great places_

mandogalup west local structure plan volume a

(part one + part two)

lots 682 and 52 rowley road, mandogalup

PREPARED BY ROBERTSDAY FOR QUBE PROPERTY GROUP
ON BEHALF OF MANDOGALUP DEVELOPMENT JOINT VENTURE
NOVEMBER 2017

QUBE

CLIENT

QUBE PROPERTY GROUP ON BEHALF OF MANDOGALUP DEVELOPMENT JOINT VENTURE

PROJECT TEAM

ROBERTSDAY
COSSIL AND WEBLEY
PLAN E
JDA
TRANSCORE
STRATEGEN
TAKTICS 4
LLOYD GEORGE ACOUSTICS

CITATION
This document should be cited as follows:
RobertsDay (2017),Mandogalup Local Structure Plan. Prepared by RobertsDay Pty Ltd.

LOCAL STRUCTURE PLAN ENDORSEMENT STATUS

This structure plan is prepared under the provisions of the City of Kwinana Town Planning Scheme No. 2.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

22 March 2018

Signed for and on behalf of the Western Australian Planning Commission:

_____

an officer of the Commission duly authorized by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

_____ Witness

_____26 March 2018 _____ Date

_____ 22 March 2028 _____ Date of Expiry

TABLE OF AMENDMENTS

Amendment No.	Summary of the Amendment	Amendment Type	Date Approved by WAPC
0	[Original Local Structure Plan]		

TABLE OF DENSITY PLANS

Density Plan No.	Area of Density Plan Application	Date Endorsed by WAPC

EXECUTIVE SUMMARY

This Local Structure Plan has been prepared for Lot 682 and Lot 52, Mandogalup. The Local Structure Plan area also includes a portion of the Peel Main Drain (Lot 3). The subject site is herein referred to as the Mandogalup West Local Structure Plan or MWLSP.

The purpose of this Local Structure Plan is to provide a plan for the coordination of future zoning and subdivision of the subject land to facilitate development for residential, education, recreation and local centre purposes.

The preparation of this Local Structure Plan has been undertaken in liaison and collaboration with Satterley Group and associated project team (the adjacent landholding comprising the Mandogalup East Local Structure Plan), The City of Kwinana and all other relevant approval authorities.

TABLE 1: Structure Plan Summary Table

Item	Data	Section number referenced in report
Total area covered by the Structure Plan	68.46 ha	1.3.2
Estimate area of each land use proposed: Zones Residential Local Centre	 32.71 ha 0.15 ha	 3.0
Reserves Public Open Space Existing Drainage Reserve Public Purpose -Primary School Road Transmission Line Easement	 6.673 ha 0.7 ha 2.0 ha 14.74 ha 11.32 ha	
Estimated lot yield:	900	3.4
Estimated number of dwellings	900	3.4
Estimated residential site density (dwellings/hectare gross subdivisible area):	13.15	3.4
Estimated population (@ 2.8 people per household)	2520	3.4
Number of high schools	0	3.7
Number of primary schools	1	3.7
Estimated commercial floor space (nett lettable area):	750m^2	3.8
Estimated area and percentage of public open space given over to: Regional open space District open space Neighbourhood parks Local parks	 Nil 1.358 ha (playing fields) 4.18 ha, 2 parks 1.25 ha, 4 parks	3.3
Estimated number and area of natural area	0ha	3.3

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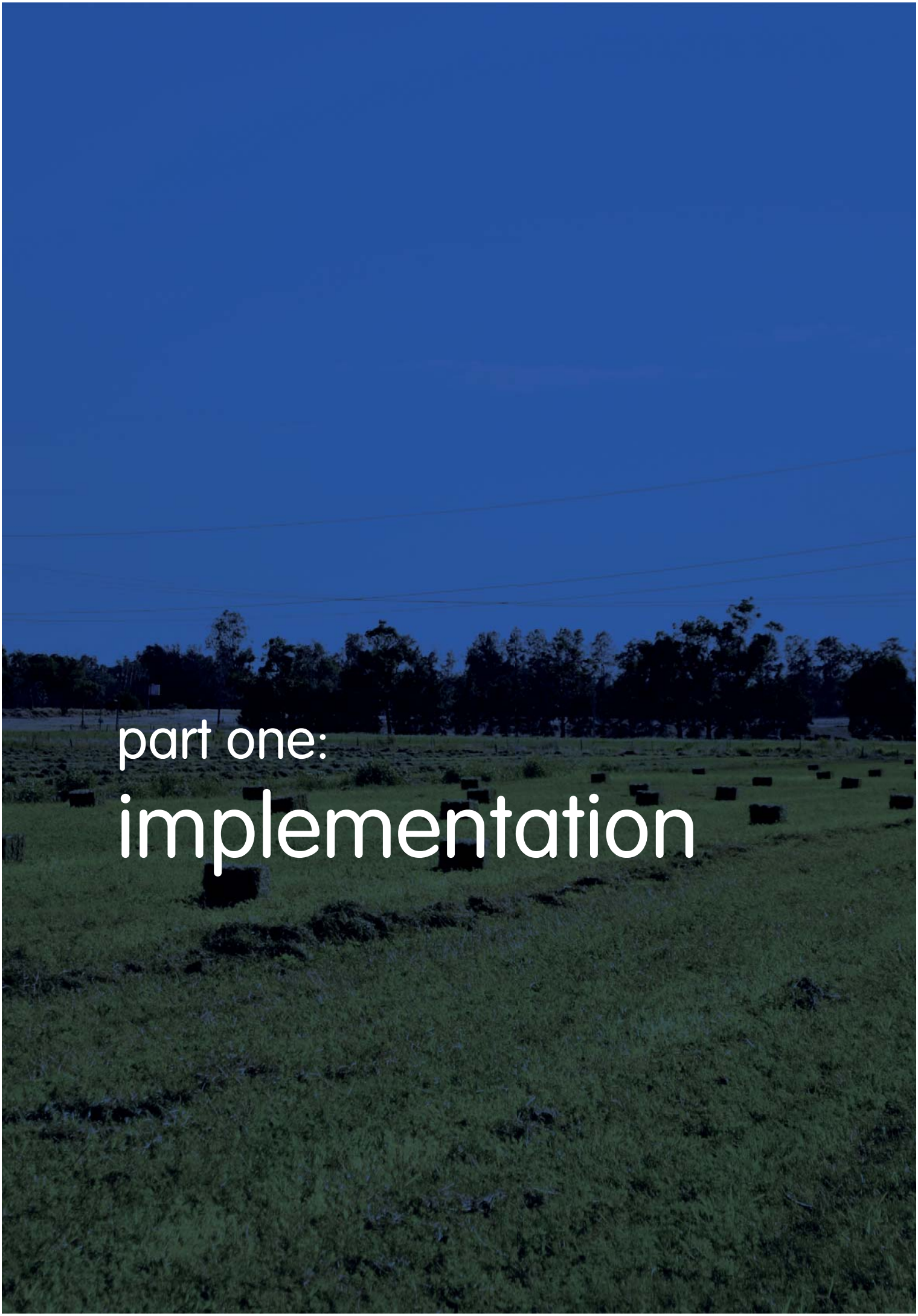


part one:
implementation

1.0 Structure Plan Area

This Local Structure Plan applies to the land contained within the inner edge of the line denoting the Local Structure Plan boundary on the Local Structure Plan map (refer Plan 1 situated at the end of Part One of this Local Structure Plan report).

2.0 Operation

The Local Structure Plan comes into effect on the day it is approved by the Western Australian Planning Commission (WAPC).

3.0 Staging

Development of the site will generally progress from north to south. Development will then generally progress in a southerly direction.

4.0 Subdivision and Development Requirements

4.1 Residential Density

Residential densities for the Local Structure Plan are as the residential density code range shown on the Local Structure Plan map.

4.2 Public Open Space

The Local Structure Plan is to provide for a minimum of 10% public open space in accordance with the WAPC's Liveable Neighbourhoods requirements. Public open space is to be provided generally in accordance with the Local Structure Plan map.

4.3 Bushfire Management

The Local Structure Plan is supported by a Bushfire Management Plan (BMP) (Strategen, August 2017). Any land falling within 100 metres of a bushfire hazard identified in the BMP is designated as a Bushfire Prone Area for the purpose of the Building Code of Australia.

4.4 Notifications on Title

The Council shall recommend to the WAPC that a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate of Title to suitably respond to the following:

a) The BMP for lots with a Bushfire Attack Level (BAL) rating of 12.5 or higher;

b) Transport noise for lots that are the subject of noise levels exceeding the noise target as per State Planning Policy 5.4 - Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

4.5 Management Plans

The Council shall recommend to the WAPC that a condition be imposed on the grant of subdivision approval to respond to the following as identified by the Local Structure Plan:

a) A Urban Water Management Plan;

b) A Dieback Management Plan;

c) An Acid Sulfate Soils Management Plan;

d) A Fauna and Habitat Management Plan;

e) A Landscape Feature and Tree Retention Management Plan;

f) A Mosquito and Midge Management Plan;

g) A Public Open Space Management Plan for the Western Power transmission easement; and

h) Construction Environmental Management Plan.

5.0 Local Development Plans

A Local Development Plan is required in the following circumstances:

a) Lots with an area of 260 square metres or less;

b) Irregular shaped lots;

c) Lots where specific vehicle access and egress control is required;

d) Lots abutting public open space;

e) Lots with particular site constraints;

f) Lots subject of a notification on title;

g) Lots abutting the Western Power High Voltage Power Line Easement;

h) Lots abutting / adjacent to the Peel Main Drain;

i) Lots with a BAL Rating of 12.5 or greater; and

j) Lots that require Quiet House Design for noise attenuation through deemed-to-comply noise insulation packages, and/or lots identified as requiring specialist acoustic requirements.

