane or lot boundaries) or the public frontage types of adjacent buildings will be adjusted to complement the thoroughfare type.

Landscape Standards

The Landscape Standards allocate civic space types and the intended landscape treatments that will be applied to these spaces. The standards also contain a selection of plant species, chosen to suit local soil and climatic conditions, as well as support the urban environment and the project vision. Ultimately the species selection for various locations within the project area will also respond to coastal exposure zones, as well as to the intended landscape character of the relevant Transect Zone.

Pattern Book

The Pattern Book will include detailed design standards and material specifications aimed at achieving the physical design outcomes envisaged for Jindee. These standards will address treatments to be applied to both the public and private realms and will be reflected in the detailed design of thoroughfares, public spaces and buildings.

1.5 LAND DESCRIPTION

The legal description of the Jindee land area is:

- Portion of Lot 9036 Marmion Avenue, Jindalee on Deposited Plan 70682, Volume 2773, Folio 490;
- Portion of Lot 3054 on Deposited Plan 47953, Volume 2611, Folio 665; and
- Swan Location 11593 on Land Administration Diagram 90531, Volume 3051, Folio 396.

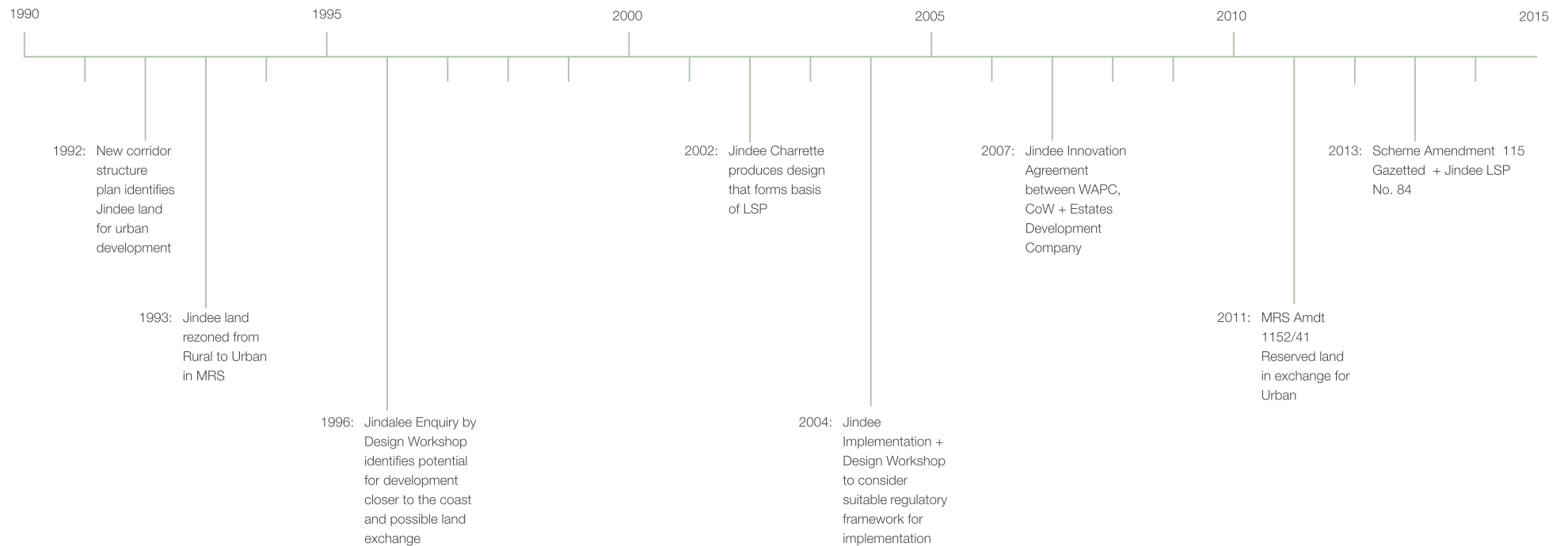


1.6 PROJECT HISTORY

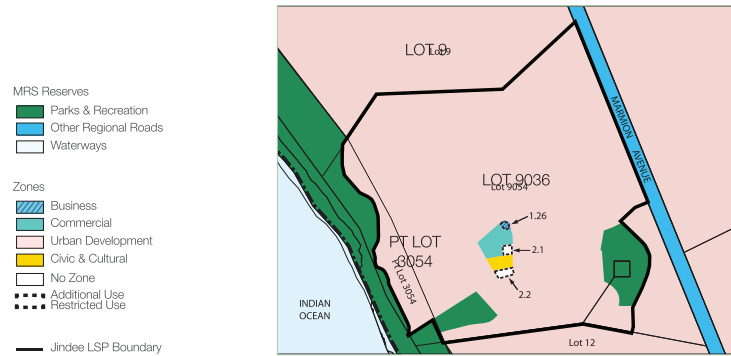
Introduction

Significant planning and detailed design has occurred for Jindee that is the result of extensive collaboration between EDC and the CoW, DoP, the Western Australian Planning Commission (WAPC), Department of Environment Regulation (DER), and an extensive team of local and international urban professionals brought together to set a new benchmark for coastal development in Western Australia.

The sequence of events and associated milestones leading up to this LSP are illustrated in the below timeline and discussed in the following sections.



CITY OF WANNEROO DISTRICT PLANNING SCHEME NO. 2 - EXISTING RESERVES & ZONES



Zoning of Jindee- Land to 'Urban'

Jindee was identified for urban development as early as 1992 in the North West Corridor Structure plan (WAPC). The site was subsequently rezoned from 'Rural' to 'Urban' in the MRS in June 1993.

A year later, Amendment No.566 to the CoW Town Planning Scheme No.1 (TPS1) rezoned the land to bring it into conformity with the MRS. Most of the site was rezoned from 'Rural' to 'Residential Development', with the exception of a central node that was deemed to be the most suitable location for a neighbourhood centre. This land was zoned to 'Commercial', 'Civic', 'Service Station' and 'Special Zone'. Amendment 566 also introduced into Schedule V of TPS 1 a 3,000m² NLA retail floorspace allocation for Jindee.

District Planning Scheme No. 2, which superseded TPS 1 in 2006, retained equivalent zoning in the form of an 'Urban Development' zone over the most part of the Jindee site (in substitute for the former 'Residential Development' zone) and non-residential zonings over the central node. The 3,000m² NLA retail floorspace allocation was also retained in Schedule 3 to District Planning Scheme No. 2.

Amendment 115 to District Planning Scheme No. 2, which was gazetted in 2013, rezoned the site to 'Smart Growth Community'. The 'Smart Growth Community' zone enables a transect based code approach to be used to regulate development. This approach is reflected in this LSP.

1996 ENQUIRY BY DESIGN WORKSHOP PLAN



1996 Enquiry by Design Workshop

In 1996 the then Ministry for Planning orchestrated the Jindalee Enquiry by Design workshop. The workshop was a precursor to Liveable Neighbourhoods (WAPC, 2000) and promoted a return to traditional planning principles. The plan culminating from this workshop established strong movement connections between Jindee and the Brighton District Centre, the rail station and Mitchell Freeway.

The environmental analysis that informed the resulting design identified areas of native vegetation to be retained, recognising the landscape and environmental values of Eglinton Hill and a vegetated link to the coast. At the same time, it was acknowledged that development at Jindee could occur closer to the coast than reflected in the MRS 'Parks and Recreation' reservation. To enable this to occur, the potential for a land exchange between Lot 9036 (formerly Lot 10 and owned by Westminster Estates Pty Ltd) and Lot 3054 (owned in fee simple by the State Government) to facilitate the protection of highly valued inland conservation areas in return for development closer to the coast was identified.

This concept was subsequently progressed via MRS Amendment 1152/41 (gazetted in 2011), which enables this land exchange to occur.

2002 JINDEE DESIGN CHARRETTE PLAN (PREFERRED CONCEPT)



2002 Jindee Charrette

The outcomes from the 1996 Jindalee Enquiry by Design Workshop and, in particular, the concept of a coastal node with strong physical and visual connections with the regional beach was the impetus for EDC to engage internationally renowned urban planners and designers, Duany Plater-Zyberk & Company, to undertake a two week design charrette in collaboration with the local consultant team and key government agencies.

The charrette produced a series of design iterations; each responding to the natural conditions of the site to varying degrees. A final charrette plan (preferred concept) introduced the best elements of each plan, resulting in a design that demonstrates a genuine sensitivity to the Jindee site. This plan was subject to further analysis and refinement resulting in the design reflected in this LSP.

2004 JINDEE IMPLEMENTATION PROCESS & DESIGN WORKSHOP



2004 Jindee Implementation and Design Workshop

This workshop was convened by the DoP, WAPC, the CoW and EDC to develop a suitable regulatory framework to support the timely implementation of the preferred Jindee design. Workshop participants, including the Department of Environment Regulation (DER - formerly Department of Environment and Conservation), examined the benefits that could accrue from exchanging foreshore 'Parks and Recreation' reserved land for two consolidated parcels of 'Urban' zoned land located within Lot 9036 that were attributed as having greater environmental significance.

Having regard to advice from the DER, the vegetated 'link' that was shown on the plan from the 2002 Charrette was subsequently replaced with two consolidated areas that were to be protected in 'Parks and Recreation' reserves.

The workshop established an agreed regulatory framework for implementation, which included a MRS Amendment to facilitate the inclusion of the two consolidated parcels within 'Parks and Recreation' reserves in exchange for an 'Urban' zoning over the coastal land. The workshop also gave consideration to town planning scheme amendment and structure planning requirements.

LAND EXCHANGE (JINDEE INNOVATION AGREEMENT)



2007 Jindee Innovation Agreement

The Jindee Innovation Agreement was entered into by Westminster Estates Pty Ltd (owner of Lot 9036), the WAPC and the CoW in 2007 to facilitate the exchange of the foreshore land (portion of Lot 3054) for land located within Lot 9036. In addition to this land exchange, the Agreement sets out a framework for the parties to work collaboratively through the required statutory processes, including the required MRS and TPS Amendment and structure planning processes.

The primary objective of the Innovation Agreement is to achieve shared stakeholder understanding of the project innovations and to accomplish a planning framework that will creating a unique coastal village at Jindee that strikes a delicate balance between human and natural habitats.

The inclusion in the LSP of a Transect-Based Code is consistent with the Jindee Innovation Agreement in enabling a comprehensive design response through a local structure plan and form-based code approach.

MRS AMENDMENT 1152/41



2011 Metropolitan Region Scheme (MRS) Amendment 1152/41

In accordance with the design visions of the earlier workshops described above, MRS Amendment 1152/41 (gazetted in 2011) zoned part of the coastal 'Parks and Recreation' reserve to 'Urban' (being portion of Lot 3054) in exchange for the reservation of ecologically significant inland areas of Lot 9036 to 'Parks and Recreation'.

Westminster Estates Pty Ltd, which is part of and managed by EDC purchased Lot 9036 in 1978. Westminster Estates Pty Ltd is in the process of acquiring the 'Urban' zoned portion of Lot 3054 from the State Government and will ultimately amalgamate this land with Lot 9036 in accordance with the Jindee Innovation Agreement. The two areas within Lot 9036 that were reserved to 'Parks and Recreation' will concurrently be transferred to the Crown.

The MRS Amendment provided the basis for the more detailed planning to take place for the delivery of the Jindee Innovation Project and project vision. The Amendment will deliver significant environmental outcomes, as well as enable the coastal village to have a strong connection to the regional beach and for the regional beach parking to be sleeved behind the built form, as opposed to being located within the foreshore reserve.

The LSP design reflects the amended MRS zonings and reservations.

2.1 STRATEGIES

Directions 2031 (WAPC, 2010)

Directions 2031 is the strategic blueprint guiding the future growth of the metropolitan Perth and Peel regions. It provides direction for the more detailed planning and delivery of housing, infrastructure and services to realise the preferred ‘connected city’ growth scenario. This scenario favours consolidated development and the highly efficient use of land and infrastructure.

Directions 2031 identifies six sub-regional planning areas that are to form the basis of future planning and policy development.

Jindee is located within the north-west subregion, encompassing the Cities of Joondalup and Wanneroo. The population of the north-west subregion is projected to grow by 100,000 from 285,000 to 395,000 persons between now and 2031. Jindee is one of the existing urban zoned areas that will contribute to the total dwelling supply required to accommodate this growth.

To achieve a more compact and connected city, Direction 2031 sets a density target of 15 dwellings per gross urban zoned hectare. This is 50 per cent higher than the average density currently being achieved of 10 dwellings per gross urban zoned hectare. The design proposed for Jindee satisfies this density target, and is expected once it is fully developed, based on the current proposed development, to exceed these targets.

Directions 2031 states that the employment self-sufficiency in the north-west subregion currently performs poorly at 41 per cent. To achieve the Directions 2031 employment self-sufficiency target of 60 per cent, an estimated 131,000 to 157,000 additional jobs will be needed over the next 25 years. Employment land within the north-west subregion that is identified as playing the most significant role in meeting the employment self-sufficiency target include the major activity centres and industrial land.

Jindee’s contribution to local employment creation will exceed that ordinarily delivered by a project of its scale and position within the broader regional structure of activity centres. This is attributable to a range of factors including: the Transect-Based Code approach that promotes mixed-use development and a robust coastal village with strong appeal to tourist and visitor markets.

The job creation potential of Jindee is discussed in further detail under Chapter 5.

In summary, the LSP is compliant with Directions 2031, addressing the following key themes and objectives of the strategy:

Responsible Growth – the LSP facilitates well-planned urban growth, including a density of development that supports land and infrastructure efficiencies and the economic viability of the Jindee coastal village centre and the subregion’s higher order activity centres, including Yanchep, Alkimos and Brighton.

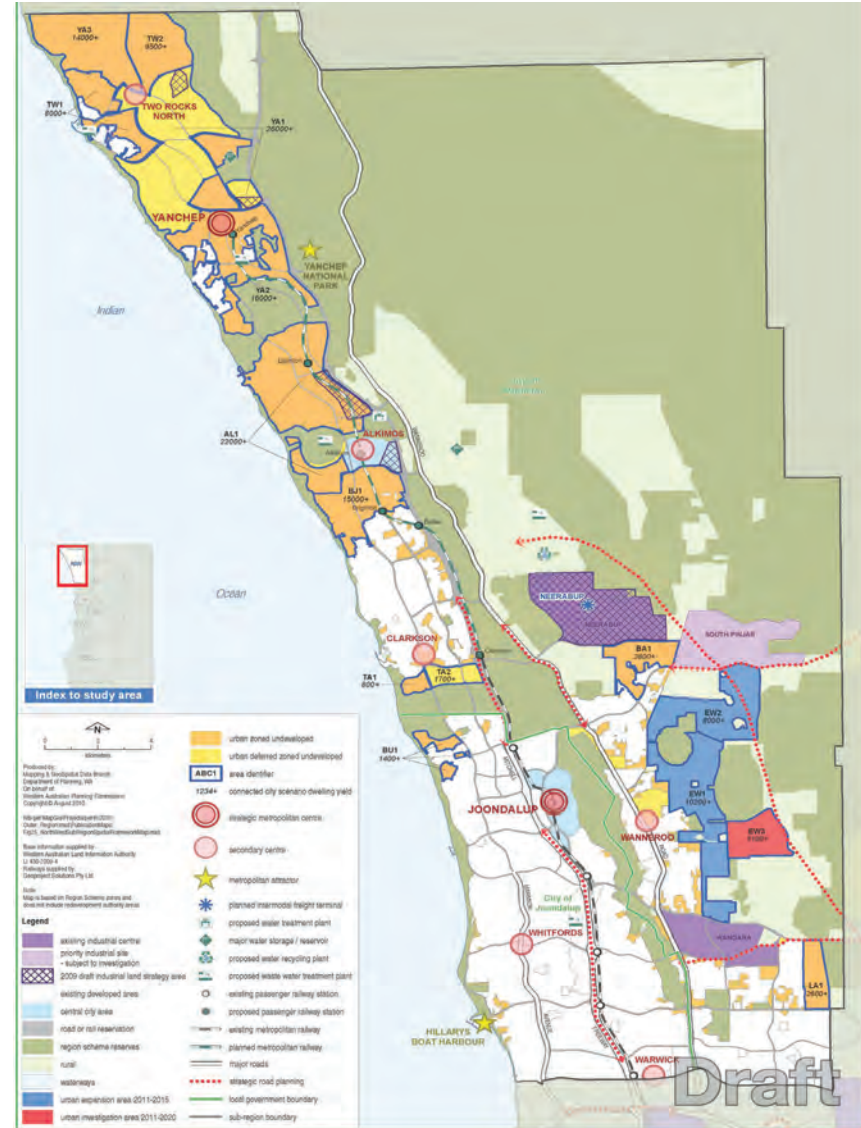
Liveable – provides for choice of housing, local jobs and a quality of urban design, built form and public realm that will deliver a highly liveable environment.

Diverse Housing– offers a wide choice of housing to cater for a range of household types including affordable options. Housing types include terraces and apartments located close to public transport and community infrastructure, and lower density, freestanding housing where the natural vegetation and terrain is to be preserved.

Prosperous– supports investment and job creation at Jindee beyond the level typically found within a conventional residential estate by leveraging off the site’s exposure to Marmion Avenue and potential for tourism, and by promoting mixed-use and flexible forms of development.

Accessible – integrates with the wider metropolitan transport network and creates the critical mass needed to support a viable public transport service that connects people with the jobs and services on offer in the north-west subregion. Within Jindee the movement network and quality of streets and civic spaces will be highly conducive to pedestrian activity.

Sustainable – protects local ecological values through a design that is responsive to the natural terrain, vegetation and coastal conditions, as well as demonstrates a genuine commitment to grassroots place making initiatives that will underpin the evolution of a healthy and robust local community.



Perth Coastal Planning Strategy (WAPC 2012)

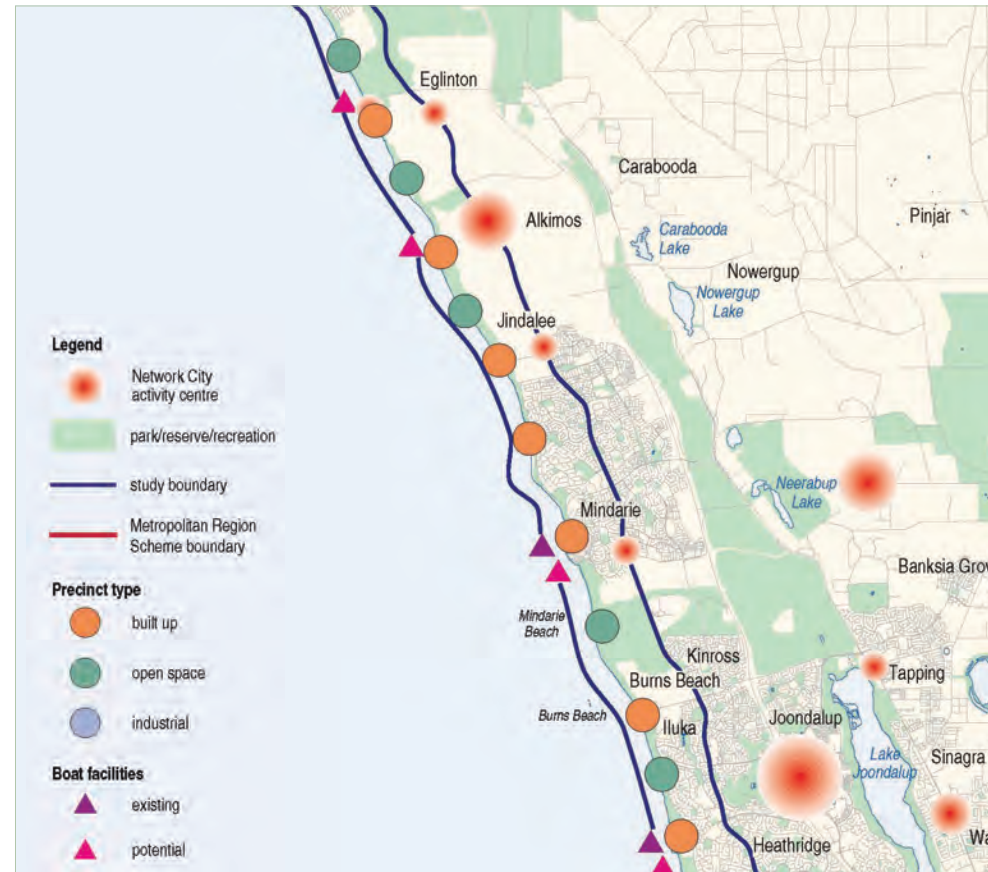
The Perth Coastal Planning Strategy was initiated by the Coastal Planning and Coordinating Council to ensure that future planning decisions along the metropolitan coastline result in integrated and sustainable development that reflects the expectations of the wider community. The consultation accompanying the formulation of the Strategy provided a clear message that the community supported development concentrated in select coastal nodes to enable widespread retention and protection of the coastal environment. The community also overwhelmingly identified the coast as being an important place to socialise and relax. It was therefore important to provide opportunities for socialising and recreation, including restaurants, hotels and cafes.

Consistent with this view, the Strategy nominates suitable locations, including Jindalee, as 'built up' precinct types. The recommended future character of the Jindalee precinct is described in the Strategy as "...a medium intensity Mixed Use precinct with retail focus, with some high-density residential use...".

The Strategy recommendations have been endorsed by the WAPC and will be used to inform the next stage of Directions 2031, including structure planning for those areas that include the Perth Coastal Planning Strategy planning precincts.

The LSP is compliant with the Strategy proposing a coastal village centre supported by a range of housing, including a significant component of higher density typologies, and mixed use activity that will facilitate a sustainable local economy and concentrated nodal activity.

DRAFT PERTH COASTAL PLANNING STRATEGY (2008)



Coastal Planning Study Burns Beach to Jindalee (Hames Sharley 1992)

A Coastal Planning Study for the site was undertaken in 1992 by Hames Sharley for the then Department for Planning and Urban Development (DPUD) (now DoP) and the CoW. The purpose of the study was to prepare a coastal management plan with a particular emphasis on foreshore recreation. The study depicts Jindalee and the southern portion of Lot 9 (located directly north of Jindalee) as a 'regional beach' in the coastal beach hierarchy.

The Coastal Planning Study also recognised that the foreshore reserve boundary established in 1978 did not take into consideration local topographic conditions and recommended for Jindalee a varied foreshore reserve boundary reflecting the location of the ridges and valleys and to prevent excessive cut and fill along roads adjacent to the coast.

Jindalee responds to the physical environment, with development located behind the limestone cliffs and buried competent limestone. A larger coastal setback is provided in the northern section of the site to allow for coastal processes and adequate amenities adjacent to the regional beach. A reduced setback is provided in the southern section of the site where the exposed and buried limestone provides protection against coastal processes.

The design for Jindalee is consistent with the recommendations of the Coastal Planning Study in regards to the provision of coastal access, the intensity and type of uses proposed, and the responsiveness of the MRS foreshore reserve boundary to the topographic and underlying geomorphological conditions of the coastline.

2.2 SCHEMES

Metropolitan Region Scheme

Most of Jindee is zoned Urban in the MRS, with the exception of two discrete areas comprising approximately 6.1 hectares that are reserved for Parks and Recreation. The reserve in the south eastern quadrant encompasses Trig Point (known as Eglinton Hill) and the western reserve adjoining the coastal reserve captures land of high landscape and environmental quality.

The subject land abuts an Other Regional Road reservation to the east (Marmion Avenue) and Parks and Recreation reserve to the west (coastal foreshore).

MRS Amendment 1152/41 contracted the northern portion of the coastal reserve to enable the future development of a coastal village centre with strong physical and visual ties with the coast. The amendment was the first phase in implementing the Jindee Innovation Project.

The zoning of portion of the coastal reserve to 'Urban' was in exchange for the reservation of the 6.1ha of ecologically significant inland reserves referred to above. In the context of this exchange, the EPA also required that an ecological link be preserved between the inland and coastal Parks and Recreation reserves. In its decision on Amendment 1152/41, the EPA resolved to defer the issue of the ecological link to allow an adequate mechanism to be introduced during the later stages of planning. Accordingly, the EPA stated it would consider this issue further when more information became available (i.e. at subsequent zoning, structure planning, subdivision or development).

The EPA's requirement to secure and preserve an ecological link was addressed through local Scheme Amendment 115 and in Part 1 of this LSP. These provisions include the southern section of the T2 Zone, which extends between the two reserves, within a Protected Natural Living Area and attaches development control provisions to maximise vegetation retention and conservation. These provisions include the requirement for larger lot sizes and for LDPs to be prepared that delineate building envelopes and building zones to control the location and extent of development.