6.0 Other requirements

6.1 Developer Contribution Arrangements

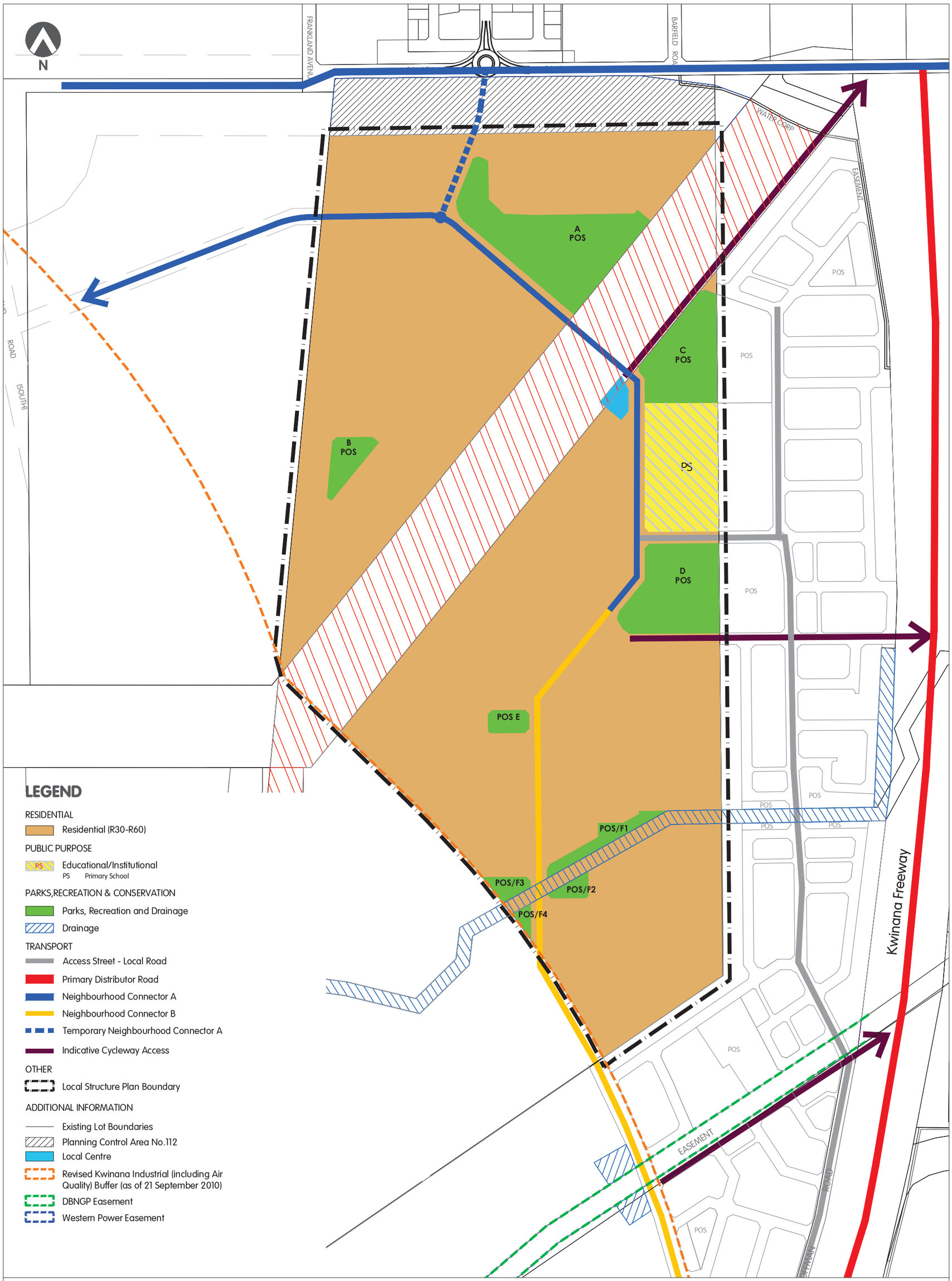
Under the City of Kwinana Town Planning Scheme No.2, the following development contribution arrangements apply and/or are contemplated:

a) Development Contribution Area 8 for the funding of community infrastructure; and

b) Development Contribution Area 6 for traditional 'hard' infrastructure.

6.2 Bushfire Management Plan Addendum

a) An addendum to the BMP is to be lodged with any subdivision application for the site, containing the necessary development and associated bushfire planning detail, in accordance with the stated requirements of the BMP and SPP 3.7.



QUBE

RD great places

CADASTRAL INFORMATION
SOURCE: MNG
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DWG REF: 98728lt-003c
PROJECTION: PCG94

AERIAL PHOTOGRAPHY
SOURCE: NA
YYMMDD: NA

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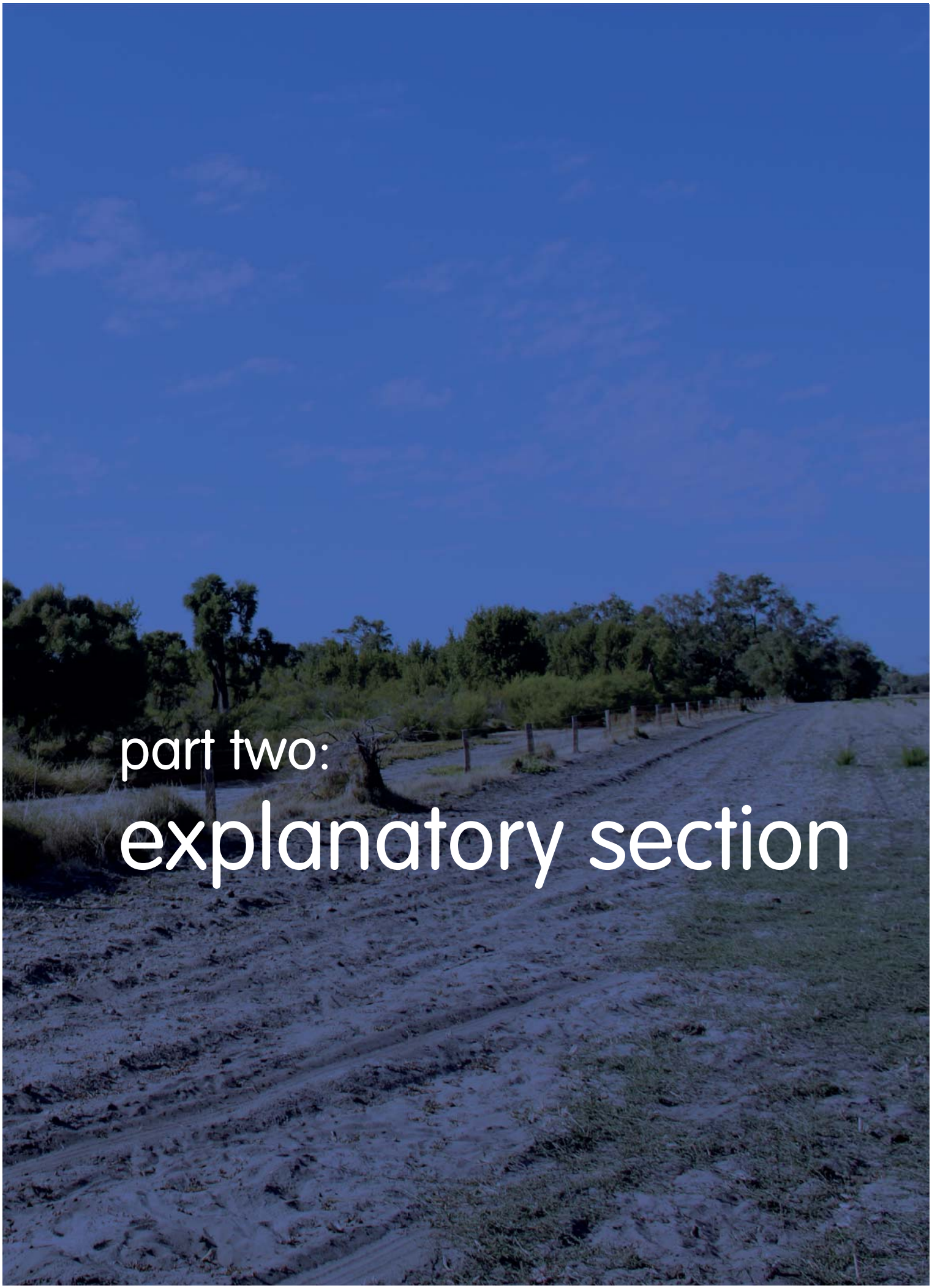
G	UPDATED BASE	171114	HH	EH
F	BASE PLAN QUB MAN UD1 145F	170524	SB	-
E	BASE PLAN QUB MAN 145B	170517	SB	-
D	NEIGHBOURHOOD CONNECTOR RE-ALIGNMENT	161201	SB	TT

PLAN 1 LOCAL STRUCTURE PLAN
Mandogalup
City of Kwinana

REF NO.	DRAW NO.	REV.
QUB MAN	**RD1 134**	**G**



part two:
explanatory section

1.0 Planning Background

1.1 Introduction and Purpose

The purpose of the Local Structure Plan is to provide a plan for the coordination of future zoning and subdivision of the subject land. The subject land relates to the urban zoned land within Lot 682 and Part Lot 52, Mandogalup, herein referred to as the Mandogalup West Local Structure Plan or MWLSP.

Subdivision and development of the subject land in accordance with this Local Structure Plan represents a logical progression of the development front from the north (Hammond Park), as well as the eastern side of the Kwinana Freeway (Wandi).

1.1.1 Project Team

The following multi-disciplinary project team have been engaged to progress the preparation of the MWLSP:

Discipline	Consultant
Landowner	Mandogalup Joint Venture
Urban Design and Town Planning	RobertsDay
Civil Engineering	Cossill and Webley
Landscape Architect	Plan E
Hydrological	JDA
Bushfire Management	Strategen
Environmental	Strategen
Traffic	Transcore
Acoustic	Lloyd George Acoustics
Retail	Taktics 4
Survey	McMullen Nolan (MNG)

1.1.2 Mandogalup East Local Structure Plan

The MWLSP is adjoined on its eastern boundary by land comprising the Mandogalup East Local Structure Plan and MELSP. The MELSP is currently being progressed by Satterley Property Group, and is being assessed and determined concurrently with the MWLSP.

Ongoing collaboration between the relevant landowners and project consultant teams for the MWLSP and MELSP has taken place to ensure coordination between the two Local Structure Plan areas. In particular, the concept subdivision designs ensure the alignment of local roads, distribution of public open space, residential property boundaries, service provision and staging.

The proposed primary school and local playing fields have been sited within the MWLSP and MELSP to ensure equitable pro rata provision of the required land area, as well as in consultation with the Department of Education and City of Kwinana to ensure appropriate location within the catchment and surrounding land use context.

1.2 Land Description

1.2.1 Location

The MWLSP area is located within the metropolitan south-west corridor, in the municipality of the City of Kwinana. The site is situated approximately 25 kilometres south of the Perth Central Area, and is accessible via the Kwinana Freeway. The Kwinana Town Centre is located approximately 9 kilometres south of the site and Cockburn Central approximately 6 kilometres north of the site (refer Figure 1: Regional Context).

The MWLSP area is bound by Rowley Road to the north and Kwinana Freeway to the east. Land to the immediate east of the site is zoned urban and the land to the south is zoned rural. The adjoining urban zoned land to the east is subject to a separate Local Structure Plan currently being progressed by Satterley Property Group, known as the Mandogalup East Local Structure Plan or MELSP (refer Figure 2: Local Context).

FIGURE 1: Regional Context

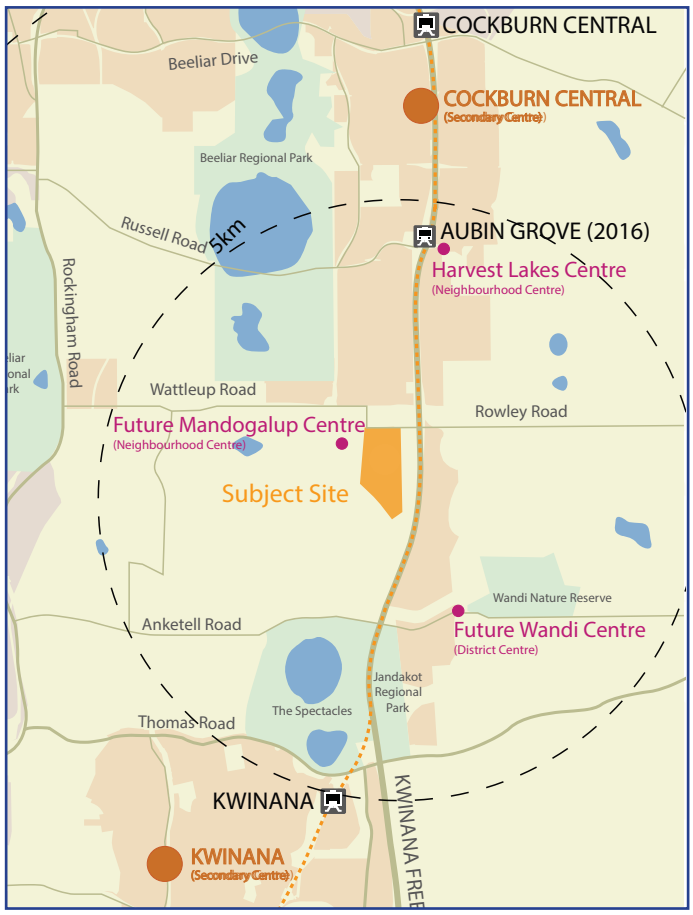


FIGURE 2: Local Context

1.2.2 Area and Land Use

The MWLSP has a total land area of approximately 68 hectares. It is traversed by a 132 kv and 330 kv power line easement running north-east to south-west, totalling 11.32 hectares in area. An existing drainage reserve, being the Peel Main Drain, also runs east west across the southern portion of the site.

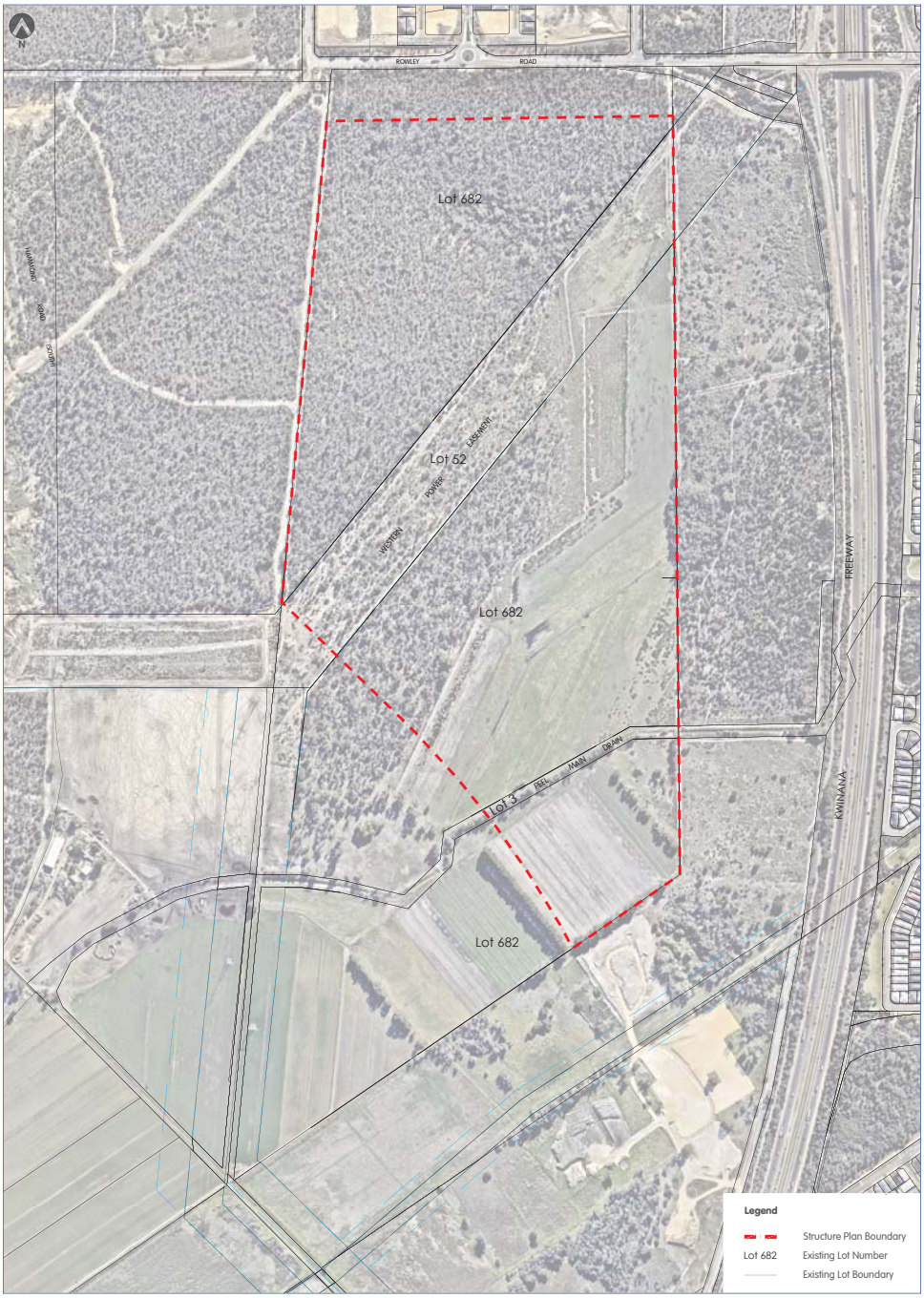
The MWLSP area is currently utilised for rural and horticultural purposes. The northern portion of the site contains an area of remnant bushland (refer Figure 3 – Aerial Photo).

1.2.3 Legal Description and Ownership

The MWLSP area comprises three land parcels (or a portion thereof), being; Lot 682 and Lot 52, Rowley Road, Mandogalup, owned by Mandogalup Development Joint Venture, and Lot 3 which is Crown Land owned by the State of Western Australia.

Lot 3 is the continuation of Lot 8018 (UCL – Peel Main Drain) from the adjoining MELSP area.

FIGURE 3: Aerial Photo



1.3 Planning Framework

1.3.1 Zoning and Reservations

1.3.1.1 Metropolitan Region Scheme

The majority of the MWLSP area is zoned "Urban" under the Metropolitan Region Scheme (MRS), with the exception of one small area that is zoned "Urban Deferred", which is located on the northern boundary of the site. The "Urban Deferred" portion of land is associated with the eventual upgrading, road widening and noise attenuation measures of Rowley Road, which is also known as Planning Control Area No. 112 (PCA No. 112).