MRS - EXISTING RESERVES + ZONES



- Reserved Lands
 - Parks & Recreation
 - Waterways
- Roads
 - Other Regional Roads
- Zones
 - Urban
- Jindee LSP Boundary

City of Wanneroo District Planning Scheme No. 2

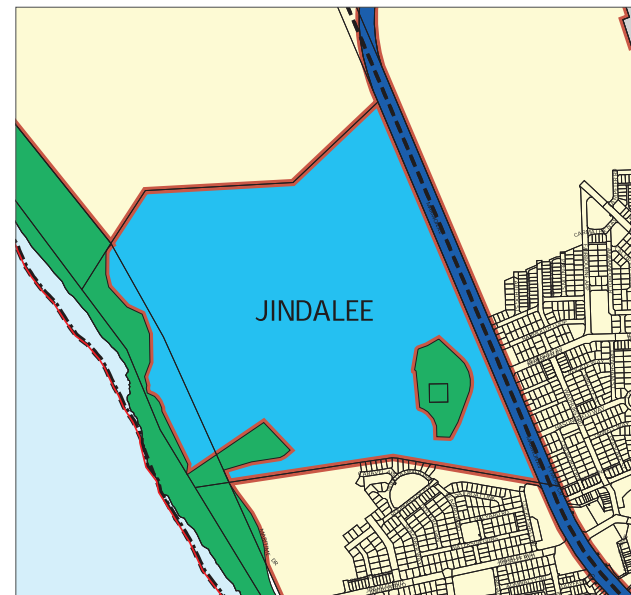
The subject land is zoned 'Smart Growth Community' under the CoW's District Planning Scheme and reflects the 'Parks and Recreation' reserves in the MRS. The 'Smart Growth Community' zone establishes a regulatory framework for the application of a Transect Based Code. The provisions require that an Agreed Structure Plan be prepared for all 'Smart Growth Community' zones and that a Transect Based Code form part of the Structure Plan. The Transect Based Code is to comprise of a Regulating Plan Series, Urban Standards, Thoroughfare Standards and Landscape Standards, that are calibrated from the SmartCode® model ordinance to respond to the specific circumstances of each 'Smart Growth Community' site. These Standards are to provide an alternative development control mechanism to the R-Codes and therefore 'Smart Growth Community' zoned land is exempt from the R-Codes.

In addition to the above outlined provisions that apply to all 'Smart Growth Community' zoned land, site specific provisions for the Jindee site are included under a related Scheme Schedule (Schedule 13).

Schedule 16 includes the Protected Natural Living Area environmental provisions and the retailing provisions that establish Jindee's role as a Neighbourhood Centre within the regional hierarchy of activity centres. A retail cap of 3,000m² applies to Jindee, with scope for additional retail floorspace provided it can be justified through a retail needs assessment and the additional space is for tourist/visitor retailing serving the wider Perth metropolitan region and beyond.

Any additional retail floorspace is however, limited to that which is consistent with Jindee's designated role as a Neighbourhood Centre in accordance with SPP 4.2 – Activity Centres for Perth and Peel (WAPC, 2010) and the Jindalee Butler District Structure Plan.

CITY OF WANNEROO DISTRICT PLANNING SCHEME NO. 2 - EXISTING RESERVES AND ZONES



- LEGEND**
- METROPOLITAN REGION SCHEME RESERVES**
- PARKS AND RECREATION
 - RESTRICTED PUBLIC ACCESS
 - PRIMARY REGIONAL ROADS
 - FUTURE HIGHWAYS
 - OTHER REGIONAL ROADS
 - PORT INSTALLATIONS
 - PUBLIC PURPOSES - IDENTIFIED AS FOLLOWS
 - STATE FORESTS
 - HOSPITAL
 - WATER CATCHMENTS
 - H1 HIGH SCHOOL
 - H2 TECHNICAL SCHOOL
 - C1 CATHEDRAL
 - C2 CHURCH
 - C3 COMMERCIAL THE GOVERNMENT
 - C4 STATE FINANCE COMMISSION
 - C5 SPECIAL USES
 - C6 WATER SUPPLY OF ALL TYPES
 - WATERWAYS
- LOCAL SCHEME RESERVES**
- PARKS AND RECREATION
 - PUBLIC USE - IDENTIFIED AS FOLLOWS - HIGH SCHOOL
 - PUBLIC USE - IDENTIFIED AS FOLLOWS - PRIMARY SCHOOL
- ZONES**
- RESIDENTIAL
 - SPECIAL RESIDENTIAL
 - URBAN DEVELOPMENT
 - BUSINESS
 - CENTRE
 - COMMERCIAL
 - MANTRA
 - MIXED USE
 - SMART GROWTH COMMUNITY
 - SPECIAL USE
 - CRIC AND CULTURAL
 - PRIVATE CLUBS RECREATION
 - GENERAL INDUSTRIAL
 - INDUSTRIAL DEVELOPMENT
 - SERVICES INDUSTRIAL
 - GENERAL RURAL
 - RURAL COMMUNITY
 - RURAL RESIDENCE
 - SPECIAL RURAL

2.3 STRUCTURE PLANS

Butler-Jindalee District Structure Plan (2006)

The Butler-Jindalee District Structure Plan allocates the distribution of major land uses and establishes the primary transport network and neighbourhood structure for the land bounded by Romeo Road in the north, the coast to the west, the Ridgewood locality to the south and Mitchell Freeway to the east.

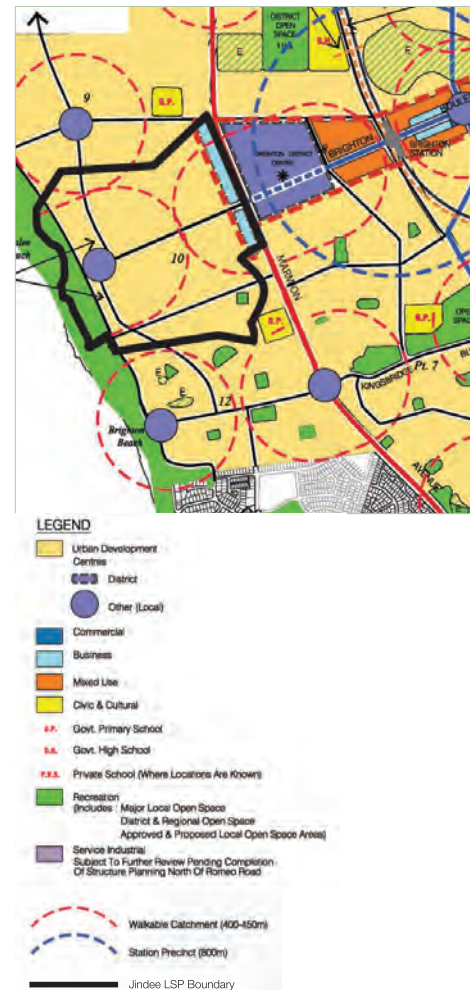
This includes designation of a district centre to the east of Jindee near the proposed Butler station, primary and high school sites, local and neighbourhood centres, activity corridors, integrator arterial and district distributor roads, public open space and walkable catchments.

In relation to Jindee, the District Structure Plan, identifies:

- a coastal village centre at Jindee with connections through to the Butler station and district centre;
- linkages between Jindee and development to the south and north;
- commercial uses along Marmion Avenue; and
- a primary school abutting Marmion Avenue in the south east corner of the Jindee site.

The LSP design for Jindee is consistent with these elements and with the Butler-Jindalee District Structure Plan generally.

BUTLER-JINDALEE DISTRICT STRUCTURE PLAN (2006)



Jindalee Primary School Local Structure Plan

The Jindalee Primary School Local Structure Plan (LSP 71) area sits immediately to the south east of the Jindee LSP area and west of Marmion Avenue. LSP 71 specifically addresses the Primary School site and an active Parks and Recreation reserve immediately to the north. Under normal circumstances, the land would logically form part of the broader Jindee LSP. In this case, however, the primary school site and adjacent POS areas were dealt with as a separate local structure plan ahead of the Jindee LSP because certainty was needed in relation to the final agreed location and design layout for the primary school.

In this regard LSP 71 serves two primary functions:

- it secures a suitable site for the Jindalee Primary School; and
- it introduces design parameters to guide development.

In relation to a) above, the LSP confirms the location for a 3.5ha primary school site abutting the western side of Marmion Avenue in the south-eastern corner of the Jindee site and immediately north of Lot 12. The catchment to the school will be wholly to the west of Marmion Avenue and include the central and southern portion of Jindee and all of Lot 12 to the south. The northern section of Jindee falls within the catchment for the primary school to be developed within Lot 9 to the north.

The siting of the primary school site in this location is the result of extensive stakeholder consultation, particularly with the Department of Education (DoE) and CoW over a number of years. The approved structure plan for Lot 12 to the south had not made provision for a primary school site, despite the future residents of this area forming part of the school catchment. As school sites generally require relatively flat land, it was agreed the land within the south-western corner of Jindee provided the most suitable available site for the primary school, relative to its catchment.

In relation to b) above, the LSP includes an Indicative Layout for the design of the primary school. This has been included primarily to demonstrate the capacity of the site to accommodate the required school

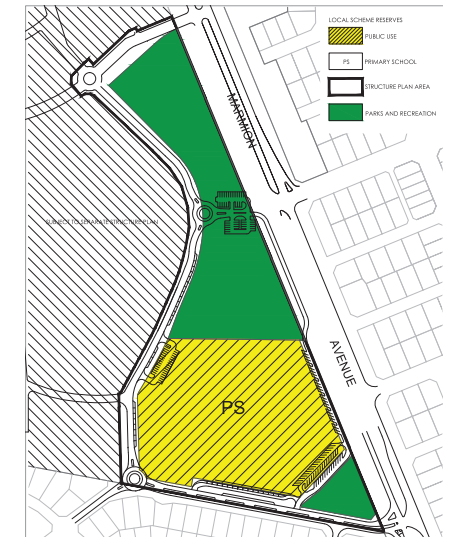
buildings, playing areas, car parking and other required improvements. The LSP also confirms that an extensive network of cycleways and pedestrian paths will be provided to ensure the school can be safely accessed from its catchment area.

It is EDC's intention to continue to work closely with the DoE in the detailed design of the primary school development to achieve an outcome that demonstrates a genuine sensitivity to and compatibility with the innovative and site responsive design that will define Jindee.

In addition to the primary school site, the LSP makes provision for a 3.0ha public open space reserve to the north of the primary school. The DoE and CoW have agreed to the shared use of this reserve. The reserve is of a sufficient size to accommodate a junior size oval and potentially future clubroom facilities if ever required by the CoW. A smaller reserve comprising 3,100m² is shown in the south eastern corner of the LSP area which will be used for drainage.

Given that the primary school and adjacent Parks and Recreation reserves form an integral part of the broader community design for Jindee, the WAPC has agreed for the LSP 71 land to be included in the POS calculations for the Jindee LSP.

JINDALEE PRIMARY SCHOOL INDICATIVE LAYOUT



2.4 POLICIES + GUIDELINES

Liveable Neighbourhoods (WAPC, 2009)

Liveable Neighbourhoods, Edition 3 (WAPC, 2009) has made significant progress in facilitating a more sustainable structuring of neighbourhoods by applying the time-tested principles of Traditional Neighbourhood Design (TND). However, Liveable Neighbourhoods deals mainly with urban structure and the design and layout of subdivisions and does not consider in detail the third dimension, including desired built form, thoroughfare character or landscaping.

The result is that the built form is generally left to the landowner to determine, whilst the related elements of thoroughfare design, landscaping and public spaces, remain the responsibility of the developer and/or the CoW. This lack of coordination between the design of streets, buildings and landscape often results in a disconnect whereby the design of urban environments do not clearly convey a sense of place or local identity.

The Jindee Design Code is a Transect Based Code which prescribes detailed standards relating to the design of buildings, thoroughfares and public spaces. The objective of these standards is to facilitate implementation of an integrated design vision that is responsive to the environment and coordinates all aspects of development as it occurs within the public and private realms. In this regard, the standards of the Jindee Transect Based Code complement the provisions of Liveable Neighbourhoods set out under Elements 1 – 8.

SPP 3.1 - Residential Design Codes (WAPC, 2010)

In accordance with the Scheme and the Part 1 provisions, residential development at Jindee will not be subject to the requirements of the Residential Design Codes (SPP 3.1). Instead, the Urban Standards contained in Schedule 1 of Part 1 will prescribe detailed design controls for the ten building types that may be built at Jindee.

These standards assign building types to each Transect Zone and contain specifications for the design of each building type, including lot area ranges, site coverage, building disposition, building setbacks, number and placement of car parking bays, permissible private frontage types and building height.

Supplementary site specific controls will be introduced through the LDPs, including provisions to address solar access, minimum and maximum building heights, retaining, walling and fencing, and building setbacks.

An overriding objective of the Urban Standards is to achieve a quality built form outcome that complements the natural site conditions, reflects the Western Australian climate and lifestyle, and reinforces the character intended for each Transect Zone.

SPP 2 Environment and Natural Resources Policy (2003)

SPP 2 Environment and Natural Resources Policy aims to ensure that environment and natural resource management is integrated with broader land use planning and promotes the protection, conservation and enhancement of the natural environment.

SPP 2 sets out the broad environment and resource management policies for sustainability, including measures to:

- safeguard and enhance areas of environmental significance on the coast including the marine environment;
- ensure use and development on, or adjacent to the coast is compatible with its future sustainable use for conservation, recreation and tourism in appropriate areas; and
- take into account the potential for impacts from changes in climate and weather, human activities and cultural heritage including coastal and urban communities, natural systems and water resources.

The proposed development of Jindee is consistent with the objectives of SPP 2. The landowner is committed to a development that is compatible with, and respects its coastal setting; recognises areas of environmental significance; and provides for a range of recreation and tourism opportunities.

SPP 2.6 – State Coastal Planning Policy (2013)

The State Coastal Planning Policy addresses land use planning and development issues specifically as they relate to the protection and management of the coast. The objectives of this Policy are to:

- protect, conserve and enhance coastal values, particularly in areas of landscape, nature conservation, indigenous and cultural significance;
- provide for public foreshore areas and access to these on the coast;
- ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities; and
- ensure that the location of coastal facilities and development takes into account coastal processes, including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria.

SPP 2.6 distinguishes between establishing a sufficient width for a coastal foreshore reserve, and development setbacks for physical processes. A total setback provides for both coastal process and other factors such as the protection of ecological values and the provision for public access and recreation requirements within the coastal foreshore reserve.

To establish the required coastal reserve width for MRS Amendment 1152/41, coastal engineering firm, MP Rogers and Associates, calculated the required coastal setback distance in accordance with the requirements of SPP 2.6, taking into account the setbacks required for physical processes and the coastal foreshore requirement for the Jindee coastal node.

The assessment found that a variable coastal setback alignment that responds to the specific conditions of the coastline provides the best solution.

The setback line that was required by the Minister for Planning and the WAPC is reflected in the MRS 'Parks and Recreation' coastal reserve boundary.

It requires development to be setback a minimum distance of 50 metres from the coastal limestone at approximately 3.0 metres above AHD. Some of this limestone is presently exposed in cliffs, whereas other limestone is buried beneath the sand dunes.

The agreed setback recognises the existence of continuous competent Tamala Limestone (exposed and buried) at elevations of about 3.0 metres above the mean sea level (and higher) not far from the beach (identified through geotechnical investigations by Coffey Geosciences Pty Ltd).

MP Rogers and Associates confirms the same limestone is encountered along the coast at Mandurah, Cottesloe, Trigg, North Beach and Watermans and provides excellent coastal protection as the limestone can withstand erosive forces of the ocean well beyond the 100 year planning timeframe. Comparisons of surveys of the High Water Mark on the rocky coast at Mandurah indicates less than 5 metres of recession between 1890s and 1980s. This is the same Tamala limestone that is present at Jindee.

The agreed setback also acknowledges that foreshore land requirements are reduced by the decision to locate public car parking for regional beach use within the 'Urban' zoned land. This parking will be provided within 2.0 hectares of public car parking land that will be ceded to the Crown in perpetuity by Westminster Estates Pty Ltd as part of the land exchange agreement. This is a departure from convention, where regional beach parking is usually accommodated within the foreshore reserve, creating a division between the urban environment and the coast.

Since MP Rogers and Associates assessment in support of MRS Amendment 1152/41, the WAPC has reviewed and updated SPP 2.6. The revised Policy was gazetted in 2013 and requires a similar approach to the previous version in requiring that the coastal setback provide for both physical coastal processes, as well as accommodate protection of significant natural features and public recreation and access requirements.

A notable change in the updated Policy is that it requires a higher vertical sea level rise allowance of 0.9 metres over the 100 year planning timeframe, compared with the previous policy requirement of 0.38 metres.

MP Rogers and Associates has assessed the setback line that was agreed through the MRS Amendment against the current SPP2.6 and confirms the agreed setback remains valid. Further, MP Rogers confirms the increased allowance for the vertical sea level rise from 0.38m to 0.9m in the SPP does not warrant a larger setback due to the stability of the competent and continuous rock within the foreshore and the elevation of the developable land above the mean sea level which generally follows the 14 - 16 metre AHD contour.

SPP 4.2 Activity Centres Policy

SPP 4.2 applies an activity centre hierarchy to the Perth and Peel regions to facilitate an integrated public and private sector approach to the development of social infrastructure and to support wide ranging retail and commercial premises that promote competitive economic environments and increased employment opportunities.

The policy also aims to increase housing densities around activity centres and ensure activity centres have sufficient development intensity and land use mix to support high-frequency public transport. The LSP for Jindee is consistent with the underlying principles of this policy.

Jindee is identified as a neighbourhood centre in the Butler-Jindalee District Structure Plan and is currently assigned 3,000m² of retail floorspace in the Scheme. SPP 4.2 recognises the important role neighbourhood centres are to perform in providing walkable access to services and facilities, but also acknowledges that some centres also cater to visitors from a wider catchment.

Importantly, the Jindee Innovation Agreement between the WAPC, CoW and EDC was predicated on the development of a coastal village that draws visitors from the wider region – not just a small neighbourhood centre serving local residents, but also a tourism centre and destination for the wider region.

Provisions within the Agreement specifically refer to the function that Jindee is to perform as the "... dominant focus of lifestyle and entertainment for the local community, the wider district and the regional community."

A centre of 3,000m² NLA retail floorspace as currently capped in the Scheme, equates to a small neighbourhood centre that would find it difficult to perform the intended dual function as a centre serving local needs as well as a destination for the wider region.

Whilst 3,000m² allows for a small supermarket and associated convenience retailing typical of a modest neighbourhood centre, it restricts the capacity for Jindee to become a destination in its own right, with an activated main street, hotel development and associated specialty retailing.

It also restricts Jindee in its ability to uphold the terms of Jindee Innovation Agreement and objectives of SPP 4.2 including:

- (a) to create a community that maximise employment options;
- (b) provide a focus for higher density housing development; and
- (c) provide a sufficient intensity of development to support a high frequency bus service to the railway station.

The Scheme and Part 1 therefore include provisions that give flexibility for additional floorspace above the 3,000m² cap, provided the additional floorspace is justified through a retail needs assessment and is confined to tourist/visitor related retailing. Significantly, any additional floorspace is confined to that which is within the acceptable range for a neighbourhood centre.

Planning for Bushfire Protection Guidelines (WAPC, FESA)

A bushfire hazard assessment of the site has been undertaken in accordance with the requirements of the Planning for Bushfire Protection Guidelines to identify the relevant bush fire management issues which need to be addressed in the implementation of the LSP, LDPs and subdivision design (refer Part 3 – Bushfire Hazard Assessment).

The classification of the bush fire hazard in Planning for Bushfire Protection is based upon the existing vegetation in the undeveloped site. It classifies the existing vegetation based on tree height and the percentage of canopy cover. The general principles within the Planning for Bush Fire Protection Guidelines contain a presumption against development in areas with an “extreme” bush fire hazard rating.

The majority of the undeveloped site has a moderate to extreme bush fire hazard rating. Planning for Bushfire Protection Guidance Statement A3 stipulates that in areas with an extreme bush fire hazard level, permanent hazard reduction measures must be implemented to allow development to occur.

While the hazard assessment relates to the undeveloped land, the final fire management measures must have regard to the proposed development and its relationship to the surrounding location. These measures will be established through the Fire Management Plan(s) that will be prepared at subdivision stage.

The development will result in the vast majority of the site's vegetation being cleared. Vegetation will be retained within the existing MRS Parks and Recreation reserves and in the southern T2 Zone.

The key implications arising from the hazard assessment are:







1. The majority of the site will have a low fire hazard as the existing hazard will be permanently removed by the clearing of most of the land for development;
2. The MRS Parks and Recreation reservations are likely to remain as a moderate to extreme bush fire hazard;
3. It is possible that some development within 100m of the MRS Parks and Recreation reserves and development within the southern T2 Zone may need to be constructed in accordance with Australian Standard AS3959. This will be determined through the fire management plan prepared at subdivision stage;
4. The southern T2 Zone is likely to be a moderate bush fire hazard because of the management of the land and the fragmentation due to roads, driveways, building sites, fences and services;
5. The subdivision design within the southern T2 Zone will need to comply with the provisions of the Planning for Bush Fire Protection Guidelines;
6. The major public open space reserves will need to be subject to further assessment of the landscaping design in order to determine if there will be any associated bush fire hazard.

It is submitted that the design of the structure plan is appropriate to the level of bush fire hazard that will apply to the developed site as:

1. The site is being developed predominantly for urban purposes;
2. Dwellings within 100m of the MRS Parks and Recreation reservations and within the southern T2 Zone can be constructed in accordance with the assigned Bushfire Attack Level under Australian Standard AS3959; and
3. A fire management plan will be prepared for the subdivision which will document specific fire management measures.



LEGEND

	SUBJECT LAND		MODERATE HAZARD Southern T2 Natural Living Area Potential moderate rating due to fragmentation from roads, driveways, fence lines etc. Will be subject to a fire management plan as part of the DAP and dwellings will be constructed in accordance with AS3959 construction standards.		JINDEELSPAREA
	LOW HAZARD Urban development, cleared lots with associated earthworks.		MANAGED OPEN SPACE Managed public areas which are predominantly local POS. The hazard rating will depend upon the landscaping characteristics and is to be determined when subdivided.		EXTREME HAZARD MRS Parks and Recreation reservations. The rating in parts of the reserves may be “moderate” depending upon the level of revegetation and maintenance which is done.

The bush fire hazard assessment report recommends:

1. That a fire management plan should be submitted in conjunction with any subdivision application so as to ensure that the design complies with the requirements of the Planning for Bush Fire Protection Guidelines. This plan should also address:
 - (a) The extent of earthworking (cut and fill with proposed finished surface levels) and vegetation clearing for that stage;
 - (b) The interface treatment between the development and any classified bush fire hazard;
 - (c) Any interim fire management measures which are required for staging of the subdivision;
 - (d) Where AS3959 construction standards will be required; and
 - (e) A Bushfire Attack Level (BAL) classification plan for those nominated areas.
2. That the preparation of the Environmental Management Plan for the southern T2 Zone should consider:
 - (a) The minimum height of vegetation required;
 - (b) The degree of "openness" of the foliage;
 - (c) The specific density of groundcover;
 - (d) The ability to remove dead material and maintain leaf litter;
 - (e) The need to include appropriate BAL setbacks;
 - (f) How the continuity of the corridor will be affected by three metre wide driveways and any associated earthen shoulders/embankments;
 - (g) How the continuity of the corridor will be affected by boundary firebreaks up to 6m wide i.e. 3m either side of the boundary on lots of more than 2,000sqm.

3 That the preparation of the LDP for the southern T2 Natural Living area should consider:

- (a) The vegetation rehabilitation and management requirements;
- (b) The implications of AS3959 construction standards including the required BAL setbacks;
- (c) The management of vegetation within the BAL setbacks;
- (d) A potential variation of the CoW Firebreak Notice to remove the requirement for boundary firebreaks.

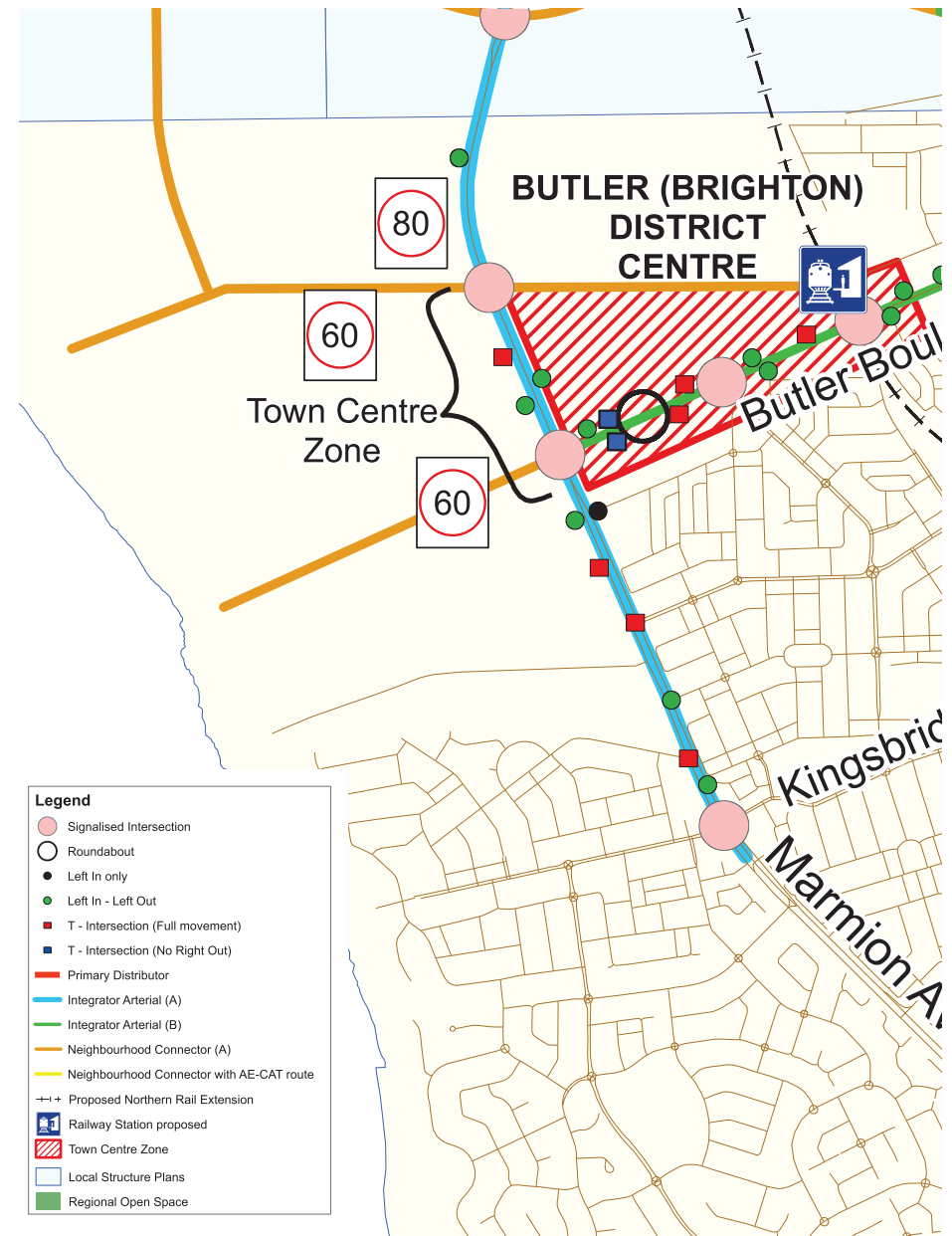
City of Wanneroo Local Policies

Part 1 includes a provision that exempts Jindee from complying with current CoW policies unless otherwise stated in the adopted policy.

The provision accepts that the Transect-Based Code standards and the types of requirements that are to be regulated through the LDPs will supplant many of the policy provisions of the City.

LPP 3.8: Marmion Avenue Arterial Road Access Policy (CoW, 2012), which was prepared by the CoW in consultation with Marin Roads Western Australia, is a notable exception that will continue to apply to Jindee. Access provisions for Jindee off Marmion Avenue contained within this LSP address and conform with the requirements of this policy.

Local policies may be prepared specifically for Jindee to address issues not covered in the LSP or LDPs. These policies will be subordinate to the provisions of Part 1 and/or the LDPs and therefore, in the event of any inconsistencies, the provisions of the LSP and/or the LDPs will prevail.



3.1 LOCATION

Jindee is located approximately 37km north-west of the Perth CBD, 14km north-west of Joondalup City Centre, and 1km east of the future Brighton train station and District Centre.

The land has approximately 930 metres of frontage to the Indian Ocean. The beach frontage in the northern portion Jindee and the southern portion of Lot 9 (located to the north of Jindee) is identified as a regional beach in the 1992 Burns Beach to Jindalee Coastal Planning Study (1992, Hames Sharley).

Principal access to the site is via Marmion Avenue.



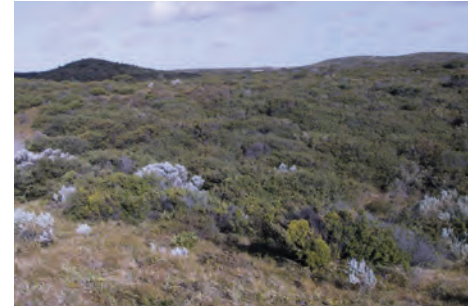
3.2 EXISTING AND SURROUNDING LAND USES

The site is covered by remnant coastal heath and has no current active use. The urban development front within the north-west corridor has progressed in a northerly direction beyond the subject site, through to Yanchep and Two Rocks.

Surrounding land uses to the south and east of the site include the residential estates of Quinns Rock, Brighton and Butler. The site is located in proximity to the proposed northern rail extension (expected to be constructed between 2015-2020), the proposed Brighton train station, and the Mitchell Freeway extension. A future district activity centre is planned near this station.

The Alkimos Eglinton landholding to the north is identified for urban development and is expected to accommodate more than 50,000 residents over the next 25 years.

Existing development within the corridor has involved widespread earthworking of the natural topography and clearing of remnant vegetation to accommodate housing estates of a predominantly suburban nature. The resulting settlement pattern is homogeneous comprising predominantly low density, single residential development, supported by strip shopping and shopping centres.



JINDEE DUNAL RIDGES



ROCKY SHORELINE ADJACENT TO JINDEE TO THE SOUTH & THE WIDER, SANDY BEACHES TO THE NORTH



PORTION OF THE REGIONAL SWIMMING BEACH THAT WILL FORM A FOCUS OF JINDEE



ROCKY SHORELINE ADJACENT TO JINDEE TO THE SOUTH



INDIAN OCEAN SHORELINE ADJACENT TO JINDEE



THE JINDEE SITE RISES FROM THE WEST TO THE EAST, ALLOWING OCEAN VIEWS FROM VARIOUS PARTS OF THE SITE

3.3 TOPOGRAPHY

The landform comprises dunes and undulating limestone ridge terrain typical of coastal landforms associated with the Quindalup unit and the low, hilly landscapes of the Cottesloe unit.

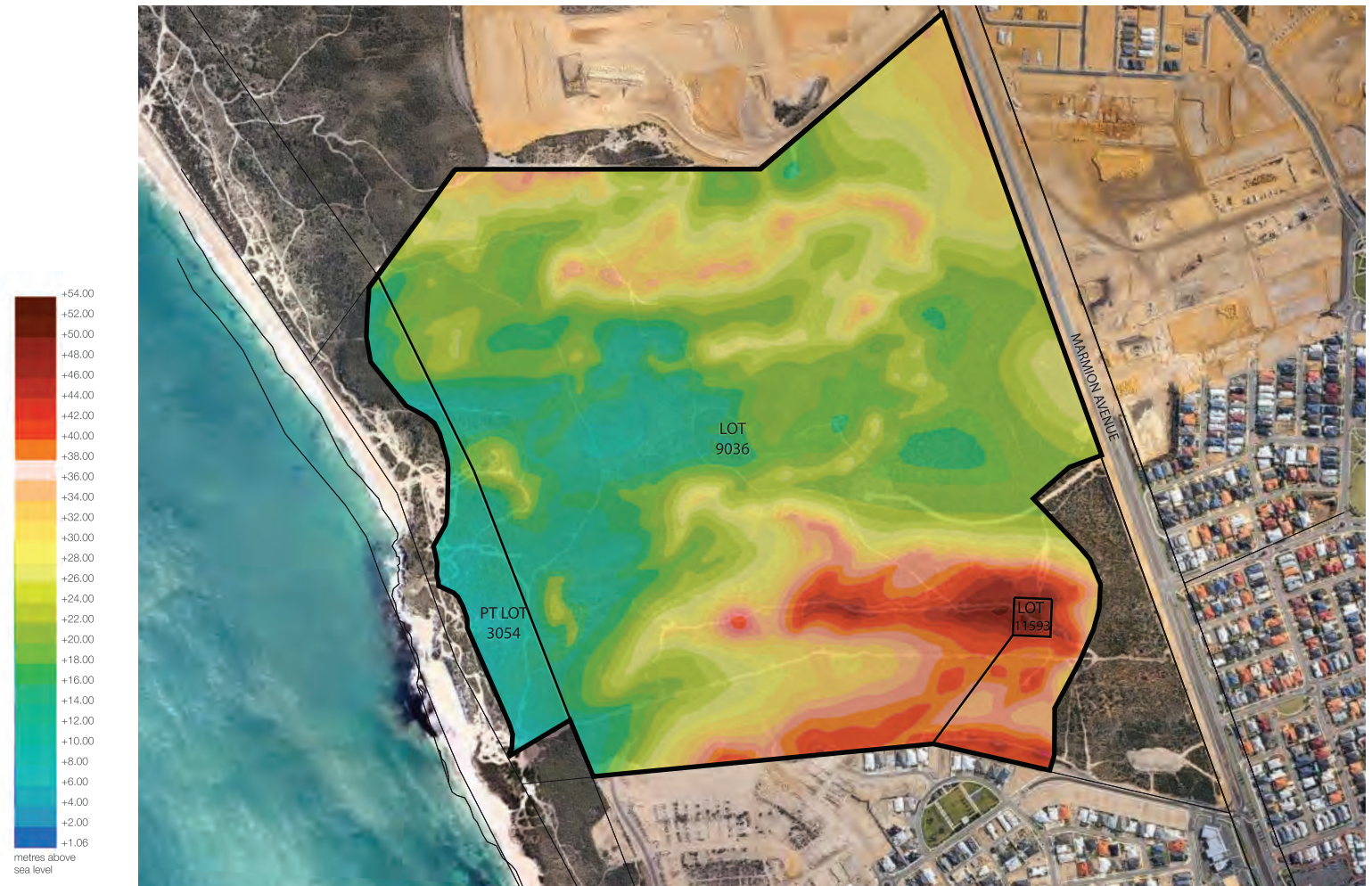
From its lowest point of 13 metres AHD towards the foreshore frontage, the land rises to 56 metres AHD at Trig Point in the south-east of the site.

The landform slopes abruptly, dominated by two east-west oriented parabolic dunal ridges of the Quindalup system and a distinct central valley which meets the coast at the designated regional swimming beach to create a natural amphitheatre.

Terminating the vistas at the western end of the central valley is a north facing headland that marks the boundary between the rocky shoreline to the south and the wider, sandy beach to the north.

The natural landform and elevations bring significant opportunity to capture coastal and inland views from various parts within the site.

The LSP responds by designing streets and public spaces to capture these views and by locating larger lots on the ridgelines to preserve this terrain.



TOPOGRAPHIC OVERLAY ON AERIAL PHOTO

3.4 VEGETATION AND FLORA

The Jindee site remains naturally vegetated apart from localised areas of clearing associated with tracks and off-road vehicle routes. The effect of off-road vehicle activity and associated uncontrolled recreation is particularly evident near the coastline where the historical movement of off-road vehicles to northern destinations has created significant damage to vegetation and dune landforms.

Regional scale mapping (1:250,000) indicate two vegetation complexes occur on the site; the Quindalup Complex and Cottesloe Complex – Central and South (Heddlie et al. 1980). Quindalup Complex is a coastal dune complex consisting mainly of the strand and foredune alliance, and the mobile and stable dune alliance. Local variations include low closed forest of the *Melaleuca lanceolata* – *Callitris preissii* and the closed scrub of *Acacia rostellifera*.

Vegetation of the Cottesloe Complex – Central and South is characterised by a closed heath on limestone areas with shrubs such as *Melaleuca huegelii*, *Acacia* species, *Grevillea thelemanniana* and *Trymalium ledifolium*.

The Vegetation and Flora Survey found the extent of Quindalup and Cottesloe – Central and South complexes protected in reserves satisfies the EPA's Position Statement No. 2 (EPA, 2000) which recommends retention of 30% of ecological community as the appropriate target.

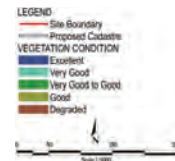
In accordance with the EPA's Guidance Statement No. 51 (EPA, 2004) a Level 2 Vegetation and Flora Survey within the adjacent Parks and Recreation reserve and southern portion of the site was undertaken in early October and late December 2004. Further investigation and verification of Declared Rare and Priority Flora and vegetation condition mapping for the site was also undertaken in September 2005 and December 2005 respectively. The detailed Vegetation and Flora Assessment report is appended to the Environmental Assessment Summary (refer Part 3 - Technical Reports).

Floristic community types identified on the site are not listed on the Department of Environment and Conservation's Threatened Ecological Communities Database or the Commonwealth's TEC list.

Furthermore, in its assessment of MRS Amendment 1152/41, the EPA advised it was satisfied there are no Declared Rare Flora or Threatened Ecological Communities on Lot 9036 and supported the MRS Amendment on the basis that the inland Parks and Recreation reserve would increase the number of vegetation assemblages and fauna habitats to be conserved and retained in the upland area surrounding Trig Point.

The only deferred environmental issue was the regional vegetation values attached to the land between the two Parks and Recreation reserves which was addressed to the EPA's satisfaction through the environmental provisions that were inserted into the Scheme through Scheme Amendment 115 and that are reflected in Part 1.

VEGETATION UNITS (EXTRACT FROM ENVIRONMENTAL ASSESSMENT SUMMARY, PART 3 - TECHNICAL REPORTS)



VEGETATION UNITS

MhSp	<i>Melaleuca huegelii</i> , <i>Spyridium globulosum</i> Closed Heath on shallow limestone.
MeSp	<i>Melaleuca carthylii</i> , <i>Acacia rostellifera</i> , <i>Spyridium globulosum</i> , <i>Cleora axillaris</i> , <i>Acacia saligna</i> Closed Tall Scrub Closed Heath in wetter and lower slopes.
AcLSg	<i>Acacia saligna</i> , <i>Spyridium globulosum</i> , <i>Cleora axillaris</i> Shrubland/Open Shrubland over <i>Pterogramma capitatum</i> , <i>Melaleuca systena</i> Open Low Heath over <i>Lomandra maritima</i> Sedgeland.
Ef	<i>Eucalyptus foecunda</i> Closed Shrub Mallee over <i>Anthoecaris illinoensis</i> Shrubland over * <i>Aragalis aeneus</i> Hemland.
XpAs	<i>Xanthorrhoea preissii</i> , <i>Spyridium globulosum</i> , <i>Acacia saligna</i> Tall Open Scrub/Open Heath over <i>Leucopogon propinquus</i> , <i>Melaleuca systena</i> Open Shrubland over <i>Lomandra maritima</i> , <i>Lapidosperma aquasatum</i> Open Sedgeland.
AbSg	<i>Allyogyne hakeifolia</i> , <i>Scanzonia globulifera</i> Closed Heath/Closed Low Heath over <i>Conostylis pauciflora</i> ssp. ? Very Open Hemland.
B	<i>Bankisia attenuata</i> , <i>B. menziesii</i> Low Woodland over <i>Dryandra sessilis</i> , <i>Macrozamia riedlei</i> Scattered Shrubs over <i>Rhagodia baccata</i> , <i>Hibbertia hypericoides</i> , <i>Leucopogon polymorphus</i> Low Open Shrubland.
D	<i>Bankisia attenuata</i> , <i>Bankisia menziesii</i> Low Woodland over * <i>Trichyandra divaricata</i> Closed Hemland.
D	<i>Dryandra sessilis</i> Closed, Tall Scrub over <i>Macrozamia riedlei</i> Scattered Shrubs over <i>Hibbertia hypericoides</i> , <i>Jackoona calycicola</i> Low Shrubland.
DsSg	<i>Dryandra sessilis</i> Shrubland to Tall Closed Scrub over <i>Xanthorrhoea preissii</i> Scattered Shrubs over <i>Jackoona calycicola</i> , <i>Hibbertia hypericoides</i> , * <i>Pterogramma capitatum</i> Low Open Shrubland over <i>Trachymene pilosa</i> , * <i>Aluagalis aeneus</i> , * <i>Arctostaphylos cuneata</i> Hemland.
Mixed	<i>Acacia truncata</i> , <i>A. coxii</i> , <i>Spyridium globulosum</i> , <i>Cleora axillaris</i> Closed Shrubland over <i>Lapidosperma glaucatum</i> Sedgeland/Open Sedgeland with lines of <i>Hardenbergia comptoniana</i> . Contains a variety of shrubs and herbaceous plants.
P	Physcane communities, consisting largely of <i>Dryandra sessilis</i> , <i>Acacia pulchella</i> Closed Heath/Closed Low Heath.
Sp	<i>Spyridium globulosum</i> Closed/Open Heath over * <i>Trichyandra divaricata</i> , <i>Trachymene pilosa</i> , <i>Conostylis pauciflora</i> ssp. ? Hemland.

3.5 FAUNA

In accordance with the EPA's Guidance Statement No. 51, a Level 2 Fauna Survey of the proposed Jindee LSP area was conducted by Bamford Consulting Ecologists in 2006 to identify fauna habitats, to record conspicuous species, and to review fauna species known to occur in the region based on the habitats present within the site. A complete copy of the Jindee Fauna Assessment report is appended to the Environmental Assessment Summary (refer Part 3 - Technical Reports).

The survey found that Jindee supports a rich vertebrate fauna that is most likely largely intact except for some locally extinct mammals. There are few species of high conservation significance because, especially among mammals, such species are extinct in the vicinity of Perth.

Species of conservation significance level 1 (recognised under legislation) that are like to rely on the site include the south west race of the Carpet Python (not recorded but likely to be present), Carnaby's Cockatoo (recorded) and the Graceful Sunmoth (known to the area).

Bamford Consulting Ecologists recommended that for conservation planning purposes, retaining examples of the important vegetation types in juxtaposition and with minimal edge to area ratio is likely to be the most beneficial approach and also the most appropriate for management.

It was also noted that the complex of vegetation types preserved in reservations within the south-west of the project area would provide for a wide range of fauna and it was recommended that ideally this area be linked to retained vegetation types in the south east of the site (Eucalyptus foecunda and Banksia woodland). The requirement for this link is consistent with the advice of the EPA in relation to MRS Amendment 1152/41.

Provisions subsequently introduced into the Scheme via Amendment 115 and the related provisions under Part 1 for the southern T2 Zone will secure this link by requiring the confinement of development and associated clearing to building envelopes and building zones (to be defined in LDPs) to maximise vegetation retention.

3.6 GEOLOGY AND GEOMORPHOLOGY

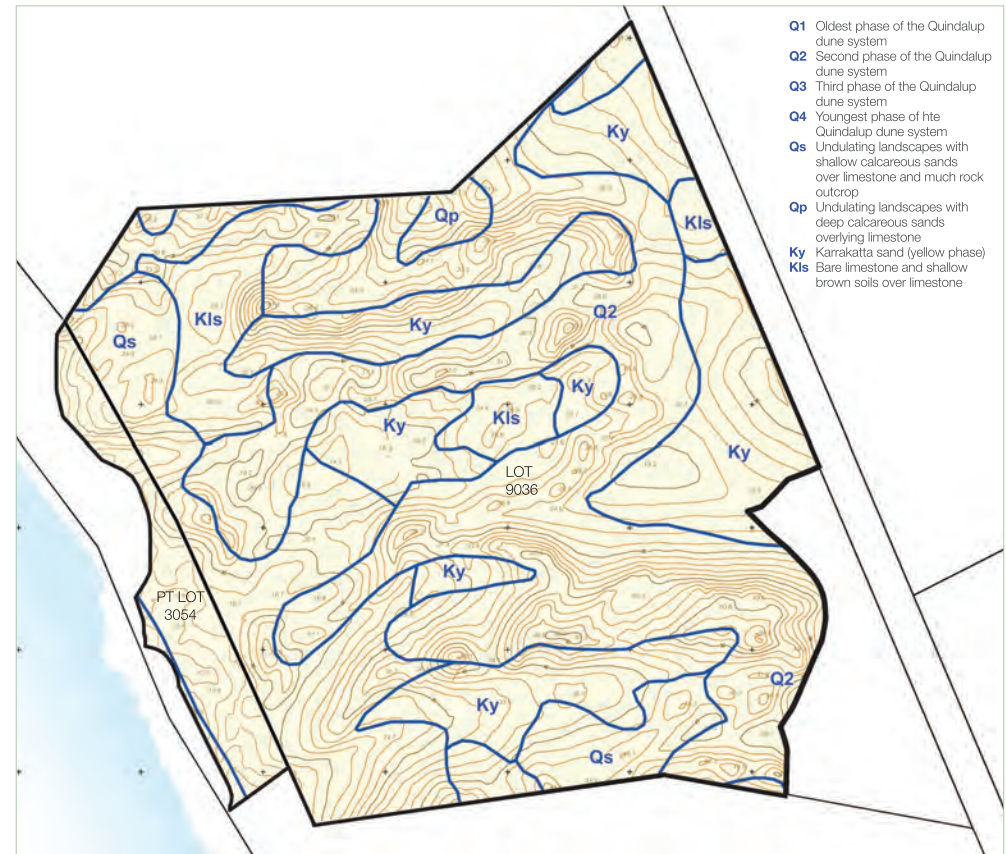
The site falls largely within the Quindalup landform unit, with the eastern fringe forming the Cottesloe unit. The Quindalup system typically accommodates dunal beach ridges composed of calcareous sands (comprising the Quindalup soils). The Cottesloe unit is typically a low hilly landscape with shallow sand over limestone (comprising the Karakatta soils).

The geology of this area can be described as a major coastal ridge of Pleistocene Tamala limestone and associated surface solids, variably overlain, but most prominently in the west by a series of younger Holocene sand dune deposits.

The characteristics of the soil types within the site vary depending on whether the soils are derived from the Quindalup or Spearwood dune systems, ranging from quartz sands with seashell fragments to deep calcareous sands, dark grey-brown, grey brown yellow Karakatta and pale brown sands, clay and humus and limestone and many rock outcrops.

The sandy soils with overlying limestone provide good geotechnical conditions for the construction of urban structures, including roads, houses and commercial buildings.

The permeability of the shallow sediments is highly suitable to stormwater management by infiltration.



GEOLOGY, GEOMORPHOLOGY AND TOPOGRAPHY

3.7 SURFACE HYDROLOGY AND GROUNDWATER

There are no naturally occurring surface water courses or water bodies within the site. As a result of the highly porous nature of the dune sands and underlying limestone sediments, the dominant surface hydrological process within the site is rainfall infiltration and groundwater recharge.

An unconfined aquifer has developed in the Tamala Limestone sediments. The watertable lies at around 1.5 metres AHD along the eastern boundary and at around 0.5 metres AHD at the western boundary. The direction of groundwater flow is west-south-westerly, towards the coast.

The watertable is located up to 50 metres below the ground surface; shallowest in the western sections of the site, and deepest below the ridges in the eastern sector of the site (Water and Rivers Commission, 1997).

Groundwater quality is generally fresh, particularly in the upper part of the aquifer, with salinity in the range 500 – 1,000mg/L TDS (Davidson, 1995). A wedge of saline water from the ocean may exist at the base of the aquifer very close to the coast.

The eastern edge of the site lies within the Perth Underground Water Pollution Control Area and is a Priority 3 public water supply groundwater catchment area (Water and Rivers Commission, 1997). Urban development is considered 'Compatible' within Priority 3 areas provided it is connected to reticulated sewerage.

A Water Corporation public water supply bore is located within Lot 9036 near Marmion Avenue. Land within a 300 metre radius of a public water supply bore within a Priority 3 area is designated a Wellhead Protection Zone. Decision-making authorities are required to restrict or exclude potentially polluting land uses within these zones. The Jindee LSP does not propose to introduce any polluting uses within the Wellhead Protection Zone.

RPS has prepared a Local Water Management Strategy for Jindee that is included in Part 3 – Technical Reports.