The Western Australian Planning Commission (WAPC) initiated MRS Amendment 1114/33 in June 2006 to rezone approximately 352ha of land in Mandogalup from the "Rural" zone to the "Urban Deferred" zone. This was one of a group of amendments in the district to facilitate the urbanisation of land as prescribed by the Jandakot Structure Plan (JSP) (outlined further in section 1.3.2.1).

The amendment was recommended for final approval by the WAPC but held in abeyance following objections from Alcoa regarding potential dust impacts from the Alcoa residue storage area located to the west of the landholding. The "Review of the Kwinana Air Quality Buffer – Position Paper (WAPC 2008)" identified an area 1km from the nearest residue disposal area (Area F) as "subject to further investigation" due to potential impacts of dust, noise and visual amenity arising from the operation of the residue storage area.

Amendment 1114/33 was approved and became effective in November 2009, in a modified form, transferring approximately 181ha (of the original 352ha of land) outside the 1km "subject to further investigation" area to the "Urban Deferred" zone.

The south-western boundary of the MWLSP area and the extent of the "Urban" zoned land is defined by the outer edge of the Revised Kwinana Industrial (including air quality) Buffer (here in referenced to as KIB), as of 21 September 2010.

In proposing the reduced amendment area, the Minister for Planning directed the WAPC under Section 17 of the Planning and Development Act 2005 as follows:

No decision to transfer land in the Mandogalup locality from the Rural or Urban Deferred zone to the Urban zone is to be made without the approval of Cabinet and the Minister responsible at the time of the Metropolitan Region Scheme and amendments or changes proposed to be made to it. No such decision will be made until the Kwinana Air Quality Buffer has been finalised, clearly indicating what land is within a buffer and should remain in the Rural or Urban Deferred zone and what land is outside a buffer area and therefore could be transferred to the Urban zone, subject to whatever other planning circumstances may apply to the subject land at the time.

In September 2010, the WAPC reviewed its position following completion of dust monitoring and modelling studies undertaken by Alcoa. The WAPC, on advice from the Kwinana Buffer Review Committee, resolved to retain the 1km buffer and an additional 500m residential development and sensitive use restriction area to be referenced in public documents and Memorials on Certificates of Titles. In May 2011, the WAPC resolved to confirm the 1km buffer and the additional 500m residential development and sensitive use restriction area, but with the specific acknowledgement that the extent of the buffer and restriction area will be reviewed in five years (May 2017).

In May 2011, RobertsDay on behalf of Qube Property Group and Satterley Property Group lodged an application with the WAPC to lift the "Urban Deferred" zone over the portion of land outside the KIB. Subsequently the WAPC approved the inclusion of the land in the "Urban" zone. There have been no further zoning amendments.

The site is surrounded by "Urban" zoned land to the north and east and "Rural" land to the west and south-west. Further east of the site is the "Primary Regional Road" reserve associated with the Kwinana Freeway.

The land within the MWLSP boundary is zoned "Urban" zoned land, as well as a small portion of "Urban Deferred" zoned land, being PCA No.112.

The current MRS zonings are shown on Figure 4.

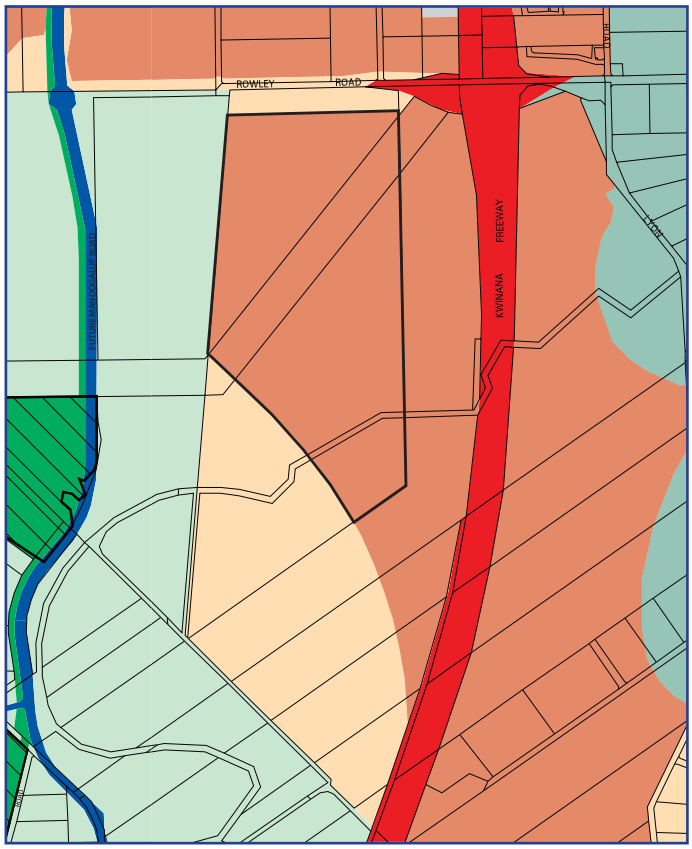


FIGURE 4: MRS Zoning

LEGEND

Structure Plan Boundary

METROPOLITAN REGION SCHEME RESERVES

Primary Regional Roads

Other Regional Roads

RESERVED LANDS

Parks and Recreation

NOTICE OF DELEGATION AREA

Bush Forever Area

ZONES

Urban

Urban Deferred

Rural

Railways

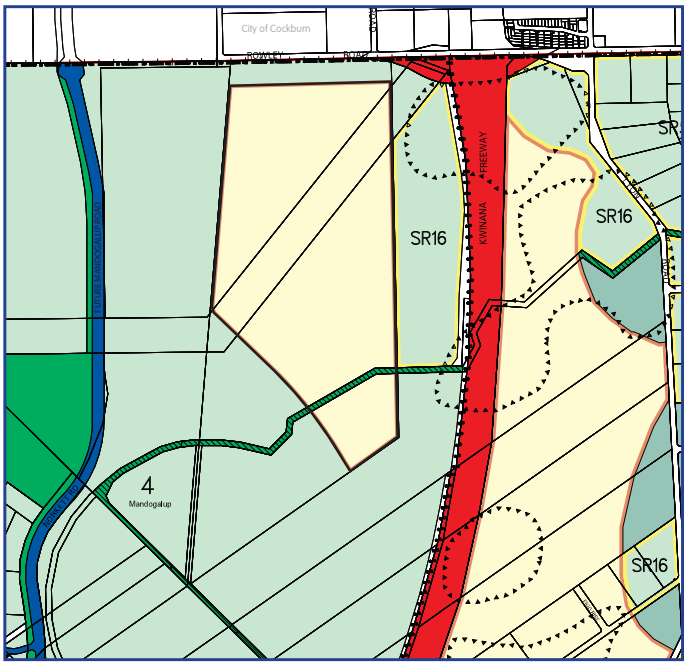


FIGURE 5: Town Planning Zoning

LEGEND

Structure Plan Boundary

METROPOLITAN REGION SCHEME RESERVES

Primary Regional Roads

Other Regional Roads

LOCAL SCHEME RESERVES

Park Recreation and Drainage

ZONES

Development

Rural A

Special Rural

OTHER

Local Government Boundary

Scheme Boundary

Area of Landscape Protection

SR2 Special Rural Area (see scheme text)

14 Policy Area (see scheme text)

No Zone

1.3.1.2 City of Kwinana Town Planning Scheme No. 2

As part of the process of lifting the "Urban Deferred" zone under Clause 27 of the MRS, a request using the provisions of Section 126 (3) of the Planning and Development Act 2005 was lodged by the City of Kwinana for the concurrent rezoning of the land to a "Development" zone under the City of Kwinana Town Planning Scheme No. 2 (TPS 2).

This request was agreed by the WAPC and approved upon gazettal. The portion of land outside the KIB is therefore zoned "Development". The area within the KIB remains "Rural".

The subdivision, use and development of land within the "Development" zone is to generally be in accordance with a Local Structure Plan that has been prepared and adopted under the provisions of Clause 6.17 of TPS 2. The current TPS zonings are shown on Figure 5.