3.8 INDIGENOUS HERITAGE

An ethnographic survey of indigenous heritage values within and near to Jindee was undertaken by Ethnoscience in collaboration with key representatives of local indigenous communities. The Summary Report, prepared by Ethnoscience, is provided in the Part 3 Technical Reports.

The LSP design responds by accommodating the retention and protection of identified sites within local and regional reservations.

The proponent is fully aware of and will meet their obligations under Section 18 of the Aboriginal Heritage Act, 1972.



INDIGENOUS HERITAGE - DIA SITES

4.1 PROJECT VISION + DESIGN PRINCIPLES

The controls and requirements set out in Part 1 of the LSP are specific to achieving delivery of the Jindee project vision.

The vision is to create a community lifestyle and coastal village premised on close interaction with the surrounding beach and natural landscape. It will be mixed use and provide a diversity of housing types and higher densities than elsewhere in the district.

Jindee will be a focus for community life and have an intricately crafted structure of well connected central places. Priority will be given to pedestrians and cyclists.

Jindee will have a distinctive sense of place, firmly grounded in its natural ecology and designed according to the timeless principles of urbanism.

The design of buildings, streets, and public spaces will tell a distinctive story about the Jindee coastal community and provide a pathway through which the people of Jindee will understand their place within both an urban environment and nature.

The design will allow the organic evolution of a community which will ultimately achieve the ideal balance between human and natural habitats.

Jindee is designed according to the time-tested principles of urbanism: walkable neighbourhoods, a connected movement network, a mix of buildings and uses, quality public spaces, and celebrated civic buildings and structures. These elements will combine to create a human-scale, walkable community that is designed to integrate with adjacent neighbourhoods and the wider city environment.

The following principles have guided the LSP project design and will support realisation of the Jindee project vision.



Walkable Neighbourhoods

The neighbourhood unit is compact so that the majority of the population is within a 5 minute walk of a local centre (400m). By bringing the activities of daily life within walking distance, all people gain independence of movement, particularly the young and elderly.

Connected Network

Thoroughfares are designed for pedestrians, cyclists and vehicles and are laid out in a network so there are alternate routes to most destinations. Dispersal of traffic across the network permits narrower streets and slower traffic, with most streets having on-street parking, trees, footpaths and buildings. This creates an environment where people feel comfortable walking and cycling which facilitates neighbourliness and passive surveillance.

Mix of Buildings and Uses

There is a mixture of building types including: detached villas, houses and cottages, terraces, apartment houses, loft buildings, flex buildings, loft houses, apartment buildings, commercial buildings and ancillary buildings and units. These buildings are diverse in size and function but compatible within their context. The wide range of housing types and employment opportunities attracts a broad demographic cross-section facilitating the creation of an authentic community.

Quality Civic Space

Civic space is provided in the form of specialised areas including squares, playgrounds, greens, parks, commons and plazas. Each type is defined by its size, landscaping and the adjoining built form. To be truly public, the space must be overlooked by buildings and fronted by thoroughfares. To be fully functional, spaces are located adjacent to main pedestrian routes, leading to destination points throughout the neighbourhood.

Civic Buildings & Structures

Civic buildings, such as meeting halls, churches, gazebos and galleries may be located within public spaces or at the termination of important vistas. Positioned at key locations these structures function as prominent landmarks.

4.2 DESIGN OUTCOMES

The character of the interface of the Jindee coastal village and the beach front is based on many of the design elements seen in traditional coastal settlements such as Fremantle, Rottneest and Cottesloe. The built form of the village centre is designed to have a dense and active relationship with the beachfront. This close interaction is critical to ensure the viability of tourist, commercial and recreation uses.

The design maintains ample public access to the beachfront. An ocean drive follows the contours of the land and regional beach car parking is located within the existing Urban zoned land, and integrated into the village design, mostly on-street or sleeved behind buildings within Interior dots, rather than within the foreshore reserve. This approach enables land overlooking the beach and ocean to be used for purposeful public uses consistent with community expectations for a coastal village.

The inclusion of regional beach car parking into the village design is a fundamental aspect of the Jindee development and a significant departure from the usual planning response which is to locate extensive car parking areas within foreshore reserves. While this approach may be suitable for areas where the beach is physically remote from urban development, it is not ideal for the development of a beach node or coastal village. The regional beach parking will service the portion of regional beach fronting Jindee, recognising that the regional beach extends further north adjacent to Lot 9, which will be developed by others.

Higher intensity uses are allocated to the coastal village so as to activate the centre, foster interaction with the beachfront and maximise access to this highly desirable location. Mixed-Use Buildings will house Apartments,

Offices, cafes, specialty shops, restaurants and other tourist facilities. The surrounding public realm will be highly detailed and well designed including a pedestrian Promenade extending along the western boundary of the site, incorporating seating and civic structures that are located to optimise views out to the ocean and provide resting and meeting places for the community.

Housing types will respond to its location within the Transect. The housing provided will be the most diverse of any greenfields project undertaken within Australia. This will encourage a wide representation of the community from families, single people, couples to retirees.

A variety of house sizes will cater for different income levels. The central Avenue for example will be flanked on both sides by denser housing, typically including Terrace Houses and Apartments, whereas single-family homes will line the Streets that meander through the undulating terrain. Many houses will be serviced by Lanes so as to remove garages and driveways from street Frontages, creating a more attractive streetscape and a safer experience for pedestrians.

The design outcomes are expressed in the master plan design and detailed further through the Code requirements set out in Part 1, including a more detailed explanation on the following pages.



PEDESTRIAN PATHS, T2



PEDESTRIAN PATH CONNECTION TO THE COAST, T2



SINGLE FAMILY HOMES, T3



TERRACE HOUSES, T4



THE VILLAGE CENTRE, T5

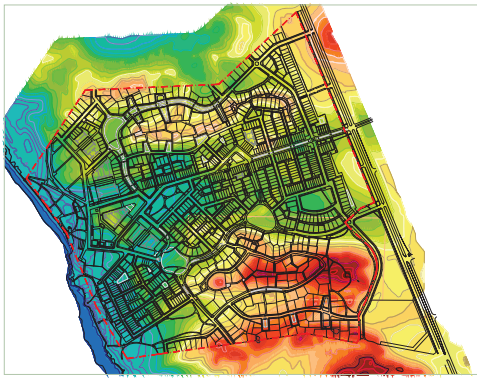


THE VILLAGE CENTRE, T5

(Source: Studio LFA)



DESIGN OUTCOMES



Responding to the Site

Jindee is characterised by undulating natural terrain comprising coastal dunes and valleys, with limestone ridges typical of the natural landscape of the north-west corridor.

The design is predicated on retaining as much of the existing terrain as possible. Larger lots within the T2 and T3 zones will be positioned to accommodate the preservation of the east-west oriented ridgelines and associated vegetation where possible. This will ensure a balance between the natural and built environments, and capitalised views to the ocean and valley areas. The more intensely developed T4 and T5 zones will be concentrated in the lower lying and less undulating terrain.

Many of the thoroughfare alignments will also respond to the terrain by following existing contours.

The retention of these landform elements and vegetation, and the preservation of coastal and inland views, will make a significant contribution to the sense of place that will become Jindee.



Neighbourhood Structure

The Jindee design proposes a walkable neighbourhood structure based on a five minute walking radius (400m). Walkability will extend along the elongated pedsheds associated with the linear nature of coastal foreshore mixed-use development and the Marmion Avenue to development.

The project will ultimately yield approximately 1,300 dwellings and 3,000 square metres of neighbourhood retail, with potential for additional floorspace for specialty shops targeting tourist and visitor trade.

The neighbourhood structure and interconnected movement network will encourage a well connected community where the basic needs of daily life are within walking distance of most residents, giving people (particularly those who cannot or choose not to drive) independence of movement and is comprised of two pedsheds based on the average 400 metre radius (from centre to edge), which represents the 5-minute journey most people are prepared to walk before opting to drive.

The densest T4 - T6 zones are captured within the two pedsheds. The village centre forms the centre of the western pedshed whilst a neighbourhood centre forms the focus of the eastern pedshed. A centrally located civic space area links the two pedsheds. The majority of residents to be within walking distance of the coastal village centre or a civic square.



Block Structure

The blocks at Jindee are configured and sized to suit the intended character of the various Transect Zones. There are three basic block types:

Larger blocks within the T2 and T3 zones, accommodating generous lot sizes and thoroughfares that respond closely to the natural terrain;

Regular, rectilinear blocks, served by lanes, within the T4 zones that incorporate sufficient flexibility to accommodate a diversity of housing types and density, and provide a high level of permeability for maximum pedestrian accessibility; and

Larger blocks within the T5 and T6 zones that accommodate mid-block parking and larger format mixed-use buildings that are accessed via alleys and lanes.



Vehicular Network

The urban structure of Jindee has a highly permeable and legible movement network that is designed to facilitate a connected community and the dispersal of traffic volumes among many streets. The network also ensures connectivity with the broader regional transport system.

The network of streets helps to reduce greenhouse gas emissions, by reducing trip length, promoting alternative transport modes to the automobile, and by dispersing traffic to avoid congestion. Jindee has been designed to be 'transit-ready'.

The network is comprised of a range of Thoroughfare types that respond to two primary considerations:

- Character: the physical qualities of Thoroughfares to support a variety of building types and pedestrian activity ranging from natural to urban consistent with the Transect.
- Capacity: the number of vehicles that can move safely along a thoroughfare within given periods. Traffic flows are controlled by the number of vehicle lanes and lane width, as well as Kerb Radii.

Thoroughfares are accordingly designed to accommodate the car, whilst respecting the pedestrian and cyclist and spatial form of public areas. The design and scale of thoroughfares, including landscape treatments, respond proportionately to, and complement the adjacent built form.

DESIGN OUTCOMES



Civic Space & Civic Buildings

The network of civic spaces includes regional reserves (that reflect existing MRS reserves), vested local public open space reserves and incidental areas such as small pocket parks and landscaped areas within thoroughfare reserves. The network forms part of the total public realm of Jindee that, importantly, also encompasses the thoroughfare network.

Each neighbourhood includes a range of civic spaces that vary in scale and form and are located within walking distance of all residents and workplaces. This will create possibilities for a diversity of recreational and public activities that are compatible with community needs, including opportunities for healthy levels of activity, connectedness with nature, and social interaction.

A variety of time-tested civic space typologies are provided including parks, greens, squares, plazas, playgrounds, closes and commons. These typologies are organised to complement Transect Zones and contribute to the transitioning of the environment from a natural to highly urbanised state. All civic spaces are overlooked by buildings and most are fronted by thoroughfares to maximise security and accessibility. The spaces are also carefully configured to create defining terminated vistas for many of the thoroughfares.

The design of civic buildings are intentionally not coded in the Part 1 provisions but are to be negotiated between the Town Architects' Office, the CoW, and where appropriate, with existing members of the community.



Public Realm

The public realm encompasses all civic spaces and thoroughfares. The detailed design of the thoroughfares will profoundly affect the character of Jindee and, for this reason, these elements are closely regulated in the Thoroughfare Standards of the Design Code.

Unlike conventional suburban development, the thoroughfare network is to be more than a conduit for the passage of motor vehicles. It will comprise a great diversity of spaces: some that allow for the relative unimpeded flow of traffic; some that allow the requirements for pedestrians and cyclists over cars; and others that facilitate the equitable movement of motorists, cyclists and pedestrians.

Each thoroughfare type within the network supports a variety of building types, building frontages, street activity and landscaping, and is designed to complement the Transect through which it traverses. This will create cohesive memorable places of differing character throughout Jindee.



Pedestrian and Cycle Network

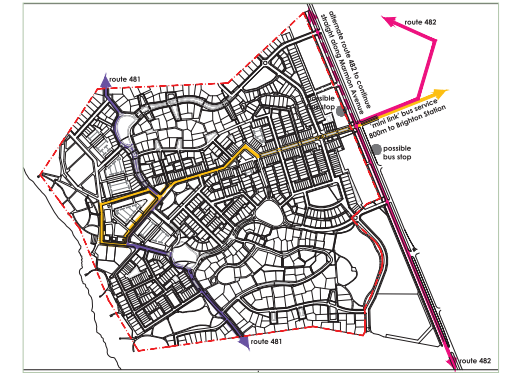
A primary goal of the Jindee design is to create a highly walkable community that provides a meaningful and safe experience for pedestrians and cyclists.

The scale of the neighbourhood unit and the highly permeable network of thoroughfares, lanes and civic spaces specifically cater for, and encourage walking and cycling.

The Jindee design also features a comprehensive network of pathways and complementary routes for pedestrians and cyclists. Pedestrian footpaths will be provided on most streets and dedicated pedestrian ways will provide connections across civic spaces and between street blocks and buildings.

Cyclists will be catered for with extensive cycle routes along shared paths and on-street within traffic lanes rather than by separately designed on-road cycle lanes. This approach is generally safer for the cyclist by maintaining a narrower pavement width that encourages slower traffic speeds and avoiding the alternative of vehicles traversing dedicated on-street lanes when accessing parking bays and driveways.

Jindee is also designed to connect with the wider, regional network of paths.



Public Transport

Jindee is designed as a 'transit-ready' community. The neighbourhood structure, density of development and thoroughfare network is planned to support a future bus service, which is within walking distance of most residents and connected to the wider metropolitan transit system. Bus stops will be located and designed for optimal accessibility, safety and public transport service coverage for the community.

A bus route extending north from Clarkson through Jindee to Alkimos is planned. Another bus route provides a service along Marmion Avenue extending from Clarkson, north to Alkimos Station, via the future Brighton Station.

A nominal future 'mini-link' bus service from Jindee Regional Beach to Brighton Station may also be feasible in the future. However, it is not part of Transperth's current district bus route planning and would be dependent on future passenger demand and funding availability.

5.1 INTRODUCTION

The Western Australian planning policy framework aims to integrate good urban planning outcomes with economic development objectives by requiring that minimum employment self-sufficiency (ESS) targets be attained to support local residential populations. 'Employment self-sufficiency' is defined as the number of jobs within a specified area as a proportion of the total labour-force of that area. Liveable Neighbourhoods (WAPC, 2009), recommends an ESS of 60% as a good starting point for district structure plans where no alternative target has been set. Directions 2031 recommends a 60% ESS target for the north-west subregion of Perth, of which Jindee forms part.

At a local level, the CoW provides further guidance in the design of new communities through its Employment Policy. This policy is designed to provide a framework to encourage and retain local employment within the City and within the north-west subregion. In addition to setting targets for ESS, the policy also provides further guidance for employment self containment (ESC); a measure used once a community is established which aims to encourage local jobs to be taken up by the local population. ESC can be defined as the number of jobs occupied by the local resident workforce of a given area relative to the number of jobs needed.

Whilst setting an ESS target provides a baseline for economic sustainability, the target is not intended to be applied uniformly across the north-west subregion. This is because the economic roles that neighbourhoods and activity centres perform within the region and their capacity to generate employment will be invariably commensurate with their place within the broader structure and hierarchy of centres.

Within the north-west subregion, the Joondalup and St Andrews strategic centres will have the most significant roles in generating employment opportunities for the region's workforce. A consequence of the concentration of employment within these centres will be to balance out the employment levels that can realistically be attained within the north west subregion's residential neighbourhoods, so as to overall meet the 60% ESS target.

The purpose of this section is to describe the role that Jindee will perform in employment creation and economic development within the context of the north-west subregion.

5.2 TYPES OF EMPLOYMENT

In considering the capacity of different developments to deliver local job creation, it is necessary to understand the distinction between different types of employment.

The North West Corridor Document Review (Pracsys, 2008) commissioned by the Department for Planning and Infrastructure makes the following distinction between 'population driven employment' and 'knowledge/producer service employment':

Population driven employment: Refers to employment created from those businesses / industries from which the local resident population purchases retail, consumer and producer services. Any growth in 'population driven employment' is directly proportionate to population growth and is dependent upon the expenditure of end user groups including residents, workers and visitors.

Knowledge / Producer service employment: Refers to employment in those businesses that do not rely on a local resident population base, but where business to business transactions have a higher monetary value. Those employed in knowledge/producer service oriented occupations are usually highly skilled and work in existing agglomerations of businesses where there is specific infrastructure (i.e. university, hospital, airport, port) or in places with high quality business environments and cultural / social networks (i.e. Perth CBD, Subiaco, West Perth).

Regions that rely on population driven employment typically achieve employment self-sufficiency within the range of 35% - 50%; well below the 60% target (Pracsys, 2008).

Given the size of Jindee (112 hectares / minimum 1,336 dwellings) and its neighbourhood centre function within the regional hierarchy of activity centres, business investment in Jindee will be mostly dependent on a local resident and visitor customer base.

Accordingly, employment will predominantly fall within the first of the above categories and be population driven. It is likely that most 'knowledge / producer service employment' will gravitate to the larger existing and planned activity centres of Yanchep, Joondalup, Alkimos and Brighton, where there is or will be strategic business investment, a more sophisticated level of infrastructure, extensive social and cultural networks, and clustering of activities. This is consistent with the structure of centres articulated in the Butler-Jindalee District Structure Plan (DSP) and Directions 2031 (refer section 1.3).

5.3 REGIONAL CONTEXT: CHALLENGES FOR ECONOMIC DEVELOPMENT WITHIN NW CORRIDOR

The availability of a sufficient number and range of jobs within the north-west sub-region of metropolitan Perth is necessary to support the economic, social and environmental sustainability of its communities, including Jindee.

The north-west subregion however performs poorly in its attained level of ESS, which currently stands at approximately 41% (Directions 2031, WAPC, 2010). This is well below the self-sufficiency target of 60% set by Directions 2031 for the subregion. As a result of this imbalance, two out of three workers residing in the north-west corridor leave the corridor to commute to work (Employment Policy, CoW, 2006). Directions 2031 estimates that achieving this target will involve the creation of an additional 131,000 to 157,000 jobs over the next 25 years.

There are major challenges associated with meeting this target. There is no strategic physical infrastructure in the region, such as an airport or port, and the majority of existing available employment opportunities are in the construction, retail and service sectors, which are jobs driven by the local residential population.

To meet the challenge of 60% employment self-sufficiency for the north-west subregion, Directions 2031 recommends a coordinated approach, involving the DoP partnering with local governments in the preparation of regional economic development and employment strategies.

Directions 2031 also recognises the need to target knowledge / producer service employment through strategic industry and infrastructure and the agglomeration of business investment and associated activity in high amenity centres. Most employment growth will accordingly be concentrated in the north-west subregion's major activity centres and industrial areas.

The WAPC's Activity Centres Policy establishes a hierarchical framework for the north-west sub-region's activity centres. Joondalup is the nearest existing 'Strategic Metropolitan Centre' to Jindee, located approximately 14 kilometres to the south-east. Planned major centres, include the Yanchep 'Strategic Metropolitan Centre', the Alkimos 'Secondary Centre' to the north, and the Brighton 'District Centre' immediately to the east. The nearest industrial areas to Jindee, as identified in the WAPC's draft Industrial Land Strategy 2009 Perth and Peel, are Neerabup, South Pinjar and Alkimos.

Whilst the level of local employment opportunities created at Jindee will be proportionate to the community's scale and function within the context of the broader subregion, implementation of a transect-based design approach and the possibilities this creates for a compact urban form and mixed use activity will deliver a depth of local employment beyond that typically found within a conventional suburban development. This is demonstrated in further detail following.



5.4 JINDEE CONTEXT: CONTRIBUTION TO SUB-REGIONAL EMPLOYMENT TARGETS

Jindee Employment Creation

A goal of the Jindee project is to connect the residents of Jindee with employment opportunities in the north-west subregion. This will reduce the need for long trips to work and peak time travel, in turn alleviating pressure on the metropolitan transport system. The benefits are many including less carbon emissions and reduced household costs in both travel time and expenditure.

The Butler-Jindalee DSP (Chappell and Lambert, 2006) states the Employment Assessment prepared by Prosperous Places identifies employment floorspace requirements based on 17,000 households (which extends beyond the DSP area).

The assessment found that achieving ESS in excess of 60% requires 12,400 jobs in the subregion. The subregion structure plan developed at the Brighton Charrette, however, aims for 17,000 jobs (over 80% employment self-sufficiency).

The DSP states Jindee needs to contribute 4% of the total employment floorspace to achieve this figure. This is to include 1,200m² NLA of office/small business floorspace (2,750m² net site area) within the Jindee beach node and 1,000m² NLA of small scale commercial/light industrial use floorspace (2,600m² site area).

Projected commercial floorspace yields for Jindee within the T4 – T6 zones, encompassing the coastal village, Marmion Avenue precinct and central node, far exceed these figures (refer Table 1).

The opportunities for mixed use development at Jindee that will be created through the application of the transect-based code approach and diverse built form will create opportunities for a greater spread of employment generating uses, ranging from cottage industry, bed and breakfast accommodation and home based businesses in the lower T2 and T3 Zones through to retailing, hotel accommodation and larger commercial offices in the higher T4 to T6 Zones.

Whilst business activity is able to occur to varying

degrees within each T-Zone, Table 1 identifies the main employment generating uses projected for Jindee. These figures do not factor in the additional jobs that will be created during the construction phase of the project.

TABLE 1: PROJECTED EMPLOYMENT GENERATION AT JINDEE

	Projected Floorspace / Capacity by Type	Job Generation Capacity
Coastal Village Centre	4,000m ² shop / retail 5,000m ² mixed commercial (office / business) Hotel (100 rooms)	Retail: 130 jobs ² Mixed commercial: 200 jobs ² Hotel: 200 jobs ³
Marmion Avenue T6 Precinct	18,000m ² service commercial 1,750m ² mixed commercial (office / business)	Service commercial: 270 jobs ² Mixed commercial: 60 jobs ²
Central Node	1000m ² mixed commercial (office / business)	General commercial/retail: 40 ² jobs
Home Based Business	8% of Jindee workforce	139 jobs
Primary School	Assumes 500 students	40 jobs ⁴
Total		1,079 jobs

Footnotes:

1. Shop / retail includes land use activities included in "Planning Land-use Category 5: Shop / Retail" as defined in the WAPC Perth Land Use and Employment Survey. The maximum total permissible area of Category 5: Shop / Retail floorspace is capped at 3,000m² NLA and may only exceed this figure subject to satisfying the criteria of clause 2.0 of Schedule 16 of the Scheme to the satisfaction of the CoW and the WAPC. The 4,000m² NLA of Category 5 floorspace referred to in Table 1 is not as approved by the CoW, but is included as a realistic figure for the purpose of projecting job creation figures.
2. Employment numbers based on employee to floorspace figures used for employment projections at Two Rocks and Ellenbrook Town Centres.
3. Calculation based on World Tourist Organisation Standard (2 hotel employees per room)
4. Calculation based on ABS 2006 Survey (Average 1 teacher/16 students plus support staff).

Directions 2031 indicates an average 1.3 jobs is required to support each household. The LSP requires that Jindee achieve a minimum of 1,336 dwellings, equating to a workforce population of 1,737. This size workforce necessitates the creation of a further 1,042 jobs within the north-west subregion for the sub-region is to meet its 60% employment self-sufficiency target.

Jindee has capacity to deliver 1,079 jobs internally, which equates to 62% self-sufficiency. This is a solid contribution for Jindee, given its scale and function within the hierarchy of activity centres of the north-west subregion.

A description of the main employment generating area and uses planned for Jindee follows.

Coastal Village Centre

The coastal village is assigned a baseline 3,000m² NLA of shop-retail floorspace Planning Land Use Category 5 (PLUC) in the CoW's Scheme and Centre Planning Policy.

The Scheme however allows this cap to be exceeded where the CoW and the WAPC are satisfied that the additional retail activities constitute tourist/visitor related retailing (meaning retailing activities that customarily rely wholly or partly on the trade of visitors originating outside the LSP area) and a retail needs assessment study has been undertaken that demonstrates sufficient demand for a larger retail floorspace allocation.

In keeping with the intent of the Scheme and for the purpose of forecasting employment generation, Table 1 projects 4,000m² of shop-retail floorspace within the coastal village.

The baseline 3,000m² of floorspace is expected to consist of a small to medium sized supermarket and the clustering of associated convenience shops focused on servicing the local residential trade catchment (such as a hairdressers, newsagency, florist and bakery).

The additional 1,000m² of floorspace (above the baseline 3,000m² cap), which would be contingent on a retail needs assessment, would consist of tourist/visitor oriented shops that rely on a wider retail catchment for business viability, similar to the types of businesses found along the Cottesloe beachfront or at Hillarys Marina (eateries, surf shop, gift shop and the like).

Designed with defining place making qualities and strong connections to the regional beach, the coastal village will leverage from the activity generated by the beach and the distinctive built and natural character to draw additional tourist and visitor trade.