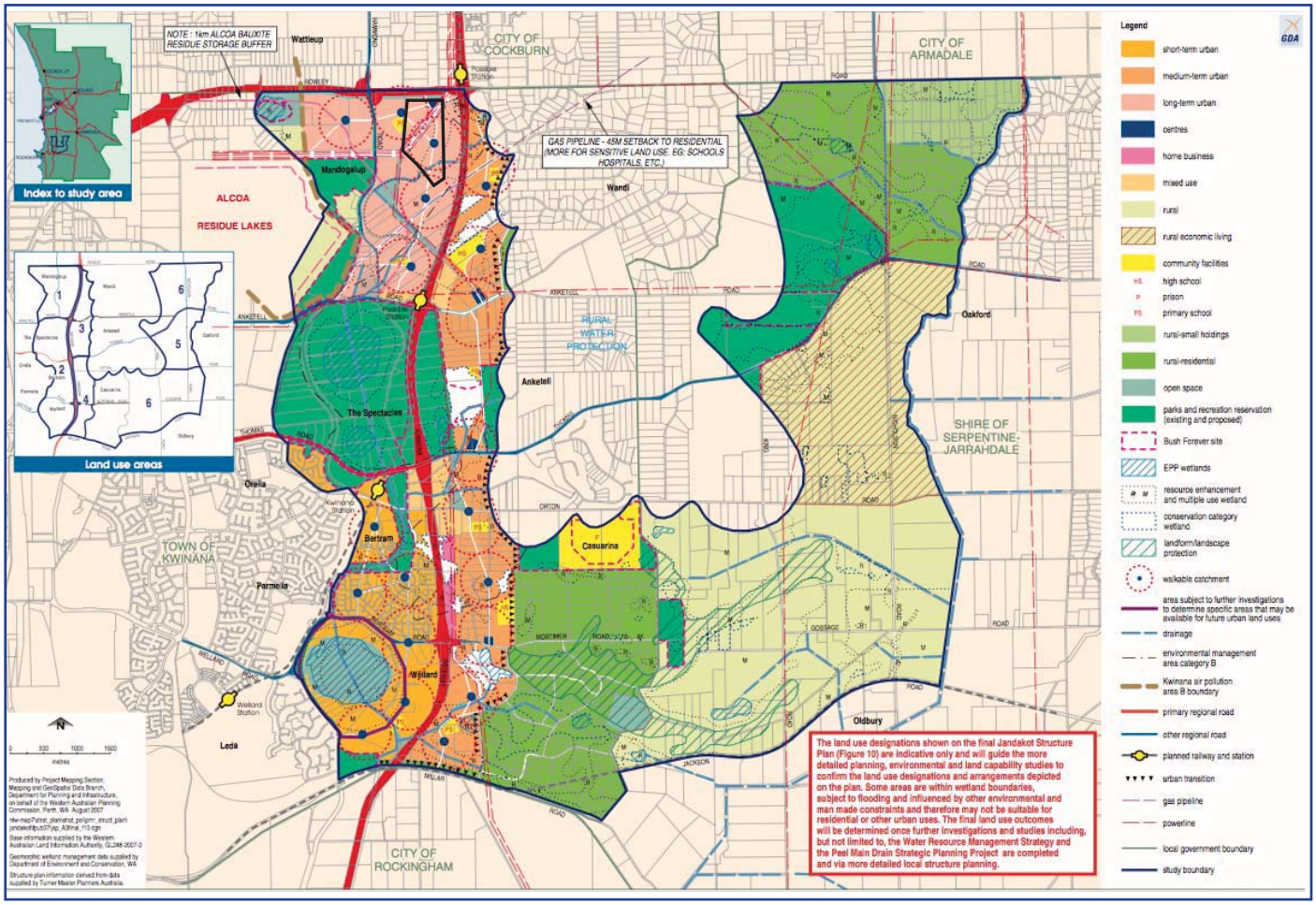
1.3.2 Regional and Sub-Regional Structure Plan

1.3.2.1 Jandakot Structure Plan

In 1993, a Select Committee Report on Metropolitan Development and Groundwater Suppli8es reviewed the boundaries of the Jandakot Underground Water Pollution Control Area (JUWPCA). This review decreased the extent of the JUWPCA and as a result, revealed an area that was now without any strategic planning for future use and development. The Jandakot Structure Plan was prepared over this subsidiary piece of land and was subsequently adopted, by the WAPC, in August 2007.

The Jandakot Structure Plan sets out the broad strategic planning framework for the 'U' shaped parcel of land surrounding the Rural Water Protection area (Refer Figure 6). It covers an area of land up to Rowley Road to the north and Millar and Jackson Roads to the south, dealing with the issues of both groundwater and storm water management. The Jandakot Structure Plan requires that a Local Water Management Strategy (LWMS), consistent with the Jandakot Water Resources Management Strategy (JWRMS), be prepared and lodged with any subsequent Local Structure Plan.

FIGURE 6: Jandakot Structure Plan



The Jandakot Structure Plan projects a population of approximately 40,000 residents within the Jandakot Structure Plan area and outlines the general location of conservation areas, primary schools and transport links. The specific details of these aspects, such as the coordination of development and remnant vegetation protection were limited. Subsequently these formed the basis of further investigations associated with the then Town of Kwinana Draft District Structure Plan, known as the Eastern Residential Intensification Concept (ERIC).

The Jandakot Structure Plan identifies the MWLSP area for urban development. The proposed MWLSP is considered to be consistent with the intent and requirements of the Jandakot Structure Plan.

The JSP projects a population of approximately 40,000 residents within the JSP area and outlines the general location of conservation areas, primary schools and transport links. The specific details of these aspects, such as the coordination of development and remnant vegetation protection were limited. Subsequently these formed the basis of further investigations associated with the Draft District Structure Plan known as the Eastern Residential Intensification Concept (ERIC) through the then Town of Kwinana, discussed in further detail below.

The Mandogalup LSP is in accordance with the provisions of the JSP.

1.3.2.2 Eastern Residential Intensification Concept

The Eastern Residential Intensification Concept (ERIC) was prepared by the then Town of Kwinana in November 2005 and provides strategic direction and refinement of the future urban areas identified under the Jandakot Structure Plan (refer Figure 7). In particular, it expands upon the opportunities and constraints inherent to the land and, whilst yet to be formally approved by Council, 'defines a framework by which urban subdivision and development is able to occur in an orderly and coordinated manner'.

The MWLSP has been prepared giving due consideration to the provisions of ERIC, albeit updated to respond to the current planning framework, policies, principles and objectives. THE MWLSP provides a response to more detailed site-specific analysis as required by ERIC, such as flora and fauna, water management, noise controls and traffic management, and those requirements emanating from WAPC State Planning Policies.

FIGURE 7: Eastern Residential Intensification Concept

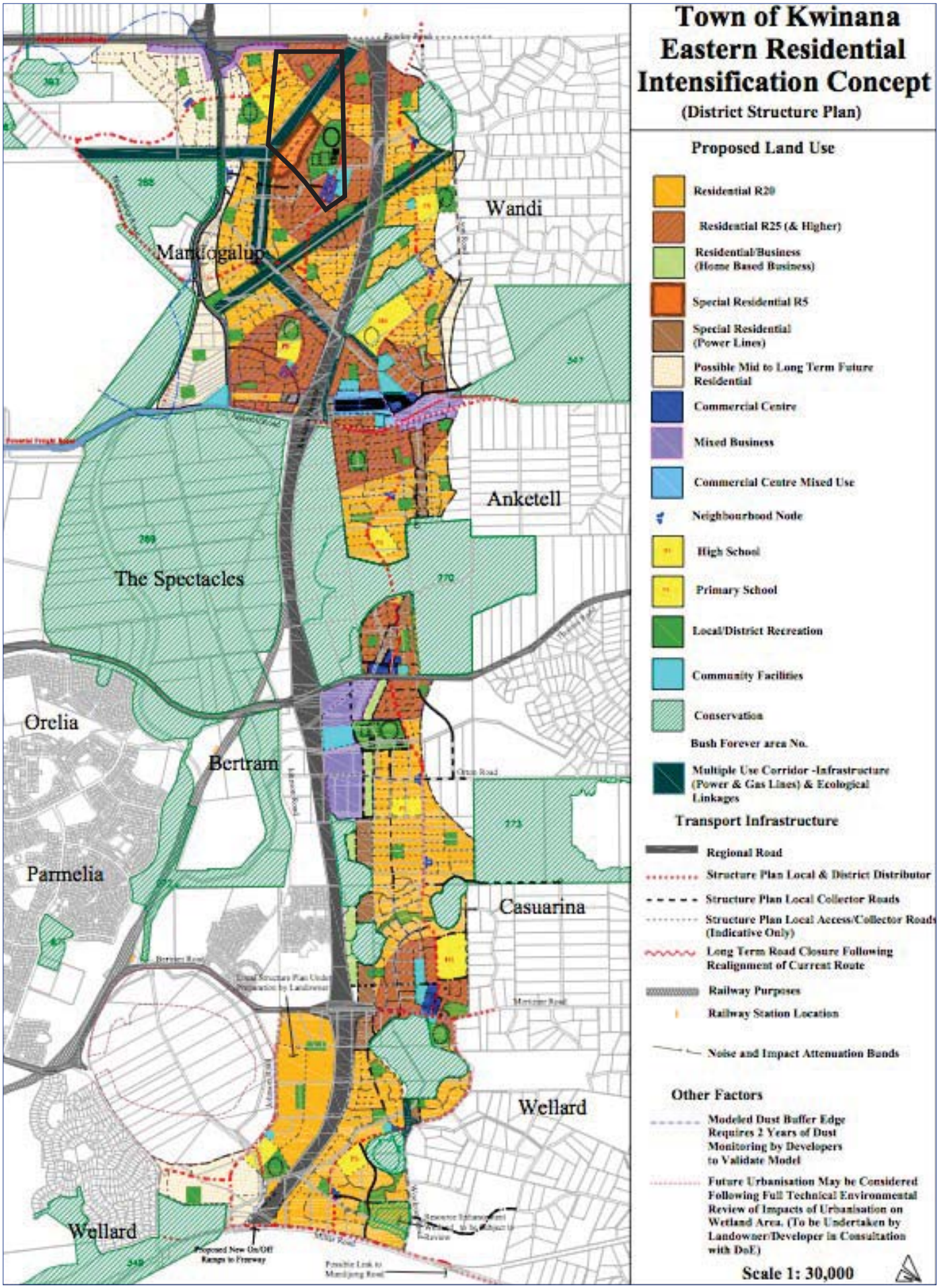


FIGURE 8: Mandogalup Concept Plan

1.3.2.3 Directions 2031 and Beyond

Directions 2031 and Beyond (Directions 2031) is the high-level spatial framework and strategic plan for the Perth and Peel metropolitan regions. Directions 2031 provides a framework for the detailed planning and delivery of housing, infrastructure and services necessary for various growth scenarios presented within the document.

Directions 2031 identifies growth scenarios for low, medium and high-density rates of infill and greenfield development. The Connected City scenario of Directions 2031 is identified as the preferred growth scenario, which was then modelled to determine the area of greenfield land that would be required for a City of 3.5 million people. Consistent with the outcomes of this approach, Directions 2031 sets a target of 15 dwellings per gross hectare of urban zoned land in development areas.

Directions 2031 is supported by a series of Sub–Regional Strategies which provide information pertaining to the levels of expected population growth in individual local government areas. The Sub- Regional Strategies also identify development opportunities and prospects for increased density within greenfield areas to facilitate achievement of the housing targets set in Directions 2031.

The overall density for the proposed development of the MWLSP area is anticipated to be approximately 900 dwellings on various lot types resulting in an overall density of 13.15 dwellings per gross urban hectare (refer Table 3). Once significant site constraints that are unable to be developed are considered (in particular the transmission line easement and the Peel Main Drain), the overall density increases to 15.94 dwellings per site hectare. This is considered appropriate for the site given its location and context.

The majority of residential lots are envisaged as more traditional R30 reflecting the fact that the development is further than 400 metres from an activity centre and responding to constraints on the land including the future freight route of Rowley Road (Planning Control Area No. 112) and the transmission line easement.

This proposed density ensures the subject land is helping deliver an urban form in accordance with State Government objectives and strategic planning policy, despite the constraints associated with the subject land.

1.3.2.4 Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy

The MWLSP area is located in the south-west sub-region of the Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy. The south-west sub- region is forecast to supply an additional 54,580 dwellings under the adopted 'Connected City' approach of Directions 2031. The draft Strategy identifies the subject site and surrounding area as 'urban zoned undeveloped' with an estimated yield of 2200 dwellings (site MA1). The Strategy also identifies an additional 400 hectares of land to the south and west of the subject land as "Urban Expansion Area 2011-2015" (Site MA2) with a target of 4500+ dwellings subject to the resolution of the KIB.

Based on indicative concept planning, the MWLSP is expected to yield in the order of 900 dwellings, helping to facilitate the dwelling targets identified under the Draft Outer Metropolitan Perth and Peel Sub-Regional Strategy.

1.3.2.5 Draft Perth and Peel @ 3.5 million

The Draft Perth and Peel @3.5 Million was released for public comment in May 2015, and seeks to provide a framework for the development of the Perth and Peel regions as the population reaches an estimated 3.5 million by 2050. The document seeks to meet the targets identified under Directions 2031 and the State Planning Strategy 2050. The suite of documents also includes four draft sub-regional planning frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions. The four draft sub-regional planning frameworks detail where future dwellings and employment should be located, and where important environmental assets should be avoided and protected.

The MWLSP area is situated within the South Metropolitan Peel sub-region and is identified as 'Urban' consistent with the current MRS zoning.

1.3.2.5.1 Draft South Metropolitan Peel Sub-Regional Framework: Towards Perth and Peel @ 3.5 million

The Draft South Metropolitan Peel Sub-Regional Framework (the Framework) represents a whole of State Government approach to managing the future urban form within the sub-region and identifies sufficient land to meet the increased demand for residential dwellings. The South Metropolitan Peel sub-region is proposed to accommodate more than 1.26 million people, over 507,000 homes and approximately 430,000 jobs, with a projected additional dwelling target of 19,549 (49,499 people) within the City of Kwinana.

The MWLSP area is identified for urban development under the draft Framework.

An indicative subdivision design for the MWLSP identifies an approximate yield of 900 lots (900 dwellings), equating to a population of approximately 2,520 people (based on 2.8 people per household). The development of the MWLSP will therefore assist in achieving dwelling and population targets identified under the draft Framework.

The draft Framework also requires new urban development meet a residential density target of 15 dwellings per gross hectare. The overall density for the proposed development is anticipated to be approximately 900 dwellings on various lot types resulting in an overall density of 13.15 dwellings per gross urban hectare (refer Table 3). Once significant site constraints that are unable to be developed are considered (in particular the transmission line easement and the Peel Main Drain), the overall density increases to 15.94 dwellings per site hectare. This is considered appropriate for the site given its location and context.

The majority of residential lots are envisaged as more traditional R30 reflecting the fact that the development Is further than 400 metres from an activity centre of any kind and responding to constraints on the land including the future freight route of Rowley Road (Planning Control Area No. 112) and the transmission line easement.

This proposed density ensures the subject land is helping deliver an urban form in accordance with State Government objectives and strategic planning policy, despite the constraints associated with the subject land.

1.3.3 Liveable Neighbourhoods

Liveable Neighbourhoods (2009) was prepared by the WAPC to implement the objectives of the State Planning Strategy and deliver the strategies and actions of metropolitan spatial frameworks. Liveable Neighbourhoods is an operational policy that guides structure planning (regional, district and local), subdivision and development for new urban areas, including greenfield and large brownfield (urban infill) sites. Liveable Neighbourhoods seeks to promote the design of walkable neighbourhoods; places that offer community and a sense of place; mixed uses and active streets; accessible and sustainable parks; energy efficient design; and a variety of lot sizes and housing types.

The MWLSP has been designed in accordance with the principles and requirements of Liveable Neighbourhoods.

The indicative subdivision layout has been designed using relatively short streets blocks, where possible, to provide for a permeable and legible pedestrian, cycle and vehicle movement network. The public open space network provides connectivity through the site, intended to serve a variety of functions to cater for a wide demographic, with all proposed lots within approximately 200 metres of an open space area.

The MWLSP provides for a primary school and local playing fields generally located centrally within the broader Mandogalup catchment (combined MWLSP and MELSP areas).

The indicative subdivision layout has been informed by various considerations, including but not limited to; existing site topography and landforms, achieving best possible solar orientation for future lots, servicing and water management.

In accordance with Liveable Neighbourhoods requirements for a minimum average density of 22 dwellings per residential site hectare, the MWLSP achieves approximately 28 dwellings per hectare of residential site hectare.

1.3.4 City of Kwinana Local Commercial and Activity Centres Strategy

The City of Kwinana Local Commercial and Activity Centres Strategy (the Strategy), adopted by Council in 2014, provides background information and input to inform the preparation of the City's new Local Planning Strategy (LPS). The document reviews and responds to the state policy setting and analyses the current configuration and future requirements for activity centres within the City based upon retail trends and population projections.

The Strategy identifies a potential local centre within Mandogalup, however, it is noted that this is unconfirmed and is subject to further, more detailed consideration.

Given the uncertainty surrounding the appropriate location and viability of a centre to service the Mandogalup residents, a Retail Needs Assessment has been prepared by Taktics 4 to guide location, size and nature of commercial activity within the MWLSP and MELSP areas (Refer Appendix A).

The Taktics 4 Retail Needs Assessment report concludes that based upon the current distribution of centres (as per the Commercial and Activity Centre Strategy), the future residents of Mandogalup would need to travel almost twice as far as most urban communities to gain access to supermarkets at Harvest Lakes Neighbourhood Centre and Wandi District Centre. Based upon a primary catchment radius of 1.5km, there is a spatial opportunity in the Mandogalup area for the provision of a small single supermarket based centre, subject to market demand. It is considered that the most logical location for this small centre is on Mandogalup Road, where it can serve north and south catchments once Rowley Road / Mandogalup Road full access intersection is realised.

Notwithstanding the above, a small local centre is indicatively shown within the proposed MWLSP to service the Mandogalup catchment (including MELSP) in the interim, however, prior to commitment to and development of the centre, further studies are required to determine the long-term viability of a centre at either location.

1.3.5 City of Kwinana Local Housing Strategy

The Draft City of Kwinana Local Housing Strategy (the Strategy), prepared in February 2007, is provided as an appendix to the Draft Local Planning Strategy and facilitates the review of and amendments to TPS 2. The intent of the draft Strategy is to promote a broader range of housing types, encourage development of suitable sites, protect existing residential areas from incompatible land uses and preserve areas of remnant vegetation.

The draft Strategy identifies a housing approach that promotes medium density housing in close proximity to Public Open Space, Neighbourhood centres and transport nodes and more traditional lot sizes for areas not within close proximity of these amenities.

The MWLSP has been prepared in accordance with the principles identified in the draft Strategy.

1.3.6 WAPC State Planning Policies

Development of land must have due regard to any relevant State Planning Policies which are prepared and adopted by the WAPC under statutory procedures set out in Part 3 of the Planning and Development Act 2005. The WAPC and Local Government must have due regard to the provisions of State Planning Policies when preparing or amending planning schemes and when making decisions on planning matters.

The MWLSP responds to the following relevant State Planning Policies:

State Planning Policy 2.1 – Peel Harvey Coastal Plain Catchment

- Preparation and approval of a LWMS to support the MWLSP; and
- Preparation and implementation of an Urban Water Management Plan to be required as a condition of subdivision approval.

State Planning Policy 2.4 – Basic Raw Materials

- There are no designated SPP 2.4 policy areas ('Key Extraction Area' or 'Priority Resource Location') located within or immediately adjacent to the MWLSP area
- A sand extraction area is located approximately 400m to the west of the MWLSP area
- The location of this existing sand extraction area is not a constraint to the development of the subject land in accordance with an approved structure plan

State Planning Policy 2.9 - Water Resources

The purpose of this policy is to guide development of land that may impact on water resources in the state. Under the policy, water resources include water in the landscape with current or potential value to the community or environment". This incorporates features such as wetlands and waterways, surface water, groundwater, drinking water catchments and sources, stormwater and wastewater. The policy aims to ensure that the quality and quantity of water resources in the state are not adversely affected by development and land use.

The MWLSP design and LWMS ensure the quality of water collected and infiltrated through the site does not impact the landscape and environment qualities of the locality.