Marmion Avenue

Intensive development and business activity within the T6 zone fronting the western side of Marmion Avenue will capitalise on the accessibility of this area by road and rail (within walkable catchment of Brighton Station) and the land's exposure to the growing number of vehicles using Marmion Avenue.

Furthermore, commercial development is proposed within the Butler District Centre on the eastern side of Marmion Avenue. The synergies of the Jindee T6 land with interfacing development to the east of Marmion Avenue and with the Butler District Centre generally, will lead to an agglomeration of commercial activity that further raises this area's business profile to fully capitalise on available market opportunities.

The T6 zone is projected to yield 19,750 m² of commercial floorspace, giving capacity to generate approximately 330 jobs.

Central Node

The central node includes a prominent public space framed by buildings incorporating shopfront treatments. This area forms a natural central point of focus for the Jindee community.

While business activity may not occupy these buildings or be of a minor nature initially, the form of the buildings is sufficiently flexible to allow their transition over time from residential to employment generating activities.

This area is expected to ultimately yield 1,000m² of commercial floorspace, which would have capacity to generate 40 jobs.

Public Use Sites

The philosophy of Jindee is to give prominence and priority to a quality public realm. This includes the creation of a wide range of public spaces that are well suited for civic buildings. This includes a public primary school within the south eastern corner of the development and opportunities for other community uses throughout the project, including child care and community meeting spaces.

It is projected the primary school alone could generate 40 jobs. Other community uses may also generate employment, however because these uses are not confirmed at this stage, they are not factored into the job creation projections.

Home Based Employment

At the 2006 Australian Bureau of Statistics Census, approximately 4% of the total workforce of the Perth Major Statistical Region was recorded as working from home.

The ABS statistics suggest home based employment is higher closer to the CBD and in higher amenity coastal locations like Jindee.

The ABS Locations of Work Survey conducted across Australia during 2008 found that 24% of the workforce worked at least some hours at home in their main or second job, of which 32% worked only or mainly at home (7.6% of all employed people).

Jindee will become a place that is ideally suited to working from home. Building types and land use regulation at Jindee will be sufficiently flexible to accommodate home business and working opportunities in the T2 through to the T6 zones.

This includes opportunities for businesses to locate on the same lot as residences so as to minimise location costs for start-up and smaller businesses. High speed broadband internet connections will also be available to all buildings to support home based employment.

Furthermore, Jindee will create a level of urban amenity that will be highly attractive to home-based business, including the 'main-street' environment of the coastal village that will create opportunity for face-to-face interaction and the amenity of its coastal location.

For the purpose of estimating the contribution that home-based employment will bring to local employment generation, a conservative figure of 8% of the total workforce has been applied. Based on a workforce of 1,737 jobs, this equates to 139 jobs in home based employment.

5.5 LOCAL ECONOMIC DRIVERS

Jindee will feature the following economic drivers to catalyse local job creation.

Access

Accessibility is a key driver for business location decisions. Jindee is highly accessible to the wider metropolitan movement network, via rail, cycleway and road. Exposure to Marmion Avenue and synergies with the Brighton District Centre will create significant business opportunities, particularly within the T6 Zone.

Urban Amenity The built form, public spaces and natural beauty of Jindee will create a vibrant, mixed use environment and distinctive sense of place that is highly attractive to local business investment and employment.

Housing Diversity

The variety housing and quality of design will set Jindee apart from other development projects in the north-west subregion. This will encourage a wider range of household income levels, expenditure capacity and skill-sets to support a greater diversity of local businesses and higher end knowledge employment at St Andrews and Joondalup.

Housing density at Jindee is designed to achieve a minimum density of 26 dwellings per site hectare across the LSP area. However, this is the minimum density requirement and ultimate dwelling numbers are expected to exceed this level. Higher residential densities will equate to increased available local expenditure and therefore floorspace productivity and demand for local business.

Spatially efficient multi-storey buildings within the T5 and T6 zones will also encourage intensity and clustering of activity conducive to business investment. Furthermore these densities support regular public transport services for business benefit.

Main Street Mixed Use Business Environment. The coastal village will incorporate a 'main-street' with street-front retail and other commercial activity. Compared with enclosed 'big-box' retailing, these businesses will be less tightly regulated allowing more competitive rents and flexible trading hours.

Furthermore, a main street environment will accommodate mixed use buildings, allowing a greater density of mutually supportive residents and workers and vibrant business environment.

Research by Patrick Partners in Perth and Auckland found that main street retail centres supported up to five times the number of non-retail jobs compared with enclosed retail centres or hybrid centres (Liveable Neighbourhoods, WAPC, 2009)

Car Parking Incentives

Reduced car parking standards will apply at Jindee to incentivise local business investment. This includes shared car parking schemes within the coastal village, central node and Marmion Avenue T6 zone, and the ability for main street businesses to be exempt from on-site car parking requirements.

Business Incubation

EDC will establish business incubation services to support the establishment of new businesses at Jindee. Also the flexibility inherent in the built form will create opportunities to support early stage businesses and allow businesses to remain in Jindee throughout the business lifecycle.

Contracting of Local Businesses/Workforce EDC will give priority to the employment of local contractors where practicable for project works.

5.6 TRANSITIONING PROVISIONS

Older inner-city and middle ring localities of the Perth metropolitan region show a greater diversity of economic activity than the newer outlying growth areas. This is because the economic and employment profile of an area typically change over time.

Initially the focus of a new community is on consumer goods, including convenience goods, bulky goods (associated with setting up house) trade services (linked to construction industry). After the residential population plateaus, demand for professional services (health, financial, legal, entertainment) will rise and eventually the focus can shift to producer service investment.

Jindee's urban structure and built form is geared to accommodate this transitioning of economic activity over time and to cater for the full business cycle from start up home-based businesses through to larger commercial enterprises.

The Control Plan for instance mandates commercial frontages (shopfronts, arcades) in prescribed locations to accommodate future commercial use, recognising that it may not be feasible to conduct businesses from these locations in the initial years. Similarly, the T4 Zone is designed as a transitional zone to allow its evolution over time to the T5 Zone which will be characterised by a greater concentration of business activity.

Whilst T6 buildings fronting Marmion Avenue may initially accommodate bulky good outlets, the built form controls will discourage the typical and less flexible concrete tilt-up construction and their associated larger floor plates. Instead, the controls will promote adaptable building typologies that can accommodate a range of commercial uses over time.

5.7 SUMMARY

The analysis has found that whilst an ESS of 60% applies to the north-west subregion, it is not intended or realistic for this figure to be applied uniformly to all communities within the north west subregion. This recognises the varying capacity of centres within the hierarchical structure of activity centres to generate job creation. It also recognises that the higher order knowledge / producer service oriented employment that is required to meet this target will be drawn to the larger centres.

Within the context of the north-west subregion, St Andrews, Joondalup, Alkimos and, to a lesser extent Brighton, will have the greatest strategic roles in generating knowledge/producer service employment. These centres have the capacity to create the conditions necessary for high end job creation that smaller neighbourhood level communities like Jindee clearly cannot. This includes higher level infrastructure, regional access, clustering of businesses and social and cultural activities.

To realise the full potential of these centres, Directions 2031 indicates an economic development strategy will be developed by the DoP in conjunction with local governments. The purpose of this plan will be to introduce a coordinated approach, recognising those centres that have the greatest strategic advantage for job creation and responding to the drivers that affect business investment decisions (i.e. clustering, infrastructure, supply chain considerations).

Jindee is limited by scale and function in its ability to catalyse a substantial level of knowledge / producer service oriented employment as recognised in the DSP. Notwithstanding this, the strategic advantages of Jindee's location, context, design and placemaking qualities will be fully exploited for maximum economic development and employment creation, while respecting the endorsed subregional structure of activity centres.

This will lead to a level of local job creation and local residential workforce that complements the subregional structure of activity centres and that far exceeds that typically found in an equivalent greenfield residential project on the urban fringe.

6.1 INTRODUCTION

The Jindee coastal community, comprising at least 1,305 dwellings, will be the scale of a typical neighbourhood unit. In addition Jindee will accommodate a significant local workforce and be a destination for tourists and day visitors.

The facilities and services available within Jindee will therefore correspond with this scale of development, with higher order facilities and services locating within the Brighton District Centre to the immediate east and further north at Alkimos and St Andrews.

As the first residents will not move into Jindee until toward the end of 2014, there is currently limited available information about the characteristics, needs and aspirations of this future population.

The purpose of this chapter is therefore to provide a preliminary outlook on the projected characteristics of the Jindee community and the types of needs they are likely to have. It also considers initiatives that may be required for meeting these needs.

6.2 CITY OF WANNEROO POPULATION FORECASTS

The CoW is one of Perth's largest outer metropolitan growth areas, experiencing a particularly rapid rate of population growth which is expected to double to approximately 300,000 by 2031 (ABS Regional Population Growth, Australia, 2009-2010).

The northern region of the City, where Jindee is situated, is the focus of much of this dynamic growth. Catering for this growth with well planned, quality infrastructure and services is a major challenge for the City and other community providers. It is predicted the main household types within the CoW in 2021 will be:

- couples with dependents - 39% of all household types;
- couples without dependents - 31% of all household types;
- lone person households - 29% of all household types. (Forecast ID®, 2010).

Whilst families remain the main household types, there will be clearly a need for housing that responds to smaller household sizes, including lone person and couple households.

In terms of age profile, the following is projected for the population of the CoW for 2021:

- 0-4 year olds will be the most populous age group, with 20,079 persons in this age group;
- the number of people aged under 15 is forecast to increase by 29,525 persons (103.7%), resulting in this group comprising 24.4% of the total population;
- the number of people aged over 65 is expected to increase by 16,018 persons (156.8%), and represent 11.0% of the total population by 2021;
- the age group which is forecast to have the largest proportional increase (relative to its population size) by 2021 is 70-74 year olds, who are forecast to increase by 177.4% to 7,227 persons. (Forecast ID®, 2010)

This suggests the City will have a significant aging population as well as a large influx of younger families.

6.3 JINDEE COMMUNITY PROFILE

The vision for Jindee is to grow a community with a mixed age, cultural, income and lifestyle profile. It also involves providing a destination for visitors from outside localities. Facilities and services catering to visitors will be mostly concentrated within the coastal village and include tourist accommodation, leisure oriented retail, civic squares and plazas and regional beach infrastructure.

To achieve a diverse residential population, Jindee will provide the greatest range of housing types of any master planned community within the Perth metropolitan region. The available choice of housing will include:

- apartments, studio apartments, townhouses and other compact, manageable types particularly suited to City's aging population, young singles and couple households;
- detached dwellings that offer particular appeal to families with children and group households; and
- apartment houses suited to multi-family occupancy.

Housing types will be located to suit their context, with the highest density types being located within and near the centres and close to facilities and services.

This choice of housing and the diversity of lifestyles supported through the transect approach is expected to result a slightly older age profile than the profile of the nearby newly developing areas which primarily offer detached housing for families. This however cannot be validated until the buyer and resident profiles for Jindee are better understood.

6.4 FOUNDATION FOR COMMUNITY

If the supportive structures required by the Jindee community are inherent in its urban fabric, then the less tangible layers and social networks that will build the essence and strength of its community will evolve to a large degree organically, from the ground-up.

This is the premise upon which the design of Jindee is based.

Drawing inspiration from established communities of Perth, Jindee is designed to provide a solid foundation that supports sustainable community growth.

It does this by addressing the following community goals:

GOAL 1 : PUBLIC REALM

Priority given to public life through highly accessible, safe and functional public spaces and streets.

- Streets will take pride of place in the community and will be designed for walking, cycling, socialising and community activities, as well as vehicles.
- Buildings will be designed to engage with people and activity on the street through the inclusion of architectural elements such as generous verandahs and awnings, shopfronts, balconies, raised decks and large openings.
- Quality public spaces will be dispersed throughout Jindee for ease of access. They will be diverse, providing a range of possibilities for all members of the community, including active, semi-active, passive, open and intimate gathering areas. Playgrounds that include opportunities for nature-based play and learning will feature prominently in public space design.
- An open-air coastal village centre incorporating a vibrant main street and civic squares and plazas will provide spaces for various community activities.
- Land uses will be mixed and commercial uses will be encouraged within groundfloor tenancies at certain locations to encourage trade and activity at various times of the day.

GOAL 2 : PLACE IDENTITY

A community of distinctive coastal character that resonates with those living at Jindee and that has a place in the hearts and minds of people visiting from the wider region.

- The transect-based approach will foster areas within Jindee of varied, authentic character, ranging from the natural areas of the lower transects through to the intensely urbanised areas of the higher transects.
- Buildings, landscapes and streets will be designed to connect people with the local coastal environment and with the distinctive character of each transect.
- Strategic sites identified for civic buildings, will be designed to reflect local community values and to have pride of place within the community.
- Design treatments will be applied to mark terminating vistas.

GOAL 3: SAFETY

To be a safe community for all residents and visitors.

- Public areas, including lanes, passages and civic spaces will be activated by adjacent land uses and buildings. Blank walls and fencing to streets and civic spaces will not be permitted.
- Lighting will be carefully chosen to address the illumination requirements of the local circumstance.
- Way-finding signage, a connected network of thoroughfares and places of distinctive character will support legibility.
- Thoroughfares will be designed to slow down cars to enable safe use by pedestrians and cyclists.

GOAL 4 : HEALTH

To provide an environment that is conducive to healthy living.

- A positive experience for pedestrians and cyclists will be created with tree lined streets, generous paths, safe street crossings and interesting streetscapes and vistas.
- The existing environmental values inherent in the site will be retained within regional reserves, public spaces and T2 lots, promoting ecological health.
- Public spaces and the regional beach/foreshore will cater for active and passive recreational pursuits.

GOAL 5: ACCESS

To provide an environment that is highly walkable and accessible to all.

- The compact neighbourhood structure, mixed-use activity, design of thoroughfares and fine-grained architecture will be coordinated to promote walking and cycling.
- A high level of comfort and safety will be provided to pedestrians through active building frontages, a combination of hard and soft landscaping, wide pathways, and controlled design speeds.
- Bus services will include a feeder service to Brighton Station and services to other destinations within the corridor.
- The public realm will incorporate universal access design to cater for people of all ages and abilities.

GOAL 6 : LEARNING

To ensure that opportunities for ongoing community learning and education are an intrinsic part of the Jindee community design.

- A local public primary school will be provided within the south-eastern quadrant of Jindee that will cater for both the Jindee community and the community to the south.
- Opportunities for shared community use of the primary school facility will be explored, as well as initiatives to involve students and the wider community in conservation and other programmes.

GOAL 7: HOUSING CHOICE

To provide a choice of housing, including affordable options, for a range of household types.

- A wide variety of housing will be built at Jindee, including apartments, terraces, ancillary dwelling units, apartment houses (suitable for multi-family living) and freestanding houses. This will support housing choices commensurate with people's needs.
- Housing will include affordable options and support a range of people living at Jindee from young singles and couples, through to families with children / teenagers and empty nesters and seniors.

GOAL 8: LOCAL ECONOMY & EMPLOYMENT

To provide opportunities for sustained local economic development and employment.

- The mixed-use, high amenity coastal centre and Marmion Avenue T6 zone and supporting physical infrastructure, including high speed internet access, will provide substantial opportunities for locally based employment.
- Businesses will be catered for as they progress through the business lifecycle, from start-up, home-based businesses through to larger businesses operating from commercial tenancies. Investment incentives will include reduced on-site parking requirements and flexible land use controls.

GOAL 9: AFFORDABILITY

To provide an affordable place to live.

- Affordability is being addressed holistically, including alternative transport options that enable reduced household dependency on private vehicles; locally accessible facilities and amenities; local work opportunities; quality and freely accessible public areas; and affordable housing choices.

GOAL 10: FLEXIBILITY AND ADAPTABILITY

To provide an urban structure and building types that can adapt to changing community needs over time.

- Flexible buildings coded through the Urban Standards will have capacity to accommodate a range of uses, therefore allowing adaptation to changing community priorities and needs over time. This includes locations where shop building frontages (with at-grade access and generous ground floor to ceiling heights) are mandated to enable the adaptation of these buildings for commercial and community use.
- The flexible street block pattern and incorporation of laneways will be conducive to the intensification of building form and use over time.

6.5 EARLY INITIATIVES AND PRIORITIES

As part of the early stages of project implementation, EDC will pursue the following initiatives to support early community development, participation and engagement:

Primary School - A LSP and subdivision application has been approved for the primary school to facilitate the timely provision of the Jindee Primary School. The school oval will be available for shared community use. EDC will engage the DET and CoW to explore other opportunities for shared community use of this facility recognising the potential for the primary school to become a strategic hub for community engagement and activity.

Early Beach Access - Although privately owned, the site is regularly trespassed by recreational 4WD vehicles, quad-bikes and those that seek beach access. EDC will consider by constructing a formalised beach access as part of the early stage infrastructure works. EDC will also consider linking the beach access to some early activity or facility on the beachfront that can be used by both Jindee residents and those from outside the project area.

Community Engagement - EDC will focus on building the capacity of the Jindee community through early engagement and project involvement. The community will be encouraged to participate in placemaking (public space design, community art) and environmental management dimensions (local bush care, clean-up days, coast care) of Jindee, recognising that ultimately the residents of Jindee will be the community's primary caretakers and vision keepers. Strategies for engagement may include a community intranet site and regular community events and programmes.

6.6 COMMUNITY INFRASTRUCTURE PROVISION

The following maximum dwelling yields have been provided for the purposes of forward planning by servicing agencies, particularly the Water Corporation to assist in the determination of the demand for water and the expected waste water discharge. The maximum dwelling yields are expected to be consistent with the minimum density targets set by Department of Planning and outlined in Part 1, however, if the market demand for apartment product increases, then dwelling yields for this type of product may increase. The larger lots in the T2 areas, that are proposed to retain landform and vegetation, and the commercial land located adjacent to Marmion Avenue, impact on the ability for the site to deliver higher densities. Further information regarding servicing and infrastructure provision is contained in Part 3 Technical Reports – Civil Engineering Report.

TABLE 2 – DWELLING YIELDS BY TRANSECT

Single Residential	
T2 (north)	36
T3	196
T4	545
T5	40
Grouped/ Multiple Residential	
T4/T5/T6	519 (dependent on market demand for apartment product)

NOTE: Table 3 provides the indicative dwelling yield for each Transect and may be subject to change at subdivision stage. T2 Southern lots accommodate an additional 49 lots. This area has been excluded from the calculation of the dwelling targets and site hectare due to environmental objectives in DPS2 to retain existing vegetation.



7.1 JINDEE CONTROLS AND APPROVALS FRAMEWORK

The regulatory framework specific to Jindee comprises the following interrelated tiers of provisions and controls:

- CoW District Planning Scheme No. 2
- Agreed Local Structure Plan
- Subdivision approvals
- Local Development Plans
- Planning approvals
- Policies and strategies.

DISTRICT PLANNING SCHEME NO. 2

Amendment 115 (gazetted 2013) introduced a new 'Smart Growth Community' zone into the Scheme and rezoned the Jindee site to this zone. The provisions attached to this zone create the regulatory framework for a Transect-Based Code approach.

The Standards of the Code provide an alternative development control mechanism to the R-Codes and therefore the Scheme provisions exempt the R-Codes from 'Smart Growth Community' zoned land.

AGREED LOCAL STRUCTURE PLAN

The role of the LSP is to provide the overarching framework for subdivision and development and identify controls to inform the preparation of LDPs.

Part 1 constitutes the statutory component of the LSP and will be administered by the CoW and the WAPC.

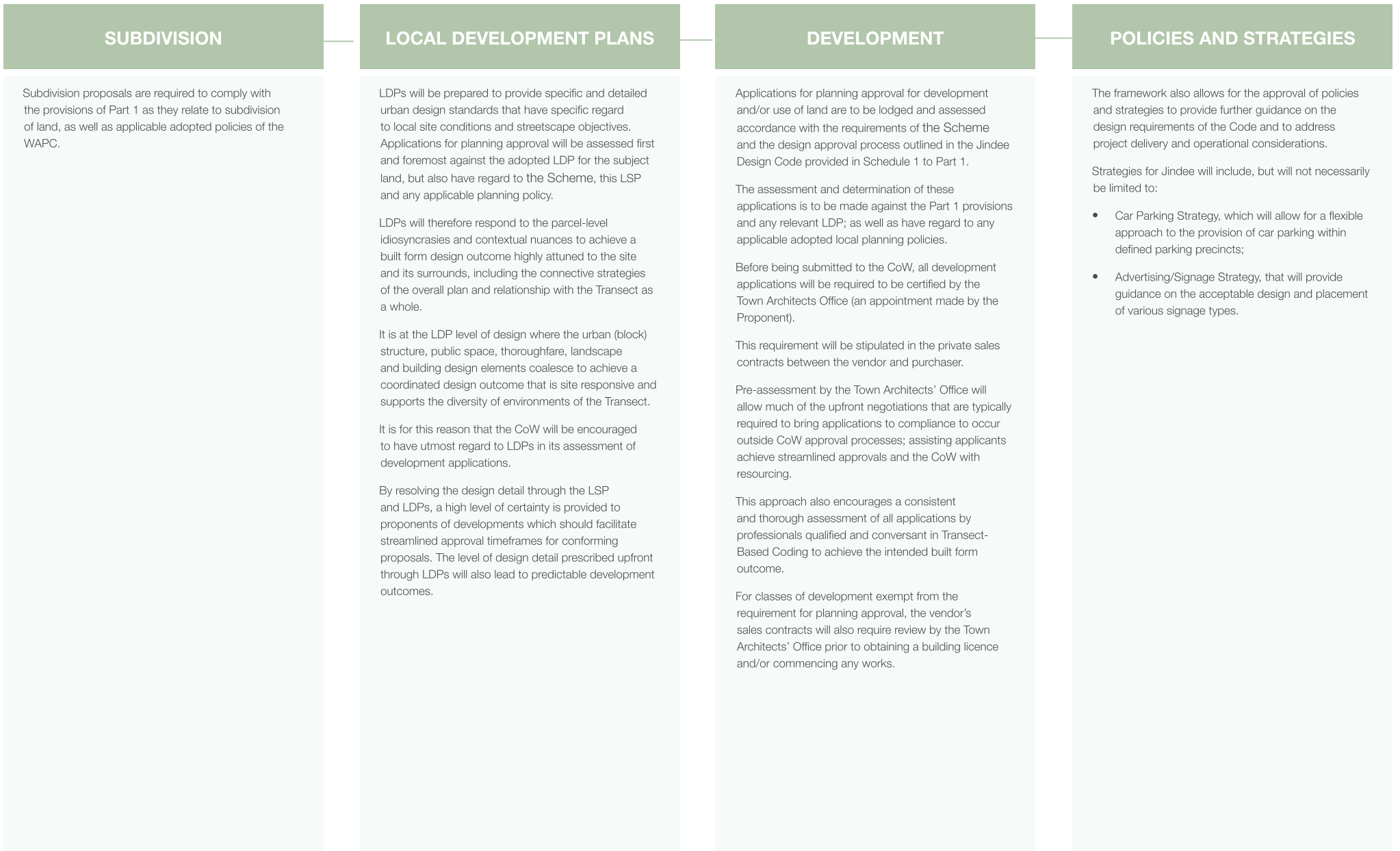
Part 1 also includes the Jindee Design Code contained in Schedule 1. While the Code forms part of the LSP to ensure the provisions have the full force and effect of the Scheme, is not required to be endorsed by the WAPC and will be approved and administered by the COW. The standards include the:

1. Regulating Plan Series;
2. Urban Standards;
3. Thoroughfare Standards;
4. Landscaping Standards.

In a notable departure from conventional practices, the provisions contained in Part 1 bring all of the relevant disciplines together, including engineering, landscape, environmental, planning and architecture.

By adopting a holistic approach, all of the elements of the built environment can be coordinated to create meaningful environments reflective of their position within the Transect.

The adopted provision of Part 1 may be varied through either a minor or major modification. The processes for undertaking modifications to the approved LSP are set out in Part 1 - Statutory Section and the Scheme.



7.2 PART 1 - STATUTORY PROVISIONS

Introduction

The Part 1 Statutory Provisions of the LSP constitutes the statutory component of the LSP and will be approved and administered by the CoW and endorsed by the WAPC.