State Planning Policy 3 - Urban Growth and Settlement

- Consideration of lot product mix and distribution / location of density;
- Provision and distribution of amenity throughout the MWLSP;
- Consideration of access, both locally and beyond;
- Consideration of walkability and cycle opportunities; and
- Consideration of 'neighbourhood character' in street block layout, open space provision and landscape design.

State Planning Policy 3.7 – Planning in Bushfire Prone Areas

- Preparation of a Bushfire Management Plan to support the MWLSP; and
- Consideration of fire management in concept planning and allocation of public open space, as well as in the landscape master plan.

State Planning Policy 4.1 - State Industrial Buffer

- The south west boundary of the MWLSP area is defined by the outer-edge of the Revised Kwinana Industrial (including Air Quality) Buffer as of 21 September 2010 (KIB).
- The MWLSP is in accordance with the provisions of SPP 4.1, including the identification of the buffer area and exclusion of sensitive land uses within it.

State Planning Policy 5.4 - Road and Rail Transport and Freight Considerations in Land Use Planning

- The preparation and endorsement of an acoustic assessment responding to the noise impacts of the Kwinana Freeway, the Perth to Mandurah Railway Line and Rowley Road (future Freight Route). The assessment includes noise mitigation requirements and the identification of lots subject to quite house design and 'deemed-to-comply' noise insulation packages.

1.3.7 Local Planning Policies

The MWLSP responds to the following City of Kwinana Local Planning Policies:

Planning for Bushfire Protection Guidelines

- Preparation of a Bushfire Management Plan to support the MWLSP; and
- Consideration of fire management in concept planning and allocation of public open space, as well as in the landscape master plan.

Public Open Space

- Provision of a minimum of 10% open space;
- Consideration for the City of Kwinana Community Infrastructure Plan;
- Consideration of public open space location, size, functional distribution and useability requirements;
- Consideration for drainage requirements and restrictions with credited public open space areas; and
- Consideration for requirement regarding conservation and wetland areas within public open space.

Landscape Feature and Tree Retention

- Identification and retention of significant trees (in accordance with the definition under the policy) within public open space and road reserves;
- Consideration of existing site topography in preliminary earthworks, servicing and drainage considerations, information the indicative street block layout; and
- The preparation of the landscape feature and significant tree retention strategy (to form part of the Environmental Assessment Report).

Other Local Planning Policies to be considered through the detailed design and subdivision stages include:

- Design Guidelines for Medium Density Development;
- Crossovers;
- Footpaths;
- Residential Development;
- Residential Subdivision Development Guidelines;
- Residential Subdivision Road Standards;
- Retaining Wall Levels;
- Street Lighting;
- Street Naming; and
- Street Trees and Verge Treatments.

2.0 Site Conditions and Constraints

2.1 Biodiversity and Natural Area Assets

Given the current agricultural land uses being performed on the land (market gardens and grazing), portions of the site are predominantly cleared of native vegetation and degraded from an ecological perspective. Remnant vegetation on the land exists in the northern and central portion of the land which varies from "Very Degraded" to "Excellent" condition in the north-west corner of the site where Banksia Woodland is present.

Cardno completed a Flora, Vegetation, Fauna and Wetland Assessment and survey for the area in 2005, with a subsequent study being undertaken by Plantecology Consulting in 2012. During the surveys, no Declared Rare, Priority or Significant flora species were located within the site pursuant to the Wildlife Conservation Act 1950 or the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC). No Threatened Ecological Communities were located during the time of survey and are not thought to occur within a 5km radius of the subject site.

An assessment of the likely occurrence of each fauna species identified by the Environmental Protection and Biodiversity Conservation Act 1999 Protected Matters database has also been undertaken. Of the species, the Forest Red-Tailed Black Cockatoo and the Carneby's Black Cockatoo were likely to be found within the area, in addition to a number of migratory species. The proposed clearing of 38.7ha of native vegetation was referred under the EPBC Act and determined to be a "controlled action". Approval was granted for clearing of the native vegetation subject to the purchase of suitable off-set land.

The northern portion of the site is currently fully vegetated and reflects woodland vegetation of the Bassendean Complex Central and South. The vegetation is dominated by an over-storey of low banksia and sheoak, as well as an understorey of emergent eucalypts, shrubs and grasses. The central portion of the site contains a small area of low banksia woodlands. The remaining central and southern portions of the site have been cleared for agricultural purposes.

A site survey completed by Plantecology Consulting in 2012 also identified existing Jarrah and Malaleuca trees that are worthy of retention. The location of these trees was a consideration that informed the location and configuration of POS areas within the MWLSP design. The development of the parks will aim to retain the trees where possible, subject to engineering constraints.

Strategen have provided a letter outlining the environmental work completed to date, in an effort to summarise the outcomes of the various environmental studies undertaken for the site over the years (refer Appendix B). The letter concludes that the on-site vegetation does not pose a constraint to development and also outlines various other environmental considerations including contamination, Acid Sulphate Soils and fauna.

2.2 Landform and Soils

The site undulates from the highest point in the north-west corner on Rowley Road (approx. 42 AHD) down to the natural low point of the old Mandogalup Swamp (approx. 13 AHD). A relatively steep ridge runs through the middle of the site in a north-east/south-west alignment with the land falling in an eastern and southern direction. An additional low point also exists within the transmission line easement, which currently forms a natural, low-lying drainage point (refer Figure 9).

The site forms part of the Bassendean Dune system, consisting of Bassendean Sands and Bassendean Sands overlying Clayey Sand of the Guildford formation. Small portions of Peaty Clay and Sandy Silt exist on the site but are not considered a constrain to development. Further details are contained within the Engineering Servicing Report authored by Cossill and Webley (refer Appendix C).

The majority of the site is Moderate to Low Risk of Acid Sulfate Soils occurring within 3 metres from the soil surface, with a small portion of High Risk. The potential presence of Acid Sulfate Soils is not considered a constraint to development, however, it is anticipated that the presence of Acid Sulfate Soils will be managed through the preparation of an Acid Sulfate Soils Management Plan prior to subdivision commencing.

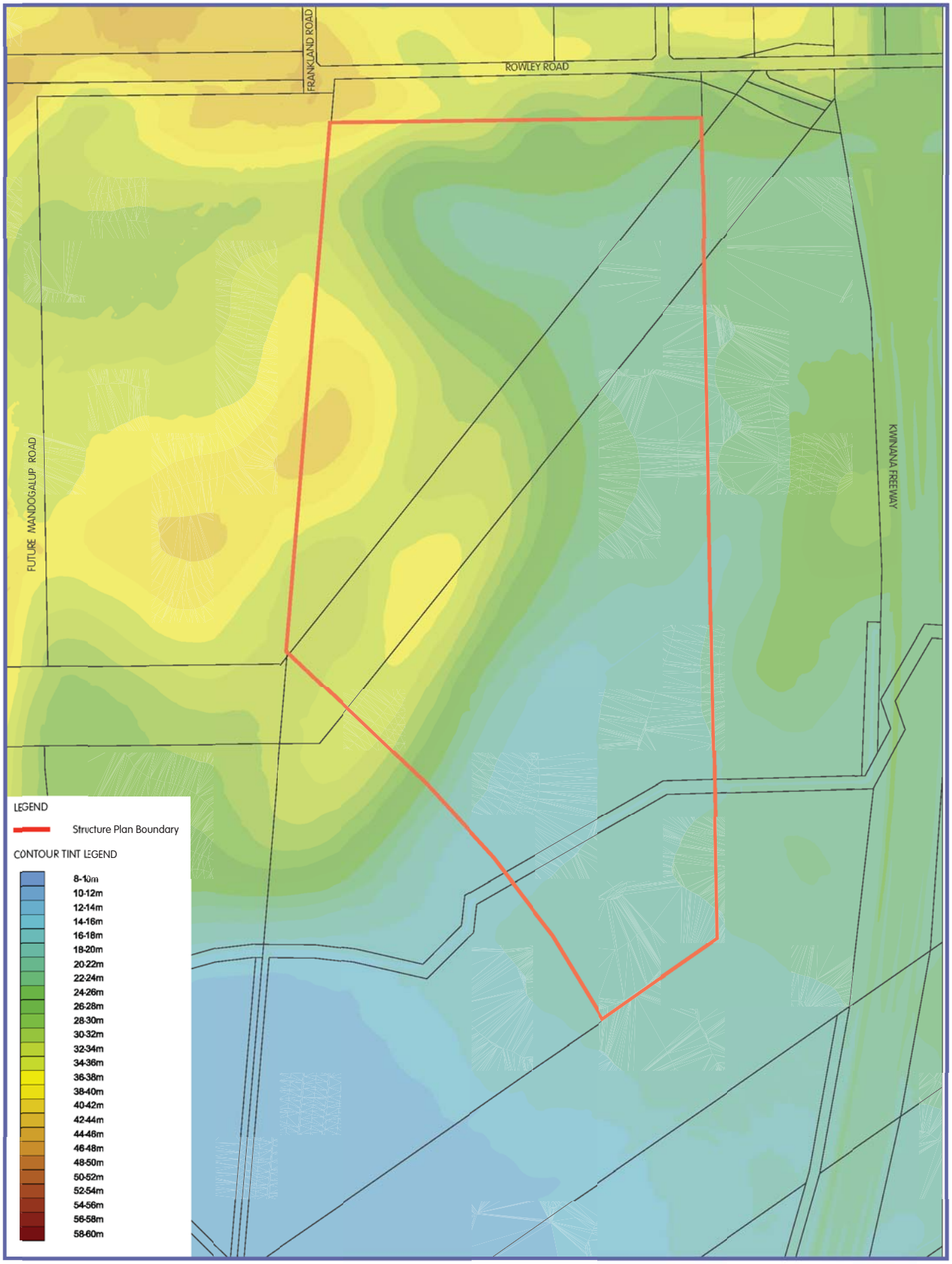


FIGURE 9: Topography

2.3 Groundwater and Surface Water

The site is subject to the provisions of the State Planning Policy 2.1 – The Peel Harvey Coastal Plain Catchment, based on the location of the site within the catchment of the Ramsar listed wetlands of the Peel Inlet– Harvey Estuary and the importance of this regionally significant wetland chain. The Estuary is impacted by surface drainage from the area via the Peel Main Drain and the Serpentine River. As such, acceptable regional ground water levels and quality require consideration.