The content and provisions of Part 1 are consistent with the requirements of the WAPC and the CoW in regard to the requirements for conventional structure plans. It provides the statutory head of power for the subdivision and development of land at Jindee and includes provisions relating to:

- the relationship with the Scheme;
- the application of Transect zones and reserves across the LSP area (Plan 1 - LSP);
- the process for the preparation of and matters to be addressed in LDPs;
- the requirement for certain reports and strategies to be prepared at specified stages of subdivision and/ or development;
- the subdivision of land, including lot size ranges and density targets; thoroughfare reserves and network design; and provision of POS; and
- standards and controls relating to the development and use of land at Jindee.

Further explanation regarding the provisions contained within the Part 1 - Statutory Section is provided in the following sections.

Subdivision - Standards and Controls

In assessing subdivision applications, the WAPC will have regard to the relevant provisions of the Part 1 Statutory Provisions, together with other relevant WAPC planning policies, including Liveable Neighbourhoods. In making a recommendation to the WAPC on a subdivision application, the CoW will have regard to these same Part 1 Statutory Provisions as well as any other relevant considerations arising from the Jindee Design Code (which the WAPC will not be adopting or administering).

Part 1 Statutory Provisions therefore include the following relevant design standards and minimum requirements to assist with the assessment and determination of subdivision applications.

LSP Plan (Plan 1)

Plan 1 allocates transect zones and reserves to all land within the LSP area and establishes Strategic Open Space areas and the primary movement network. The Transect Zones and reservations are to have the same force and effect as if they are incorporated in the Scheme. Subdivision of land is required to conform with this structure plan layout.

Descriptions of the objectives for each Transect Zone are provided under clause 6.0.

Lot Size Ranges (Plan 2) and Density Targets

Plan 2 establishes the lot size ranges applicable to residential land within the LSP area. The large area ranges for lot sizes highlights the diversity of housing and varying intensity of development that will occur across the transects. Subdivision and survey-strata subdivision of land is required to conform with the allocated lot size ranges. Because the lot area ranges identified on Plan 2 are broad and in many instances would allow for further subdivision, the Part 1 provisions include the requirement for a Residential Lot Size Plan to be submitted at the time of subdivision and for this plan to be determined by the WAPC together with the subdivision application. The purpose of the Residential Lot Size Plan is to identify where further subdivision will and will not be permitted.

The density of housing at Jindee will respond to Transect Zone, with the least dense development occurring in the lower transects to enable preservation of vegetation and terrain and the densest development occurring in the higher transects. Notwithstanding these variations in densities, Jindee will satisfy the LN recommended targets and achieve an average of 22 dwellings to per site hectare across the project area, creating a minimum of 1305 additional dwellings.

It is noted that the land encompassing the southern T2 'Natural Living Area' is at a lower than average density in order to achieve the environmental objectives for the site set by the EPA.

To ensure compliance with the density targets, Part 1 of the LSP sets an overall minimum dwelling and density target for Jindee. Subdivision and development will be required to satisfy these minimum targets.

Jindee is expected to deliver a higher than average density compared to conventional development through the delivery of apartment building types within the T5 areas, particularly along the coast. The project aims to exceed the aspirational density targets currently being considered by the WAPC for application to all greenfield subdivisions, equating to an average of 26 dwellings per site hectare across new greenfield subdivisions. This is, however, a long term objective, given that the life of the project has a timeframe of approximately 15-20 years and the delivery of the type of apartment product will be contingent on market forces.

Thoroughfares

Clause 7.13 of Part 1 requires the WAPC to have due regard to the various thoroughfare types provided in the Thoroughfare Standards in Schedule 1 Design Code in the consideration of subdivision applications within the LSP area.

The detailed design of elements that are to be accommodated within the reservation for each thoroughfare type (carriageways, footpaths, street trees, utility services etc) are prescribed in the Thoroughfare Standards of the Design Code.

JINDEE THOROUGHFARE TYPES

Thoroughfare Type

-  Avenue
-  Boulevard (one-way)
-  Boulevard (two-way)
-  Mixed Use Street
-  Street
-  Drive (one-way)
-  Drive (two-way)
-  Road
-  Alley
-  Lane (one-way)
-  Lane (two-way)
-  Boundary



*Detailed design indicative and may be subject to change at subdivision

Public Open Space

The Part 1 provisions require that a minimum of 10% POS shall be provided in accordance with the WAPC's Liveable Neighbourhoods.

The creditable POS that will be provided at Jindee is 10.65 ha or 10.68%, exceeding the minimum 10% requirement with a surplus of 0.68 ha. The POS requirements for the Jindee LSP, calculated in accordance with the requirements of Liveable Neighbourhoods, are as detailed in the Tables 4 and 5. It is noted that consistent with Clause 7.15 of Part 1, the POS calculations include the POS sites to be provided within the LSP 71 area for the future Jindalee Primary School (sites 30 and 31 of POS Table and Plan)

Complementing this is a further 11.8 ha of regional open space that is situated within the LSP boundaries and the remainder of the coastal reserve immediately west Jindee that will have a dual recreation and conservation function. In addition to this provision of local and regional open space, the thoroughfare network will contribute significantly to the quality of the public realm with shady, tree lined streets, generous provision of footpaths and interspersed pocket parks and community spaces.

In addition to complying with Liveable Neighbourhood objectives (refer Table 3 for LN Assessment), the POS areas at Jindee will also satisfy the principles of SmartCode® in regard to the character and type of civic space, as well as distribution and quantity. These provisions are not dissimilar to Liveable Neighbourhoods in requiring a range of well distributed spaces from small local parks and playgrounds to neighbourhood parks and larger active open space areas. However, SmartCode® requirements also address suitability of different civic space types according to the urban intensity of the adjacent Transect Zone.

Setting and achieving sustainability goals will be integral to any improvements to the local landscape process. Recognising this, all aspects of the landscape design will aim to incorporate sustainable principles. This includes maximising the visual amenity of the landscape while reducing maintenance costs and impacts on the surrounding environment.

The landscaping will ensure best management practices are implemented, such as:

- retention of natural landform and vegetation where practicable;
- assessing the site for recyclable materials including plants such as the grass trees on site and landscape materials such as seed rich topsoil and mulch;
- promoting a positive relationship between the built and natural environments;
- minimising water run-off and the leaching of fertilisers and herbicides into surrounding environments;
- using 'water wise' plant species wherever appropriate;
- ameliorating micro-climate such as provision of shade and wind shelter, where appropriate;
- designing landscapes that filter air and water borne pollutants, including wind-borne salt and sand;
- using environmentally conscious materials and technologies throughout the development; and
- ensuring landscape species are responsive to type and depth of soils including soil pH and limestone locations.

Local Conservation Open Space

DPS 2 includes in Schedule 16 a provision that exempts the Smart Growth Community No 1 (Jindee project) from the requirements of LPPs, unless specifically stated within an LPP. Given the CoW's intent to ensure all new communities have provided land for local conservation, an assessment has been undertaken against LPP 3.4 Public Open Space specifically dealing with POS for conservation purposes.

The policy requires the identification of significant natural assets and requires, where possible, 3% of the POS contribution to be for the purposes of landscape and vegetation retention. The only 'natural assets' that can be considered in the 3% in accordance with the CoW policy are 'matters of national significance' under the EPBC Act, which have been dealt with through the Federal Government approval. There are no other natural assets on the site that conform with the criteria of the CoW policy.

Having identified areas for retention under the EPBC approval, and using the CoW's minimum size for local conservation areas of 0.3 ha, three areas within the project area (including an area within the LSP 71) have been identified for local conservation (landscape and vegetation retention). This equates to an area of 2.06 ha, and has been supported by the CoW given that the project achieves other environmental outcomes at the State and Federal level.

6.0 hectares of environmentally significant land was identified early in the planning process, and reserved for regional conservation through MRS Amendment 1152/41. The reserved land includes two large consolidated conservation reserves, including a 4.0 ha area of land surrounding the Trig Point, and an additional 2.0 hectares adjacent to the coast. The T2 lots, located along the east-west ridge, are required through DPS 2 to retain areas of natural vegetation, providing a link between the coastal ROS to the inland ROS areas.

There is also a number of areas where, as part of the landscape design, that natural vegetation will be retained, and rehabilitation will be taking place. These areas do not meet the criteria for 'significant natural assets' under CoW policy, but will also contribute to the vegetation retention across the site.

TABLE 3 – LIVEABLE NEIGHBOURHOOD OBJECTIVES - ASSESSMENT OF PROVISION OF PUBLIC OPEN SPACE

LN Objectives	Compliance	
01	To ensure public open space of appropriate quality and quantity is provided in a timely manner to contribute towards the recreational and social needs of the community in appropriate locations.	The provision of public open space at Jindee has been designed to provide for a range of recreational opportunities and options for the community and to meet conservation objectives at a local, state and federal level. Neighbourhood and local parks are interspersed across the development providing a mix of active and passive recreation opportunities, in addition to the provision of a co-located playing field adjacent to the school.
02	To integrate urban water management functions with public open space.	Drainage has been co-located with areas of public open space, where possible, and located at low points or areas of natural depression, with the objective to integrate drainage into the existing landform and retain the natural topography, particularly in the lower Transect zones.
03	To facilitate the provision of land for community facilities, where appropriate, as part of land ceded for public open space.	The location and distribution of public open space throughout the community aims to ensure access to usable public open space within 250m from all dwellings and will include a wide range of facilities to cater to the diverse cross-section of the community, including: play-grounds, barbecues, picnic tables, off-leash dog areas, and kick-around areas.
04	To protect and conserve margins of watercourses, water bodies, and wetlands and establish public foreshores long the coast and watercourses adjacent to urban development.	Public foreshore and access has been maintained and enhanced along the coast.
05	To provide public open space that is safe and overlooked by nearby buildings.	All public open space areas offer high levels of surveillance from adjacent public streets, laneways, passages and paths and from adjoining buildings. Local Development Plans will include, provisions for openings or design elements on buildings to ensure passive surveillance of public spaces is provided where safety may be a concern.
06	To facilitate the provision of the public open space contribution and its development as part of the subdivision process and to enhance local amenity.	10.135ha or 10.16% of the site area is proposed to be provided and ceded at subdivision stage for the purposes of public open space.
07	To ensure that public open space is integrated into the urban structure to produce both land use efficiency and long term sustainability.	Public open spaces have been designed and located to suit the proposed level of urban intensity that it sits within. Plazas, squares and passages are located in higher density urban areas, and parks and larger green spaces are located in lower density. The spaces are integrated into the urban structure, and appropriate to location.
08	To provide practical cash-in-lieu mechanism for open space allocation and improvements.	N/A
09	To provide for regional variations that best reflect local community requirements.	N/A
010	To ensure the provision of adequate land to protect, and to provide public access to, river, creek, lake and ocean foreshores.	All paths and roads, including a pedestrian promenade that runs parallel with the coastal foreshore reserve, are orientated to provide direct public access to the coast.

TABLE 4 – PUBLIC OPEN SPACE CALCULATIONS

Public Open Space Calculations	Area (Ha)
Site area	124.38
Deductions	
Primary School	3.5
Town Centre and Commercial	5.8
Regional Parking	2.0
MRS Parks and Recreation Reserve	11.8
Dedicated Drainage Reserves	0.279
Excluded Open Space	1.28
Total deductions	24.66
Gross Subdivisible Area	99.72
10% of Gross Subdivisible Area	9.97
Unrestricted POS (80%)	7.98
Restricted POS (20%)	1.99
Total POS	10.6507
Restricted POS 1:1-1:5	0.213
Restricted POS buffers	0.0
Total Restricted POS provided	0.213
Surplus restricted POS	0.0
Unrestricted POS provided (Total less Restricted and Excluded POS)	10.4377
Actual POS Provided (Restricted POS + Unrestricted POS)	10.6507
Actual percentage of POS provided	10.68%
Surplus POS over requirement	0.6807
Notes:	
- Calculations assume local conservation sites are unrestricted POS.	
- Local conservation areas shall not be impacted by drainage.	

TABLE 5 – PUBLIC OPEN SPACE SCHEDULE

POS Area	Total Area	1:1 year (excluded)	1:5 year (total)	1:5yr - 1:1 yr (Restricted POS)	Balance (Unrestricted POS)	Local Conservation ¹ (Landscape & Vegetation Retention)
1	0.5219	0.11	0.138	0.028	0.3839	
2 *1	DELETED (due to design modification)					
3	0.0529				0.0529	
4	0.0398				0.0398	
5	0.0922				0.0922	
6	0.0461				0.0461	
7	0.0906				0.0906	
8	0.0608				0.0608	
9 *1	DELETED (due to design modification)					
10	0.0530				0.0530	
11	0.5775				0.5775	
12	0.1284				0.1284	
13	0.0908				0.0908	
14	0.0741				0.0741	
15	0.4567				0.4567	
15a *2	0.3721				0.3721	
15b *2	0.0249				0.0249	
15c *2	0.0864				0.0864	
15d *2	0.1185				0.1185	
15e *2	0.0462				0.0462	
16	0.1851				0.1851	
17	1.3473	0.403	0.452	0.049	0.8953	
18	0.1207				0.1207	
19	0.0482				0.0482	
20	0.2051				0.2051	
21	0.0821				0.0821	
22	0.0714				0.0714	
23	0.2527				0.2527	
24	0.9261	0.242	0.282	0.04	0.6441	
25	0.7988				0.7988	0.30
26	1.0105	0.228	0.267	0.039	0.7435	0.40
27	0.0861				0.0861	
28	0.0905				0.0905	
29	0.1191				0.1191	
30	3.0432	0.236	0.285	0.049	2.7582	1.36
31	0.3104	0.063	0.071	0.008	0.2394	
32	0.0438				0.0438	
33	0.2587				0.2587	
TOTAL	11.9327	1.282	1.495	0.213	10.4377	2.06
Note - Calculations assume local conservation sites are unrestricted POS. - Local conservation areas shall not be impacted by drainage.						
*1 - POS areas not included in calculation arising from changes at detailed design stage. *2 - Additional POS areas included to align with subdivision approvals.						





- Note:
1. Local Conservation (Landscape and Vegetation Retention) areas shall not be affected by drainage.
 2. Clause 7.15 of Part 1 provides for the inclusion of sites 30 and 31 (POS at the future Jindalee Primary School) in the public open space calculations for the Jindalee LSP.

Variations to Scheme Definitions

Unless otherwise stated in Part 1, the definitions of the Scheme are to apply where the same term is used in the Part 1 provisions of this LSP. Terms that are to carry different definitions under this LSP are specified in Part 1. Justification for the departure to the Scheme definitions are provided below.

TABLE 6 - VARIED SCHEME DEFINITIONS - JUSTIFICATION

Interpretation	Existing Scheme Definition	Jindee LSP (Part 1) Definition	Justification
child care centre	means premises used for the daily or occasional care of children in accordance with the Community Services (Child Care) Regulations 1988.	means premises used for the daily or occasional care of children in accordance with the Child Care Services (Child Care) Regulations 2006 as amended and may include a kindergarten or pre-primary.	The definition has been updated to refer to new legislation and include kindergartens and pre-primary facilities.
hire service:	means land and buildings used for the hire of goods and equipment and may include the display of some goods and equipment.	means land and buildings used for the hire of goods and equipment of a bulky nature including machinery and mechanical equipment and may include the display of better goods and equipment.	Modified definition to clarify the difference between retail hire service of smaller items included within the 'retail' definition, and industrial/bulky goods type hire services included in this definition.
reception centre	means premises used for functions on formal or ceremonial occasions, but not for unhosted use for general entertainment purposes, and may include catering facilities.	means premises used for functions on formal or ceremonial occasions, or for conferences or seminars, but not for unhosted use for general entertainment purposes. May include smaller meeting facilities attached to hotels and catering facilities.	Given the element of tourism within the Jindee LSP, and the likelihood of a hotel/ short stay elements, this definition has been expanded to include reference to such uses.
showroom	means premises wherein goods are displayed and may be offered for sale or hire excluding the sale of foodstuffs, liquor or beverages, items of clothing or apparel (except as hereinafter stipulated in this definition) or personal adornment, magazines, books, newspapers or paper products, and medicinal or pharmaceutical products unless assembled or manufactured on the premises. The term includes the sale of secondhand clothing or apparel by welfare and charitable agencies with the approval of Council.	means premises used to display, sell by wholesale or retail, or hire, automotive parts and accessories, camping equipment, electrical light fittings, equestrian supplies, floor coverings, furnishings, furniture, household appliances, party supplies, swimming pools or any other goods of a bulky nature.	The definition contained within the Scheme excludes certain items that cannot be sold from showrooms. The LSP definition specifies what can be sold to ensure showrooms are restricted in the types of products sold and do not become large retail outlets.
telecommunications infrastructure	means any part of the infrastructure of a telecommunications network and includes any line, equipment, apparatus, tower, antenna, tunnel, duct, hole, pit or other structure used, or for use, in or in connection with a telecommunications network.	means land used to accommodate infrastructure associated with a telecommunications network and includes any line, equipment, apparatus, tunnel duct, hole and pit, but does not include antennas, towers and associated satellite dishes.	Modified definition allows for telecommunications infrastructure appropriate to urban context and does not encompass high visual impact facilities including antennas, towers and associated satellite dishes.

Table 7 lists land use definitions for uses that are not defined in the Scheme. These new definitions are introduced into Part 1 - Statutory Provisions.

TABLE 7: JINDEE LAND USES NOT DEFINED IN THE SCHEME

adult entertainment:	means premises which: (a) provide entertainment (such as strip club premises); or (b) sell or show restricted material (such as adult bookshops and adult novelty stores).
artisan studio:	means a premises occupied by an artisan(s) for the crafting and sale of items that may be functional or decorative including clothing, jewellery, pottery, textiles, food products and household items and which does not adversely affect the amenity of adjoining lots.
betting agency:	means an office or totaliser agency established under the Totaliser Agency Board Betting Act 1960 (as amended).
cinema / theatre:	means any land or building(s) where the public may view a motion picture(s) or theatrical production(s), and may include more than one cinema screen, other minor and subsidiary amusements, and/or sale of foodstuffs and drinks.
civic structure:	means any structure used within a civic space for shade, community gatherings, or as part of a landscape design feature and may include public art and fountains or bus shelters.
civic use:	means land or premises which are predominantly provided for use by the public.
cottage industry:	means a trade or industry producing art and craft goods which does not fall into the definition of a home business (category 1, 2 or 3) and which does not adversely affect the amenity of the adjoining lots.
drive through facility:	means a facility where patrons remain in automobiles including fast food and car washes (car wash may only be considered for approval if attached to a service station), but does not include book and video drops and drive through bottleshops attached to a hotel where it is concealed from the street.
general commercial:	means premises used for commercial or business purposes of a non-retail, low impact nature and includes, but is not limited to, an auction room, bank, dry cleaning premises, laundromat, consulting rooms, medical centre, costume hire, beauty parlour, hairdresser, video hire, veterinary consulting rooms and veterinary hospital (if use does not adversely affect the amenity of adjoining lots).
general entertainment:	means land or buildings, open to the public or used for recreation and entertainment activities, including indoor playground facilities or amusement machines, but does not include adult entertainment and night clubs.
inn:	means premises used for the purpose of short-term lodging for a continuous period that does not exceed 3 months within any one 12 month period and comprising up to 12 accommodation rooms.
kiosk:	means a small enclosed structure, often freestanding and open on at least one side or with a window, used as a booth to retail a product (i.e. newspaper, food items) or offer a service (i.e. tourist information).
laboratory facility:	means land, building or a portion of a building equipped for scientific experimentation or research.

neighbourhood retail:	means a retail use in a predominantly residential area located on a corner ground floor shopfront location (which may or may not be attached to a dwelling) and may include a corner store, newsagency, art store, bookstore, display gallery or any other uses that services the needs of the local neighbourhood, with an area not exceeding 100m ² gross floor area.
parking structure:	means a building comprising one or more storeys to accommodate above grade car parking.
retail:	means premises used to sell goods by retail, hire goods, or provide services, and includes, but is not limited to, department store, hardware store, lunch bar, pharmacy, shop, supermarket and take-away food outlet, but does not include restricted premises and showroom outlets.
residential (single detached dwelling):	means a detached dwelling accommodating a single house on its own green title or survey strata lot.
residential (other):	means all residential building types excluding single detached dwellings.
short term accommodation:	means accommodation that may be occupied for a continuous maximum period of three months within any one 12 month period, and is not subject to residential tenancy agreements within the meaning of the Residential Tenancies Act 1987. Includes serviced apartments and existing dwellings that are predominantly used for the purpose of providing short-term accommodation to tourists. Some forms of specialised accommodation, such as student accommodation for educational establishments, may at the CoW's discretion, be occupied for longer terms than three months.
specialised retail:	means "big-box" retail and enclosed shopping malls, usually served by parking areas adjacent to and/or surrounding the development.
surface parking lot:	means premises used primarily for the parking of private vehicles or taxis whether open to the public or not but does not include any part of a public road which is used for the through movement of traffic or premises on or in which vehicles are displayed for sale or premises set aside to meet a specific parking requirement. The term includes the land required on site for access and maneuvering to enable vehicles to gain access to car parking bays.
youth hostel:	means a budget-oriented style of accommodation that accepts individual travelers or groups for short-term stays and that may provide common areas and communal facilities.

7.3 JINDEE DESIGN CODE (SCHEDULE 1 OF PART 1)

The standards and controls of the Design Code are modelled on SmartCode®; a model transect-based ordinance developed by Duany Plater-Zyberk and Company.

Being a model ordinance, SmartCode®, is in a format that enables it to be calibrated to local conditions. This involves tailoring Code standards to achieve the specific outcomes desired of a particular place to enable implementation of the project vision. The outcome is a highly customised rather than one-size-fits all approach to a given site.

Design Approval Process

Chapter 1 of the Design Code sets out the design approval process for development within the LSP area.

The Jindee Design Code provides the overarching menu of design controls and requirements for regulating development of the private and public realms. LDPs choose from this menu of standards to prescribe development requirements as they are to apply to specific land within the Jindee LSP area.

Whilst LDPs are to be mostly consistent with the Design Code provisions, for certain requirements a LDP may vary from the LSP. Variations to the LSP that may be supported by the CoW, are limited to those matters listed in Table 1 of Chapter 1 of the Code.

In assessing and determining applications for planning approval or a building permit for land within the LSP area, the CoW will have regard to the Jindee Design Code provisions, however assessment of the application is to be primarily against the site specific controls and requirements applicable to the land under the relevant approved LDP. The CoW is not to approve an application that does not satisfy the requirements of the approved LDP.

As well as demonstrate compliance with the LDP, an applicant for planning approval or a building permit must submit their plans to the Jindee Town Architects' Office prior to lodgement with the CoW to ensure the proposal achieves the high quality architectural and built form qualities intended.

The role of the Town Architects' Office is to review the application against the LSP and LDP standards, as well as any other relevant standard or requirement of the proponent. The Town Architects' Office is to prepare a statement on the proposed development that is to be submitted with the CoW as part of the application. The CoW is to have regard to the Town Architects' Office statement when making its determination on the application, but is not bound by this statement. In this regard, the Town Architects' Office has an advisory role and does not fetter the decision making powers of the CoW.

SmartCode Calibration

For Jindee, the process of calibration began in the context of the 2002 Jindee charrette. The charrette process is a method of planning used to encourage the participation of everyone with an interest in a project and to bring together the relevant disciplines to contribute to the design process. It typically involves intense sessions that occur over several days in a location on or close to the site and its success depends on its ability to galvanise joint ownership of a project and to build consensus around a project vision.







The Jindee charrette involved an interdisciplinary project team of urban designers, architects, landscape architects, planners, coastal environmental scientists, traffic and civil engineers and relevant government and community stakeholders.

The process had regard to local site conditions, including topography, views and vegetation, as well as market conditions. The process also considered the project's broader regional context, with charrette participants attending study tours of established and revered settlements, including Cottesloe, Rottneest, Fremantle, Mosman Park, Applecross and Mt Lawley.

The 'DNA' or genetic make-up of these established settlements was closely scrutinised and the design elements that contribute to their success dissected to allow adaptation to Jindee.

Transect Zone Descriptions

The Design Code applies urban, thoroughfare and landscape standards to the six transect zones that are applied to Jindee. A description of each Transect Zone is provided below.

	<p>T-1 NATURAL RESERVE T-1 Natural Reserve Zone shall consist of lands approximating or reverting to a natural condition, including lands unsuitable for settlement due to topography, hydrology or vegetation. Typical buildings are limited to civic functions.</p>	<p>General Character: Natural landscape Lot Range: Not applicable Building Placement: Not applicable Frontage Types: Not applicable Typical Building Height: Not applicable</p>
	<p>T-2 NATURAL LIVING T-2 Natural Living Zone shall consist of lots that are of sufficient size to enable the retention of natural features such as vegetation or topography. These areas shall be more 'natural' in character than 'urban' or 'sub-urban'. Road treatments shall be mostly informal including open swales with natural drainage and informal landscaping consisting of multiple species in naturalistic clusters.</p>	<p>General Character: Larger lots retaining natural landscape features such as vegetation or topography Lot Range: 600 - 3,000m² Building Type: Predominantly detached dwellings Building Placement: Larger and variable front and side setbacks Typical Building Height: 1 to 2 storeys Typical Frontage Types: Common Yard, Verandah & Fence, Projection/Bay Window Civic Space Type: Park, Playground, Promenade, Close, Passage and Path, Common, Green, Square</p>
	<p>T-3 SUB-URBAN T-3 Sub-Urban Zone shall consist of low density residential areas, adjacent to higher zones that contain some mixed use. Home business and outbuildings are allowed. Planting is naturalistic and setbacks vary from shallow to relatively deep. Larger lot sizes and irregular thoroughfare alignments may be included to accommodate natural site conditions.</p>	<p>General Character: Medium to larger sized lots accommodating dwellings and landscaped gardens Lot Range: 150 - 1,500m² Building Type: Predominantly detached dwelling Building Placement: Large and variable front and side setbacks Typical Building Height: 1 to 3 storeys Typical Frontage Types: Common Yard, Verandah & Fence, Projection/Bay Window, Terrace and/or Light Court, Stoop Civic Space Type: Park, Green, Playground, Close, Passage, Promenade, Square and Common</p>
	<p>T-4 GENERAL URBAN T-4 General Urban Zone shall consist of medium density residential areas and a component of mixed use activity. Home business and outbuildings are allowed. It shall include a wide range of building types including detached dwellings, terraces and apartments. The character is to be formal including smaller setbacks, raised kerbs, regular road patterns and landscaping consisting of single species regularly spaced.</p>	<p>General Character: Mix of house types including detached dwellings, townhouses, small apartment buildings, with scattered commercial activity; balance between landscape and buildings; presence of regular pedestrian activity Lot Range: 150 - 1,200m² Building Type: Mixture of building types: including but not limited to detached dwellings, terraces, loft buildings, loft houses, apartment houses, flex buildings and mixed use buildings Building Placement: Shallow to medium front and side setbacks Typical Building Height: 1 to 6 storeys Typical Frontage Types: Verandah & Fence, Terrace and/or Light Court, Forecourt, Stoop, Shopfront, Gallery, Projection/Bay Window Civic Space Type: Square, Green, Playground, Park, Common, Promenade, Passage</p>
	<p>T-5 URBAN CENTRE T-5 Urban Centre Zone shall consist of higher density mixed use buildings that accommodate retail, offices, terraces and apartments. It shall have a tight network of streets, with wide footpaths, raised kerbs, regular street tree planting and buildings set close to the footpaths.</p>	<p>General Character: Shops mixed with townhouses, larger apartments, offices, lodging, workplaces, and civic buildings; predominantly attached buildings; trees within the thoroughfare reserve; substantial pedestrian activity Lot Range: 150m²+ Building Type: Predominantly apartments and mixed use buildings Building Placement: Shallow setbacks or none; buildings oriented to street, attached buildings form a continuous street wall Typical Building Height: 2 to 8 storeys Typical Frontage Types: Verandah & Fence, Terrace and/or Light Court, Forecourt, Stoop, Shopfront, Arcade, Gallery, Projection/Bay Window Civic Space Type: Plaza, Square, Green, Playground, Common, Promenade, Passage</p>
	<p>T-6 URBAN CORE T-6 Urban Core Zone shall consist of the highest density and height, with the greatest variety of uses and civic buildings of regional importance. It shall have larger blocks; regular street tree planting; and buildings set close to wide footpaths.</p>	<p>General Character: Medium to high-density mixed use buildings, for a range of uses including retail, residential, commercial, entertainment, civic and cultural; trees within the thoroughfare reserve; highest pedestrian and transit activity Lot Range: 150m²+ Building Type: Predominately apartments, commercial buildings and mixed used buildings Building Placement: Shallow setbacks or none; buildings oriented to street, attached buildings form a continuous street wall Typical Building Height: 1 to 8 storeys Typical Frontage Types: Terrace and/or Light Court, Forecourt, Stoop, Projection/Bay Window, Shopfront, Arcade and Gallery Civic Space Type: Plaza, Square, Playground, Park, Square, Promenade, Passage</p>

Regulating Plan Series

The regulating plan series contained in the Design Code (Schedule 1 to Part 1) consists of the following three plans that establish controls for development across the entire project site:

- (a) **Transect Plan:** identifies project boundary and assigns Transect Zones, reserves and thoroughfare network.
- (b) **Control Plan:** identifies locations where:
 - certain private frontages, including shopfronts, arcades and galleries are recommended;
 - control fronts (build-to-lines) are required to enhance corner and edge conditions;
 - terminated vistas and pedestrian paths are required.
- (c) **Public Open Space Plan:** identifies the civic space areas that are to be ceded at the time of subdivision (as part of the required 10% contribution) and reserved for public recreation under section 152 of the Planning and Development Act, 2005.



TRANSECT PLAN



CONTROL PLAN



PUBLIC OPEN SPACE PLAN

Urban Standards

Building Types

The Urban Standards of the Design Code identify ten different building types that may be built at Jindee and establishes mandatory design requirements for each type. These requirements are mostly concerned with the interrelationship of private buildings with the public realm.

The Standards also assign which building types may be built within the various Transect Zones. The Typology Plan further refines this, allocating building types to specific lots. LDPs will be used to further refine the Typology Plan by assigning a narrower band of permissible building types to specific development sites, having regard to site characteristics and streetscape objectives.

Building types and their designs will be tailored to suit the existing landscape, local climatic conditions and the ultimate desired intensity of urban character, with a particular focus on the interface with the private realm.

The diversity of building types included in the Urban Standards support a high and low intensity mix of urban, sub-urban and natural living environments. In general, in the more urban Transect Zones, the building types will include a mix of commercial uses and higher density housing; building heights will be greater; and street setbacks shallower. Whereas within the more natural Transect Zones building types will be predominantly detached residential dwellings; single to two storey; and with larger street setbacks.

The intermediate transects will feature the greatest range of building types, allowing for a diverse mix of residential and mixed-use building forms that create a transition between the natural and urban areas.

The range of building types at Jindee will cater to different demographic and income groups, promoting great diversity within the community.

Consistent with SmartCode®, building height is regulated in the Urban Standards by prescribing:

- the minimum and maximum number of permissible storeys for each building type; and
- the minimum and maximum height of an individual storey.

LDPs will specify a datum point(s) for each lot from which building height is to be measured.

The regulation of building height using these two measures is effective in achieving compatible vertical proportioning of buildings within a streetscape, and avoids the potential to achieve additional storeys by compressing storey heights. It also allows generous minimum ground floor storey heights to be prescribed to allow for future commercial use. This approach to building height differs to the R-Codes which measures height as the vertical distance between the natural ground level and uppermost part of the building (excluding minor projections) and is silent on number of storeys and storey heights.

With regard to vehicular access, most buildings will be accessed via rear lanes so as to remove driveways and garages from street frontages, creating a more attractive streetscape and a safer experience for pedestrians.

Whilst privacy between buildings will be one of the many design considerations to be addressed through the LDPs, it will not be possible to achieve full privacy between lots in all instances, particularly where sloping terrain is retained. In these instances, privacy screens, landscaping and other techniques can be considered.

Retaining walls will be required in some locations, particularly in the lower transects to achieve safe thoroughfare grades where they traverse relatively steep terrain.

In a notable departure from the cut and fill, earthworks that has resulted in the benched lots that prevail across the north-west corridor; retaining at Jindee will be mostly used to preserve natural topography and will be closely integrated with the design of the built form. This will yield a softer visual effect that complements the natural character of the lower transects.

LDPs will include engineering detail for the location, height and design of required retaining, and most retaining will be constructed by the developer at the time of subdivision.

Car Parking

A flexible approach is proposed to the provision of car parking at Jindee to complement the project's accommodating approach to mixed use development and changes in land use over time.

The approach proposed aims to provide a level of parking consistent with demand, recognising that excessive car parking provision can detract from the urban and pedestrian qualities of an area. Satisfying excessive car parking requirements can also be a significant impost on developers and deterrent for business investment.

The car parking provisions are accordingly crafted to accommodate alternative arrangements to the usual requirement that car parking be calculated on a lot-by-lot basis and satisfied within individual lots.

The method for calculating required car parking will be dependent on whether the land is located within or outside a Car Parking Precinct.

For areas located outside a Car Parking Precinct, Table 15 and associated notes detail the circumstances when on-street parking may be included in the overall calculation of required car parking.

The CoW may also agree to the Base Parking Standards being varied in the following ways:

- Reciprocal Car Parking Arrangements: Base Parking Standards may be reduced where there is reciprocity between two or more land uses; or
- Variations through a development application: The CoW may support a reduction in the Base Parking Standards as part of an application for the use and/or development of land subject to the CoW being satisfied the reduction would not adversely impact on the amenity of the area and the applicant has provided adequate justification for the reduction to the CoW.

The CoW may approve a car parking strategy for a defined precinct or precinct(s) within Jindee. The car parking strategy is to promote a flexible approach to parking across the precinct by applying a shared parking ratio to calculate the parking requirements of all development and/or land uses in the same precinct.

The shared parking ratio is to be derived from the Base Parking Standards, however is to reflect reciprocity of car parking between the anticipated mix of land uses within the precinct and the availability of off-site parking (i.e. on-street parking and public parking). The shared parking ratio established in a parking strategy for the coastal village is to also factor in the take-up of public parking supply for regional beach parking.

The advantage of the car parking precinct approach is that it allows the CoW to factor into the parking standards reciprocity of parking between land uses to ensure an appropriate balance between car parking demand and supply. A single shared parking ratio also builds flexibility into the project by allowing the use of buildings to change without any required adjustments to car parking.

Thoroughfares Standards

The Thoroughfare Standards in Part 1 Design Code assign different thoroughfare types to the movement network and prescribes detailed standards for each thoroughfare type. These design requirements are aimed at achieving the highest quality in thoroughfare design and to ensure that each type satisfies its intended function in the movement network.

Thoroughfare types range from wide avenues and boulevards, to intimate streets and pedestrian passages and paths. The network also includes a series of 'closes' that will provide safe access to lots, avoiding the need for direct access off the busier thoroughfares.

A particularly important guiding objective is to create comfortable and safe environments for pedestrians and cyclists. In this regard, all thoroughfares are designed to elicit motorist behaviours that are attuned to context, including slower speed environments in locations where high pedestrian and cyclist traffic is predicted. These types will be designed as inviting, leafy, people-friendly streets that can be enjoyed simply for the quality of the space.

The design and scale of thoroughfares, including landscape treatments, respond proportionately to and complement the adjacent built form. This means that each thoroughfare type will support a variety of building types, building frontages, street activity and landscaping, and will be designed to complement the Transect Zone through which it passes.

In each Transect Zone there may be several thoroughfare types to suit the local context of the urban form, topography, public spaces and street function. As a thoroughfare crosses different Transects, its character (and possibly its thoroughfare type) will change to suit the intensity of the urban form.

Whilst most thoroughfares terminate on another thoroughfare, closes will be used where warranted by severe design constraints such as dramatic topography that would render an intersection unsafe.

Street trees will be a particularly important element of thoroughfare design, performing a vital role in creating the quality of life, environmental health and urban character intended for much of Jindee. Visually street trees will be used to soften and add natural character to the urban environment, providing colour, form and texture as well as performing an architectural function that gives space definition and landscape continuity. Functionally, they will contribute to a healthy urban development through the provision of shade protection to pedestrians, fauna habitat and improved air quality.













The scale and location of street trees will be considered in the context of the scale of the thoroughfare. Wider thoroughfares will allow for larger trees, while the converse applies to narrower streets and pedestrian access ways.

Given the significant and multifaceted role street trees will perform at Jindee, it is logical that 'green infrastructure' be given the same level of care, protection and maintenance as typically applied to any other public asset. Consistent with this view, any interference to, or removal of, street trees should be limited to only those circumstances that warrant interference, including protection of property, community safety and usual maintenance requirements. Where conflicts exist between tree placement and engineering services or development, priority should be given to tree preservation.

Further information on the design of the thoroughfare network including intersection treatments and capacity to accommodate predicted traffic volumes is provided in the Traffic/Transport Assessment in Part 3 – Technical Reports.



THOROUGHFARE TYPES

	Avenue		Alley
	Boulevard		Lane
	Mixed-Use Street		Promenade
	Street		Passage
	Road		Path
	Drive		Shared Path

*Note - The locations of those Paths that cross civic space areas are indicative and will be determined as part of the related LDP or relevant reserve management plan for that land.

Landscape Standards

The Landscape Standards included in Part 1 allocate civic space types throughout Jindee. The standards also stipulate the types of improvements and functions suited to each type, and include a plant list from which species will be selected to suit local soil and climatic conditions. Detailed landscaping plans, submitted to the CoW for each civic space area, will demonstrate compliance with these standards.

The civic space types respond to Transect Zone character to ensure that landscape treatments and other improvement are appropriate to their environment and relative urban intensity. For example, civic spaces located within a very urban area will typically include more formal squares and plazas, providing gathering and event spaces that are co-located with public and commercial uses. These spaces will be framed by taller buildings with reduced or nil setbacks, to further reinforce the urban character intended for these areas.

Lower intensity areas will include more informal parks, natural bushland areas, and larger active recreation areas, including the 3.0ha sportsground adjacent to the primary school. They will also include intimate community gathering spaces like those to be provided within the network of closes.

By providing this diversity, civic spaces will contribute to the transitioning of the character of the Jindee environment from a natural to highly urbanised state.

Many civic spaces will also be designed for multiple-use, whereby an area within a civic space will be designated for special uses or functions of a different civic space type. An example of this is a green which contains a plaza within it. A plaza may include a kiosk and seating for the enjoyment of the rest of the green. The two typologies complement each other and will be seamlessly integrated. Similarly, some civic spaces will perform a dual drainage and recreation role.

The majority of civic spaces will be located where the density of development will be highest, allowing borrowed amenity of these spaces to be located in proximity to higher density living. All civic spaces will be overlooked by buildings and most will be fronted by thoroughfares to maximise security and accessibility.

Many of the spaces will also be designed to create defining terminated vistas for many of the thoroughfares.

The CoW has expressed its support for the diversity of civic spaces proposed through the Landscape Standards. In this regard it is acknowledged that the varied treatments to be applied, including the more formalised treatments proposed for the smaller civic spaces within the higher transects, is consistent with SmartCode® and integral to the place character intended for each of the Transect Zones.

The City has also acknowledged that the civic spaces within the Jindee Innovation Project will not conform to the provisions of LPP 4.3 – Public Open Space, which generally encourages larger increments of public open space.

The Scheme includes a provision that exempts Jindee from complying with CoW local planning policies (LPP) (unless otherwise stated in the LPP) recognising that certain policy provisions are at odds with outcome intended for Jindee.

As the public domain of Jindee will be developed to a high standard, arrangements will be put in place between the CoW and proponent to address infrastructure maintenance responsibilities and replacement.

Landscape Character

The landscape component of the Jindee community will be an integral element of the urban fabric, from both an aesthetic and pedestrian comfort perspective. The benefits of investing in 'green infrastructure' (soft landscaping) is well documented and, in addition to making walking more attractive, can also have a positive impact on mental health.

Designing communities where the pedestrian environment is given priority also has environmental benefits through decreased car use, ensuring a balance between the built and natural elements.

In addition to supporting community and environmental health, the landscape will add strength to the overall Jindee vision. The landscape of Jindee will be diverse, reinforcing Transect Zone character and the changes in soil and ecology that occur from east to west across the site. The east west variation and progression of microclimates will present an opportunity to introduce different species which will allow for diversity of colours, textures and form in these areas.

The landscape character will progress from a stylised expression of suitably adapted species, materials and urban treatments within the urban precincts of the T4 - T6 Transects, through to a more natural expression of the existing landscape, with minimal intervention in the T2 Transect.








Jindee will use a wide range of plant species. This variety is typical of established areas like Fremantle and Cottesloe where a process of experimentation with different plant species has led to a mosaic of botanical species. Special consideration will be given to using site specific microclimatic opportunities for landscape advantage.

The different landscape treatments applied across Jindee will correspond to landscape precincts that approximately correlate with the Transect Zones. Each precinct will have its own unique character, yet be linked together by the overall vision for Jindee:

- The 'Elevated Fringe' precinct will still be influenced by the naturalistic character of the T2 Zone but also contain elements associated with more urban T4-T5 zones. Trees will be planted in random groups with verge planting. The streets will be more enclosed than the 'naturalistic' precincts, with the trees being of a larger size, creating an irregular canopy.
- The 'Green Amphitheatre' comprises the central precinct, where the landscaping will be green and shady with tree-lined streets that have touching canopies. The trees will be in a formal arrangement and will consist of predominantly exotic species. The precinct will also have lush ground level planting, enhancing the leafy, green, shady character of the area.
- The 'Coastal Urban Village' is a mixed-use, high usage precinct with large volumes of pedestrian and vehicular traffic. As such, the landscape will consist largely of paved surfaces, with street trees in a highly formal arrangement. In many locations building awnings will provide shade, leaving the street trees as features rather than shade elements. Street furniture will be robust and high quality.
- The 'Coastal Retreat' precinct is located in the south-west corner of the site and is heavily influenced by its proximity to the coast. Taking the brunt of on-shore winds, it will be prone to sand drift and salt spray. The character of this area will be coastal, with robust materials used throughout. Hardy, coastal tolerant tree species will be used. There will be minimal ground level planting in sheltered locations.
- The 'Commercial' precinct contains the commercial enterprises which rely on visual exposure from Marmion Avenue. Tall trees will be used with an umbracious canopy to provide shade for car parking, if present, and visual permeability through to the businesses.
- The 'Naturalistic North' and 'Naturalistic South' precincts will retain significant areas of existing vegetation. The landscape character combines native planting in irregular arrangements with naturalistic paving and landscape materials, such as limestone and timber. The area will be open, with much of the planting being low height species, reflecting the existing coastal scrubland. 'Naturalistic North' has tall trees, distinguishing it from 'Naturalistic South' which encompasses the MRS reserves.



CHARACTER AREA TYPES

-  naturalistic north
-  naturalistic south
-  green amphitheatre
-  elevated fringe
-  coastal retreat
-  coastal urban village
-  commercial



NATURALISTIC NORTH
NATURALISTIC SOUTH (T2)



ELEVATED FRINGE (T3)



GREEN AMPITHEATRE (T4)



COASTAL RETREAT (T4)



COASTAL URBAN VILLAGE (T4,T5)



COMMERCIAL (T6)

Tree Species List and Exposure Zones Plan

All plant species will be selected on the basis of suitability to the local conditions, work practices and functional applications, and shall perform the functions required of an urban environment including the provision of shaded streets and to promote pedestrian activity. The tree species list has been developed in consultation with the CoW environmental planners, landscape designers, and landscape maintenance officers with the aim of using appropriate, adapted species that suit the anticipated, respective coastal exposure zones.

The Landscape Exposure Zones Plan has been prepared to assist in the species selection in any given area on the site. The plan maps exposure to salt laden winds, which have a significant impact on the selection and performance of plant species over the full extent of the Jindee site / development.

The determination of the exposure zones has been based upon the premise that the existing site topography will largely remain intact and, along with the topography, a significant proportion of endemic vegetation will also be retained, in known locations, on site. The distance from the coast also plays a significant role with regard to the extent of exposure. In addition to this, a certain amount of 'interpretation' has then been applied as a 'subtle overlay' estimating the probable effect that the proposed new built form will have on local micro-climatic conditions, especially on the lee (east) side of new buildings. However, it should be stressed that this has been given a low level of consideration due to the relative uncertainty of such outcomes and interpretations. The effect of any new planting has largely been ignored due to the time it will take for any new trees to grow and thus have any discernible impact.

The Landscape Exposure Zones Plan should be read in conjunction with the Jindee Tree List with corresponding exposure zones being graphically represented in the Tree Matrix for each of the individual tree species. It should be noted that as a general rule for all of the tree species included in this list that, if they are known to perform satisfactorily in a particular exposure zone, then it can be expected that they will perform more than adequately in a less exposed zone.

LANDSCAPE EXPOSURE ZONES



NOMINAL EXPOSURE LEVELS

- highly salt laden winds
- high-moderate salt laden winds
- moderately salt laden winds
- moderate-low salt laden winds
- low salt laden winds

*Note - The zones shown on this plan are limited to an interpretation of the climatic impact on the performance of trees species in the Perth coastal area and incorporate the likely influences of Jindee's existing topography.

This plan should be read in conjunction with the Jindee Tree Matrix.

TABLE 8 - JINDEE TREE MATRIX

Scientific Name	Common Name	Height	Shape	Exposure Zones					Higher Water Use	Street Trees	Public Open Spaces
				1	2	3	4	5			
<i>Acacia elata</i>	Cedar Wattle	15-20m	oval			•	•	•		•	
<i>Acacia sellowiana</i> syn <i>Fejooa sellowiana</i>	Feijoa	2.5-4m	ball			•	•	Y		•	
<i>Acer negundo</i> 'Variegatum'	Box Elder Maple, Ghost Tree	5-10m	ball					•	•	•	
<i>Agathis australis</i>	Kauri	20-30m	oval			•	•	Y		•	
<i>Agathis robusta</i>	Queensland Kauri	12-30m	pyramid			•	•	•		•	
<i>Agonis flexuosa</i>	WA Peppermint	5-15m	umbrella	?		•	•	Y		•	
<i>Agonis flexuosa</i> 'After Dark'	Purple Leafed Peppermint	5-10m	umbrella			•	•	•		•	
<i>Albizia julibrissin</i>	Silk Tree	5-10m	umbrella			?	•	•	B?	•	
<i>Albizia lebbekii</i>	Lebbeek	8-12m	umbrella			?	•	•		•	
<i>Ailanthus altissima</i>	Tree Of Heaven	15m	oval			?	•	Y		•	
<i>Allocasuarina verticillata</i>	Drooping Sheak	5-10m	vase	?		•	•	•		•	
<i>Alnus japonensis</i>	Evergreen Alder	5-10m	pyramid					Y		•	
<i>Anagaphora costata</i>	Smooth Barked Apple	15-20m	vase			•	•	•		•	
<i>Anagaphora floribunda</i>	Rough Barked Apple	12-24m	clustered			•	•	•		•	
<i>Arucaria columnaris</i>	Captain Cook's Pine	20-30m	pyramid			•	•	•		•	
<i>Arucaria cunninghamii</i>	Hoop Pine	20-30m	pyramid			•	•	•		•	
<i>Arucaria heterophylla</i>	Norfolk Island Pine	25m	pyramid			•	•	•		•	
<i>Arbutus unedo</i>	Strawberry Tree	5-10m	ball			•	•	•		•	
<i>Aurantiacaria rhombifolia</i>	Diamond Pittosporum	5-10m	pyramid	?		•	•	•	C	•	
<i>Banksia attenuata</i>	Candle Banksia	5-10m	ball			•	•	•		•	
<i>Banksia grandis</i>	Bull Banksia	5-10m	vase			•	•	•		•	
<i>Banksia integrifolia</i>	Coast Banksia (NSW)	15m	clustered	?		•	•	•		•	
<i>Banksia marginata</i>	Silver Banksia	4-6m	ball			•	•	•		•	
<i>Banksia menziesii</i>	Menzies Banksia	5-10m	ball			•	•	•		•	
<i>Bauhinia bleekera</i>	Hong Kong Orchid Tree	5-10m	ball			•	•	•		•	
<i>Bauhinia purpurea</i>	Purple Orchid Tree	10-15m	umbrella			•	•	•		•	
<i>Bauhinia variegata</i> 'Candida'	White Bauhinia	8-12m	ball			•	•	•		•	
<i>Brachychiton acerifolius</i>	Flame Tree	5-10m	pyramid			•	•	•		•	
<i>Brachychiton discolor</i>	Lacebark Kurrajong	6-24m	pyramid			•	•	•		•	
<i>Brachychiton pregarii</i>	Desert Kurrajong	4-8m	vase	?		•	•	•		•	
<i>Brachychiton populneus</i>	Kurrajong	6-20m	ball			•	•	•		•	
<i>Brahea armata</i>	Mexican Blue Palm	10-15m	pole			•	•	•		•	
<i>Butia capitata</i>	Wine Palm	4-8m	pole			•	•	•		•	
<i>Caesalpinia ferrea</i>	Leopard Tree	5-10m	ball			•	•	Y		•	
<i>Callistemon 'Kings Park Special'</i>	Callistemon 'Kings Park Special'	3-5m	oval	?		•	•	•		•	
<i>Caryota rumphiana</i> var <i>australasica</i>	Native Fishtail Palm	8-12m	pole			•	•	•		•	
<i>Cassia fistula</i>	Golden Shower	5-10m	umbrella			•	•	•		•	
<i>Cassia surattensis</i>	Sunshine Tree	5-10m	umbrella			•	•	•		•	
<i>Castanospermum australe</i>	Mortain Bay Chestnut	10-15m	ball			•	•	Y		•	
<i>Casuarina equisetifolia</i> subsp <i>incana</i>	Harstead Sheak	6-12m	vase			•	•	•	C?	•	
<i>Casuarina obesa</i>	Swamp Sheak	5-15m	vase			•	•	•	C?	•	
<i>Catalpa bignonioides</i>	Southern Catalpa	10-15m	umbrella			•	•	Y		•	
<i>Cedrus libani</i>	Lebanon Cedar	15-25m	pyramid			•	•	•		•	
<i>Ceiba speciosa</i> syn <i>Chorisia speciosa</i>	Floss Silk Tree	10-15m	umbrella			•	•	•		•	
<i>Celtis laevigata</i>	Sugarberry	5-10m	umbrella			•	•	•		•	
<i>Celtis occidentalis</i>	Common Hackberry	5-10m	umbrella			•	•	•		•	
<i>Celtis sinensis</i>	Chinese Hackberry	5-10m	umbrella			•	•	•		•	
<i>Ceratonia siliqua</i>	Carob Tree	10m	umbrella	?		•	•	•	B?	•	
<i>Cercis siliquastrum</i>	Judas Tree	5-12m	ball			•	•	•		•	
<i>Cinnamomum camphora</i>	Camphor Laurel	15-25m	umbrella			•	•	•	A&B	•	
<i>Cinnamomum iners</i>	Wild Cinnamon	5-10m	ball			•	•	•		•	
<i>Cinnamomum verum</i>	Cinnamon	5-10m	ball			•	•	•		•	
<i>Citrus limon</i>	Lemon	5-10m	ball			•	•	Y		•	
<i>Citrus sinensis</i>	Orange	5-10m	ball			•	•	Y		•	
<i>Coecoloba wulferi</i>	Sea Grape	5-8m	umbrella			•	•	•	C	•	
<i>Copaniopsis anaeroidoides</i>	Tucketoe	5-10m	oval			•	•	•		•	
<i>Cupressus cashmeriana</i>	Kashmir Cypress	15-20m	pyramid			•	•	•		•	
<i>Cupressus funebris</i>	Weeping Chinese Cypress	15-20m	pyramid			•	•	•		•	
<i>Cupressus glabra</i>	Smooth Bark Cypress	10-15m	pyramid			•	•	•		•	
<i>Cupressus leylandii</i>	Leyland Cypress	10-15m	pyramid			•	•	•		•	
<i>Cupressus lusitanica</i>	Mexican Cypress	4-8m	pyramid			•	•	•		•	
<i>Cupressus sempervirens</i>	Pencil Pine	15-25m	pole			•	•	•		•	
<i>Cassipouia zippicata</i>	Clubmoss Tree	5-10m	umbrella			•	•	•		•	
<i>Dalmanea regia</i>	Palmistina	10-15m	umbrella	?		•	•	•		•	
<i>Dracaena draco</i>	Dragon Tree	2-5m	clustered	?		•	•	•		•	
<i>Eriobotrya japonica</i>	Japanese Loquat	5-10m	ball			•	•	•		•	
<i>Erythrina affra</i>	Coastal Coral Tree	4-8m	umbrella			•	•	•	D	•	
<i>Erythrina crista-galli</i>	Cockspur Coral Tree	4-8m	umbrella			•	•	•	D	•	
<i>Erythrina indica</i>	Coral Tree	15-25m	umbrella			•	•	•	D	•	
<i>Erythrina speciosa</i>	Showy Coral Tree	4-8m	umbrella			•	•	•	D	•	
<i>Erythrina x sykkesii</i>	Coral Tree	5-9m	umbrella			•	•	•	D	•	
<i>Eucalyptus caesia</i> subsp <i>caesia</i>	Gungahra (tree-like form)	5-10m	clustered			•	•	•		•	
<i>Eucalyptus caesia</i> subsp <i>magna</i>	Silver Princess (pendulous form)	10-15m	clustered			•	•	•		•	
<i>Eucalyptus calophylla</i>	Marri	25m	clustered			•	•	•		•	
<i>Eucalyptus calophylla</i> 'Rosea'	Pink Flowered Marri	25m	clustered			•	•	•		•	
<i>Eucalyptus calycogona</i> 'Jubilee'	Gooseberry Mallee	3-5m	clustered			•	•	•		•	
<i>Eucalyptus cinerea</i>	Dwarf Apple	8m	clustered			•	•	•		•	
<i>Eucalyptus citriodora</i> 'Marion'	Dwarf Lemon Scented Gum	20-30m	clustered			•	•	•		•	
<i>Eucalyptus cornuta</i>	Yate	10-18m	clustered			•	•	•		•	
<i>Eucalyptus coronata</i> syn <i>Eucalyptus mitrata</i>	Mitre Gum/Crowned Mallee	2-5m	clustered			•	•	•		•	

Scientific Name	Common Name	Height	Shape	Exposure Zones					Higher Water Use	Street Trees	Public Open Spaces
				1	2	3	4	5			
<i>Eucalyptus cosmophylla</i>	Cup Gum	3-15m	clustered			•	•	•		•	
<i>Eucalyptus crucis</i>	Maiden Silver Mallee	2.5-6m	clustered			•	•	•		•	
<i>Eucalyptus decurva</i>	Slender Mallee	4-6m	clustered			•	•	•		•	
<i>Eucalyptus diversifolia</i> subsp <i>diversifolia</i>	Coastal White Mallee	10m	clustered			•	•	•		•	
<i>Eucalyptus diversifolia</i> subsp <i>hesperia</i>	Mishura Mallee-Ash	10m	clustered			•	•	•		•	
<i>Eucalyptus dolicholobus</i>	Fuchsia Gum	3-5m	clustered			•	•	•		•	
<i>Eucalyptus staratoylana</i>	Spearwood Mallee	3-6m	clustered			•	•	•		•	
<i>Eucalyptus eremophila</i>	Tall Sand Mallee	3-8m	clustered			•	•	•		•	
<i>Eucalyptus erythronyx</i>	Red Cap Gum/Ilyarrie	2.5-6m	clustered	?		•	•	•		•	
<i>Eucalyptus ficifolia</i> syn <i>Corymbia ficifolia</i>	Albany Red Flowering Gum	10m	clustered			•	•	•		•	
<i>Eucalyptus ficifolia</i> 'Summer Glory'	Red Flowering Gum 'Summer Glory'	5-7m	clustered			•	•	•		•	
<i>Eucalyptus ficifolia</i> 'Summer Red'	Red Flowering Gum 'Summer Red'	5-7m	clustered			•	•	•		•	
<i>Eucalyptus ficifolia</i> 'Summer Snow'	Red Flowering Gum 'Summer Snow'	5-7m	clustered			•	•	•		•	
<i>Eucalyptus forestiana</i>	Fuchsia Gum	2.5-4m	clustered			•	•	•		•	
<i>Eucalyptus gomphocephala</i>	Tuart	15-40m	clustered			•	•	•		•	
<i>Eucalyptus kingsmillii</i> subsp <i>alatisissima</i>	Red Kingsmill Mallee	4-8m	clustered			•	•	•		•	
<i>Eucalyptus kingsmillii</i> subsp <i>kingsmillii</i>	Kingsmill Mallee	4-8m	clustered			•	•	•		•	
<i>Eucalyptus laevis</i>	Darling Range Ghost Gum	5-20m	clustered			•	•	•		•	
<i>Eucalyptus lane-poolae</i>	Salmon White Gum	3-12m	clustered			•	•	•		•	
<i>Eucalyptus lansdowniana</i>	Crimson Mallee	3-5m	clustered			•	•	•		•	
<i>Eucalyptus lehmannii</i>	Bushy Yate	5-10m	clustered			•	•	•		•	
<i>Eucalyptus leucocylon</i> subsp <i>megalocarpa</i>	Large Fruited Yellow Gum	5-10m	clustered			•	•	•		•	
<i>Eucalyptus leucocylon</i> subsp <i>megalocarpa</i> 'Goolwa Gem'	Large Fruited Yellow Gum 'Goolwa Gem'	5-10m	clustered			•	•	•		•	
<i>Eucalyptus leucocylon</i> subsp <i>megalocarpa</i> 'Millicent'	Large Fruited Yellow Gum 'Millicent'	5-10m	clustered	?		•	•	•		•	
<i>Eucalyptus macrandra</i>	Long Flowered Marlock	2-8m	clustered			•	•	•		•	
<i>Eucalyptus maculata</i> syn <i>Corymbia maculata</i>	Spotted Gum	15-25m	clustered			•	•	•		•	
<i>Eucalyptus megacarpa</i>	Warty Yate	6-12m	clustered			•	•	•		•	
<i>Eucalyptus nicholii</i>	Narrow Leaved Peppermint	10-24m	clustered			•	•	•		•	
<i>Eucalyptus nutans</i>	Red Flowered Moorit	3-5m	clustered	?		•	•	•		•	
<i>Eucalyptus olfieldii</i>	Olfield's Mallee	2-6m	clustered			•	•	•		•	
<i>Eucalyptus pachyphylla</i>	Thick-Leaved Mallee	5-7m	clustered			•	•	•		•	
<i>Eucalyptus petalialis</i>	Eye Peninsular Blue Gum	6-15m	clustered			•	•	•		•	
<i>Eucalyptus pleurocarpa</i>	Tallerack	2-8m	clustered			•	•	•		•	
<i>Eucalyptus preissiana</i> subsp <i>biloba</i>	Bell Fruited Mallee	2.5-5m	clustered			•	•	•		•	
<i>Eucalyptus pyriformis</i>	Pear Fruited Mallee	2-5m	clustered			•	•	•		•	
<i>Eucalyptus rudis</i>	Flooded Gum	15-30m	clustered			•	•	•	Y	•	
<i>Eucalyptus scoparia</i>	Wallangarra White Gum	10-15m	clustered			•	•	•		•	
<i>Eucalyptus sideroxylon</i> 'Palens' syn 'Rosea'	Red Iron Bark- Pink Flowered form	10-25m	clustered			•	•	•		•	
<i>Eucalyptus spathulata</i>	Swamp Mallet	2-7m	clustered			•	•	•		•	
<i>Eucalyptus steedmanii</i>	Steedman's Gum	5-10m	clustered			•	•	•		•	
<i>Eucalyptus stoatei</i>	Stoat's Mallee	5-8m	clustered			•	•	•		•	
<i>Eucalyptus stricklandii</i>	Strickland's Gum	6-12m	clustered			•	•	•		•	
<i>Eucalyptus syndnara</i>	Jingymia Mallee	4-6m	clustered			•	•	•		•	
<i>Eucalyptus todtiana</i>	Coastal Blackbutt	5-10m	clustered			•	•	•		•	
<i>Eucalyptus torquata</i> (Kalgoorlie form)	Coral Gum	3-8m	clustered			•	•	•		•	
<i>Eucalyptus utilis</i>	Coastal Moorit	4-8m	clustered			•	•	•		•	
<i>Eucalyptus victrix</i>	WA Coolibah	7-12m	clustered			•	•	•		•	
<i>Eucalyptus websteriana</i>	Webster's Mallee	3-5m	clustered			•	•	•		•	
<i>Eucalyptus youngiana</i>	Large-Fruited Mallee	3-7m	clustered			•	•	•		•	
<i>Ficus benjamina</i>	Weeping fig	25-30m	umbrella			•	•	•		A&B	
<i>Ficus elastica</i>	Indian Rubber Plant	25-30m	ball			•	•	•		•	
<i>Ficus longifolia</i>	Narrow Leaf Fig / Sabre Ficus	4-7m	oval			•	•	•		A&B?	
<i>Ficus lyrata</i>	Lyre Leaved Fig, Fiddle Leaf Fig	7-12m	ball			•	•	•	?	A&B?	
<i>Ficus macrophylla</i>	Moreton Bay Fig	15-35m	umbrella			•	•	•		A&B	
<i>Ficus microcarpa</i> subsp <i>hillii</i>	Hills Weeping Fig	10-20m	umbrella	?		•	•	•		A&B	
<i>Ficus microcarpa</i> subsp <i>microcarpa</i> syn <i>Ficus retusa</i>	Indian Laurel Fig	12-25m	umbrella	?		•	•	•		A&B	
<i>Ficus obliqua</i> syn <i>Ficus eugenioides</i>	Small Leaved Fig	12-25m	umbrella			•	•	•		A&B	
<i>Ficus rubiginosa</i>	Port Jackson Fig	15-20m	umbrella			•	•	•		A&B	
<i>Ficus rubiginosa</i> 'Variegata'	Variiegated Rusty Fig	3-7m	umbrella			•	•	•		•	
<i>Ficus superba</i> var <i>heneana</i>	Deciduous Fig	10-30m	umbrella			•	•	•		A&B	
<i>Ficus waltkins</i>											

Scientific Name	Common Name	Height	Shape	Exposure Zones					Higher Water Use	Street Trees	Public Open Spaces
				1	2	3	4	5			
<i>Jubaea chilensis</i>	Chilean Wine Palm	15-20m	pole					*		*	
<i>Juniperus thurifera</i>	Spanish Juniper	15-20m	pyramid				*			*	
<i>Koelerutera paniculata</i>	Golden Rain Tree	10-15m	ball				*	Y		*	
<i>Lagerstroemia indica</i>	Crepe Myrtle	5-10m	ball				*			*	
<i>Lagerstroemia speciosa</i>	Giant Crepe Myrtle	15-20m	ball				*			*	
<i>Lagerstroemia sp. (cultivars)</i>	Giant Crepe Myrtle (cultivars)	5-12m	ball				*			*	
<i>Lagunaria patersonia</i>	Norfolk Island Hibiscus	15-25m	pyramid	?	*	*	*		*	*	
<i>Laureus nobilis</i>	Bay Laurel	10-15m	oval	?	*	*	*			*	
<i>Leucadendron argenteum</i>	Silver Tree	5-10m	oval				*			*	
<i>Liquidambar styraciflua</i>	Liquid Amber	20-40m	pyramid				*		*	*	
<i>Liquidambar formosana</i>	Chinese Liquid Amber	12-18m	pyramid				*	?	*	*	
<i>Lophostemon confertus</i>	Queensland Brush Box	15-25m	ball		*	*	*	?	*	*	
<i>Lysiphillum carroni</i>	Queensland Ebony	5-10m	ball				*	Y		*	
<i>Lysiphillum hookeri</i>	White Bauhinia	5-10m	umbrella				*	Y		*	
<i>Magnolia grandiflora</i>	Bull Bay	6-20m	oval		*	*	*		*	*	
<i>Melaleuca culticularis</i>	Salt Water Paperbark	6-12m	clustered		*	*	*			*	
<i>Melaleuca lanceolata</i>	Rettnest Island Tea Tree	5-10m	ball		*	*	*		*	*	
<i>Melaleuca leucadendra</i>	Narrow Leaved Paperbark	5-15m	oval		*	*	*		*	*	
<i>Melaleuca linearifolia</i>	Snow in Summer	5-10m	clustered		*	*	*		*	*	
<i>Melaleuca nesophila</i>	Showy Honey Myrtle	5-10m	oval	?	*	*	*		*	*	
<i>Melaleuca preissiana</i>	Stout Paperbark, Modong or Moonah	6-10m	ball		*	*	*		*	*	
<i>Melaleuca quinquenervia</i>	Broad Leaved Paperbark	8-12m	clustered		*	*	*		*	*	
<i>Melaleuca styphalioides</i>	Prickly Leaved Paperbark	8-15m	oval		*	*	*		*	*	
<i>Melaleuca viridiflora 'David Hocking's Selection'</i>	Broad Leaved Paperbark	10-20m	oval		*	*	*		*	*	
<i>Melia azedarach</i>	White Cedar	10-15m	umbrella		*	*	*		*	*	
<i>Meryta sinclairii</i>	Puka or Pukanui	4-8m	ball		*	*	*	Y		*	
<i>Metrosideros excelsa</i>	New Zealand Christmas Tree	5-12m	umbrella		*	*	*		*	*	
<i>Metrosideros excelsa 'Picta'</i>	New Zealand Christmas Tree 'Picta'	6-10m	umbrella		*	*	*		*	*	
<i>Metrosideros robusta</i>	Northern Rātā	3-15m	ball		*	*	*		*	*	
<i>Metrosideros 'Erp Thompson'</i>	New Zealand Christmas Bush	5-12m	ball		*	*	*		*	*	
<i>Michelia figo</i>	Port Wine Magnolia	5m	ball				*	?		*	
<i>Morus alba</i>	White Mulberry	10-15m	ball		*	*	*		*	*	
<i>Morus nigra</i>	Black Mulberry	10-15m	ball		*	*	*		*	*	
<i>Morus rubra</i>	Red Mulberry	10-15m	ball		*	*	*		*	*	
<i>Myoporum insulare</i>	Boobialla	6m	ball		*	*	*		*	*	
<i>Myoporum laetum</i>	Ngaio Tree	3-10m	ball		*	*	*		*	*	
<i>Nyctxia floribunda</i>	WA Christmas Tree	5-10m	clustered		*	*	*		A?	*	
<i>Olea africana</i>	African Olive	5-15m	ball		*	*	*		C	*	
<i>Olea europaea</i>	Common Olive	5-10m	ball		*	*	*		C	*	
<i>Phoenix canariensis</i>	Canary Island Date Palm	10-15m	pole		*	*	*		C	*	
<i>Phoenix dactylifera</i>	Date Palm	15-20m	pole		*	*	*		C	*	
<i>Pinus canariensis</i>	Canary Island Pine	25-30m	pyramid		*	*	*		*	*	
<i>Pinus halepensis</i>	Aleppo or Lone Pine	15-25m	umbrella		*	*	*		*	*	
<i>Pinus patula</i>	Mexican Stone Pine	25-30m	pyramid		*	*	*		*	*	
<i>Pinus pinaster</i>	Maritime Pine	20-25m	pyramid		*	*	*		*	*	
<i>Pinus pinea</i>	Umbrella Pine, Stone Pine	20-40m	umbrella		*	*	*		*	*	
<i>Pistacia chinensis</i>	Chinese Pistachio	8-12m	ball		*	*	*		*	*	
<i>Pittosporum crassifolium</i>	Karo	3-8m	ball	?	*	*	*		*	*	
<i>Pittosporum eugenioides</i>	Lemonwood	10-12m	ball		*	*	*		*	*	
<i>Pittosporum phylliracoides</i>	Weeping Pittosporum	4-10m	oval		*	*	*		*	*	
<i>Platanus acerifolia syn Platanus x hispanica</i>	London Plane Tree	20-30m	ball		*	*	*		*	*	
<i>Platanus digitalis</i>	Cut Leaf Plane	10-30m	pyramid		*	*	*		*	*	
<i>Platanus orientalis</i>	Oriental Plane	10-30m	ball		*	*	*		*	*	
<i>Plumeria alba</i>	White Frangipani	5-10m	umbrella		*	*	*		*	*	
<i>Plumeria rubra</i>	Red Frangipani	5-10m	umbrella		*	*	*		*	*	
<i>Podocarpus elatus</i>	Plum Pine	8-10m	pyramid		*	*	*	Y	C	*	
<i>Polyalthia longifolia</i>	Indian Mast Tree	10-15m	pole		*	*	*	Y		*	
<i>Prunus dulcis</i>	Almond	4-8m	ball		*	*	*		*	*	
<i>Prunus persica</i>	Peach	4-8m	ball		*	*	*	Y		*	
<i>Pyrus calleryana</i>	Ornamental Pear	10-15m	ball		*	*	*		*	*	
<i>Pyrus ussuriensis</i>	Manchurian Pear	5-12m	ball		*	*	*		*	*	
<i>Quercus canariensis</i>	Algerian Oak	5-15m	umbrella		*	*	*	Y		*	
<i>Quercus ilex</i>	Holm Oak	20-25m	ball		*	*	*		C	*	
<i>Quercus palustris</i>	Pin Oak	15-20m	pyramid		*	*	*	?	C	*	
<i>Quercus suber</i>	Cork Oak	10-15m	ball		*	*	*	Y		*	
<i>Robinia pseudoacacia</i>	Black Locust	10-20m	ball	?	*	*	*		A	*	
<i>Robinia x ambigua 'Decaisneana'</i>	Pink Wisteria Tree	8-12m	oval		*	*	*		A	*	
<i>Sapium sebiferum</i>	Chinese Tallow	5-10m	ball		*	*	*		*	*	
<i>Schefflera actinophylla</i>	Umbrella Tree	10-15m	pole	?	*	*	*		*	*	
<i>Schinus molle</i>	Pepper Tree	5-10m	ball		*	*	*		*	*	
<i>Scolopia braunii</i>	Flintwood, Mountain Cherry, Brown Birch	6-15m	umbrella		*	*	*	Y		*	
<i>Spathodea campanulata</i>	African Tulip Tree	7-15m	umbrella		*	*	*		*	*	
<i>Stenocarpus sinuatus</i>	Firewheel Tree	15-20m	oval		*	*	*	?	*	*	
<i>Styphnolobium japonicum syn Sophora japonica</i>	Japanese Pagoda Tree	10-15m	umbrella		*	*	*		*	*	
<i>Syzygium luehmannii</i>	Riberry, Small-Leaved Lilly Pilly	15-25m	pyramid		*	*	*	Y		*	
<i>Syzygium smithii syn Acmena smithii</i>	Lillypilly	10-15m	oval		*	*	*	Y		*	
<i>Tabebuia heterophylla</i>	Pink Trumpet Tree	8-12m	ball		*	*	*	Y		*	
<i>Tabebuia impetiginosa</i>	Pink Lapacho	15-25m	umbrella		*	*	*	Y		*	
<i>Tabebuia ipe</i>	Pink Trumpet Tree	10-15m	umbrella		*	*	*	Y		*	
<i>Tabebuia lapacho</i>	Lapacho	20-30m	ball		*	*	*	Y		*	

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<i>Tiupaona tipu</i>	Pride of Bolivia	7-15m	umbrella		*	*	*	*		*	*
<i>Toona ciliata syn Toona australis</i>	Australian Red Cedar	30-40m	oval		*	*	*	Y	*	*	
<i>Tristanopsis laurina</i>	Kanooka	10-15m	ball		*	*	*	Y		*	
<i>Ulmus carpinifolia</i>	Smooth Leaf Elm	8-12m	oval		*	*	*	Y		*	
<i>Ulmus 'Louis van Houtte'</i>	Golden Elm	10-15m	ball		*	*	*	Y		*	
<i>Ulmus parvifolia</i>	Chinese Elm	5-10m	ball		*	*	*	?	*	*	
<i>Virgilia oroboides</i>	Blossom Tree	5-10m	ball		*	*	*		*	*	
<i>Washingtonia filifera</i>	Cotton Palm	10-15m	pole	?	*	*	*		*	*	
<i>Washingtonia robusta</i>	Fan Palm	7-15m	pole	?	*	*	*		*	*	
<i>Zelkova serrata</i>	Japanese Zelkova	15-25m	ball		*	*	*		*	*	

NOTES:

1. "1" under a particular exposure zone indicates: need to be tested in small numbers in such zones on site before being deployed in large numbers. Otherwise may need to allow for extra watering for 5-10 years.

2. "2" under "Higher Water Use" indicates: these trees are to be restricted in use to higher use areas, in where a higher maintenance and water usage is justified.

3. "A" under Street Trees indicates: these trees need to be surrounded by paving and if the tree is within 1.2m of a kerb then it may require additional measures such as a root barrier or reinforced kerb.

4. "B" under Street Trees indicates: these trees need to be restricted to larger scale thoroughfares due to their size.

5. "C" under Street Trees indicates: these trees need to be restricted to lower pedestrian trafficked locations due to the potential hazard of slipping on the nuts or seeds.

6. "D" under Street Trees indicates: these trees need to be restricted to lower pedestrian trafficked locations and not in car parking areas due to their potential to drop branches.

"The final selection of tree species will be determined at the landscape and irrigation design approval stage having regard to the Exposure Zone in which it is located, and the thoroughfare type and the Tract zone in which they are situated."