The Peel Harvey Catchment Council supports urbanisation of land within the catchment based on completion of water management strategies in accordance with regional water management strategies and design criteria.

The JSP recommended extensive regional water modelling be undertaken to protect these environmental assets. The Jandakot Drainage and Water Management Plan No.3 (Peel Main Drain Catchment) (JDWMP) identified acceptable regional ground-water levels, an arterial drainage scheme and key design criteria to be addressed through further water management planning.

In accordance with the JDWMP, a District Water Management Plan (DWMS) was prepared and subsequently approved, facilitating the lifting of urban deferment in accordance with the Better Urban Water Management (2008) framework.

To facilitate the development of the MWLSP area, a Local Water Management Plan (LWMS) has been prepared in support of the Local Structure Plan, to further refine and implement district and local drainage and groundwater quality requirements (refer Appendix D).

An existing drainage reserve, the Peel Main Drain, traverses the southern portion of the site, grading from the eastern boundary to the west and will continue to perform a role in the stormwater collection and disposal strategy.

▲ Peel Main Drain and adjacent vegetation

2.4 Bushfire Management

As subdivision commences on site, the site will be largely cleared of any remnant native vegetation and therefore bushfire hazard within the site will be limited. Where existing vegetation is proposed to be retained within POS areas, individual canopy trees will not pose a significant bushfire risk to future assets of the site. The parks will be largely grassed, with small planted areas that will not be of sufficient size or density to pose a risk.

Remnant vegetation exists within PCA No. 112. It is considered appropriate to retain a vegetated screen directly adjacent to Rowley Road, where overstorey trees are preserved to create an entry into the site. The remainder of the area will be cleared and earthworked, providing a significant buffer, subject to the approval of the WAPC.

To the east of the site, on Lot 9019, a combination of Flooded Gum open forest and Banksia low woodland in excellent condition are proposed to be retained. The area is classified as an 'extreme' bushfire hazard and a hazard rating will be assigned through the Bushfire Management Plan (BMP) prepared for the MELSP.

A BMP been prepared for the MWLSP, in accordance with State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and Australian Standards 3959 (AS 3959). The BMP considers the bushfire hazards within and adjacent to the MWLSP area, and the associated bushfire risk, is readily manageable through standard management responses and compliance with acceptable solutions outlined in SPP 3.7 and AS 3959 (refer Appendix E).

▲ Existing bushland on Lot 9019 to be retained

2.5 Heritage

A search of the Department of Indigenous Affairs Aboriginal Heritage Inquiry System identified no registered sites of aboriginal heritage significance within the MWLSP area or immediate surrounds. However, the search did identify one 'Other Heritage Place', being a mythological site (Site 3427 – Mandogalup Swamp / Spectacles) that extends in the southern portion of the MWLSP area. This listing does not restrict the development.

A search of the Western Australian Register of Heritage Places identified no sites of state heritage significance within the MWLSP area.

A search of the City of Kwinana's Municipal Heritage Inventory identified no sites of local historic significance within the MWLSP area.

2.6 Planning Control Area No. 95 and Rowley Road

The MWLSP area is directly south of Rowley Road, which is classified as a District Distributor Integrator A Road in the Main Roads WA Functional Road Hierarchy document. Rowley Road has been identified as a primary freight route to the Kwinana Industrial Area and future container port. In the future Rowley Road, will be constructed to four lanes and will have significant upgrades to on and off ramps to the Kwinana Freeway.

To protect the freight route from inappropriate development Planning Control Area No. 95 was declared in February 2010 and was subsequently replaced by Planning Control Area No. 112 (PCA No. 112), declared in November 2015.

PCA No. 112 covers a 4.53ha portion of Lot 652, along the northern boundary with Rowley Road.

The MWLSP design does not propose development within PCA No. 112 other than to provide the necessary Neighbourhood Integrator B Road connection to the existing roundabout and a landscaped entry statement.

The Transportation Noise Assessment (Herring Storer, July 2017) identifies future lots that will require Notification on Title and Quiet House Design Package A architectural treatments as a result of the potential noise impacts from Rowley Road. The implementation of these requirements will be provided through the preparation of Local Development Plans.

2.7 Transmission Line Easement

An existing transmission line easement traverses the MWLSP area, running north-east to south-west, and contains 132 kv and 330 kv power lines. The easement is associated with the power network that connects to the Kwinana Industrial Area and the wider metropolitan grid to the south and north.

The MWLSP design takes into consideration the constraints to development associated with the easement. As a result of the Local Structure Plan preparation process, an agreement has been reached with Western Power and the City of Kwinana for the future use of the easement. The easement will be developed as restricted use local open space, catering to passive recreational activities, and vested to the local government for ongoing management. The proposed use of the easement as local open space will comply with the Western Power guidelines for transmission line easements. It is noted that the MWLSP does not seek a public open space credit for the open space provided in the easement.

Interface treatments between the easement and the MWLSP have been addressed in the final MWLSP design and are complimentary to and have consideration to the interface treatments proposed within the MELSP.

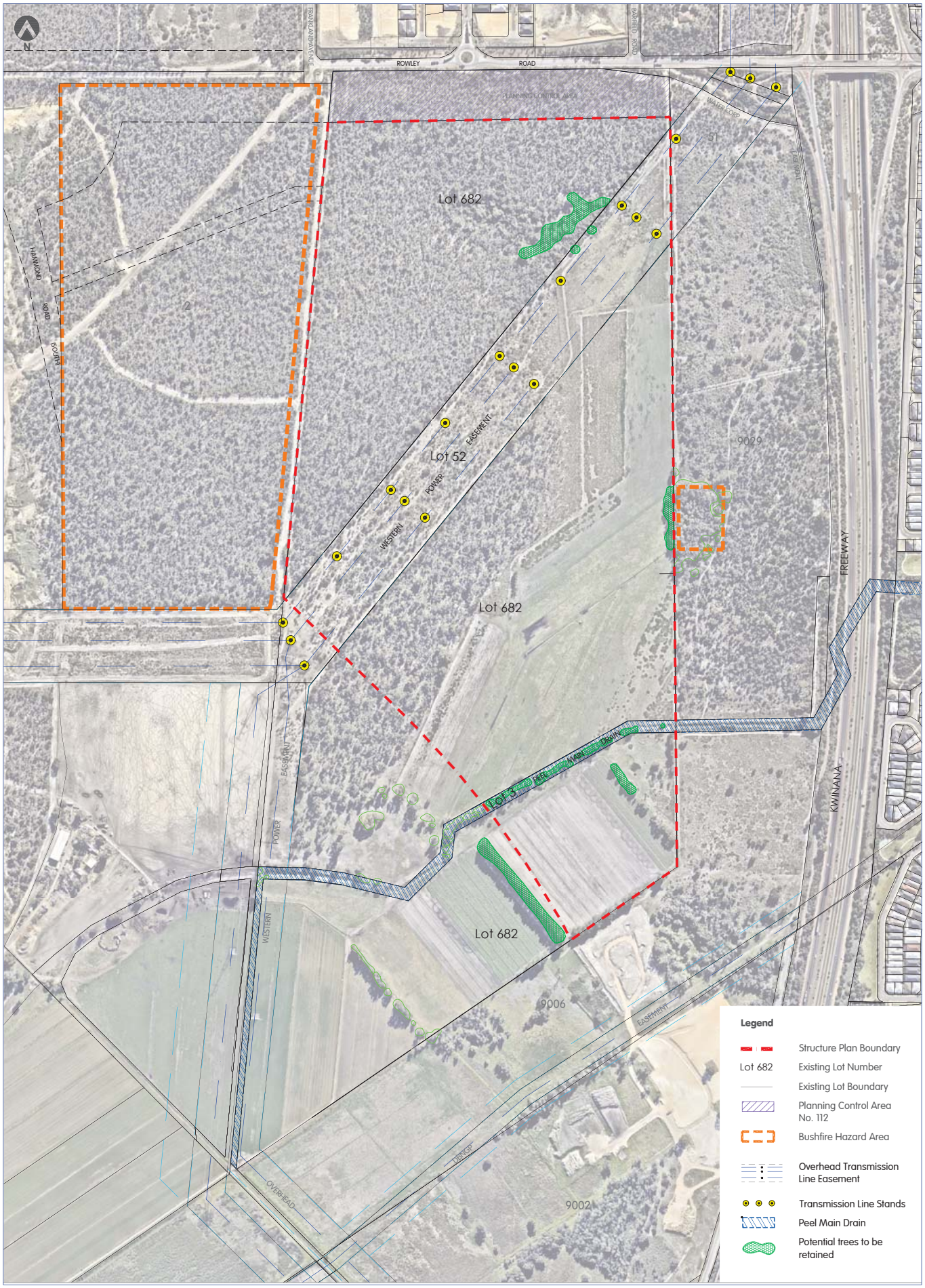


FIGURE 10: Opportunities and Constraints

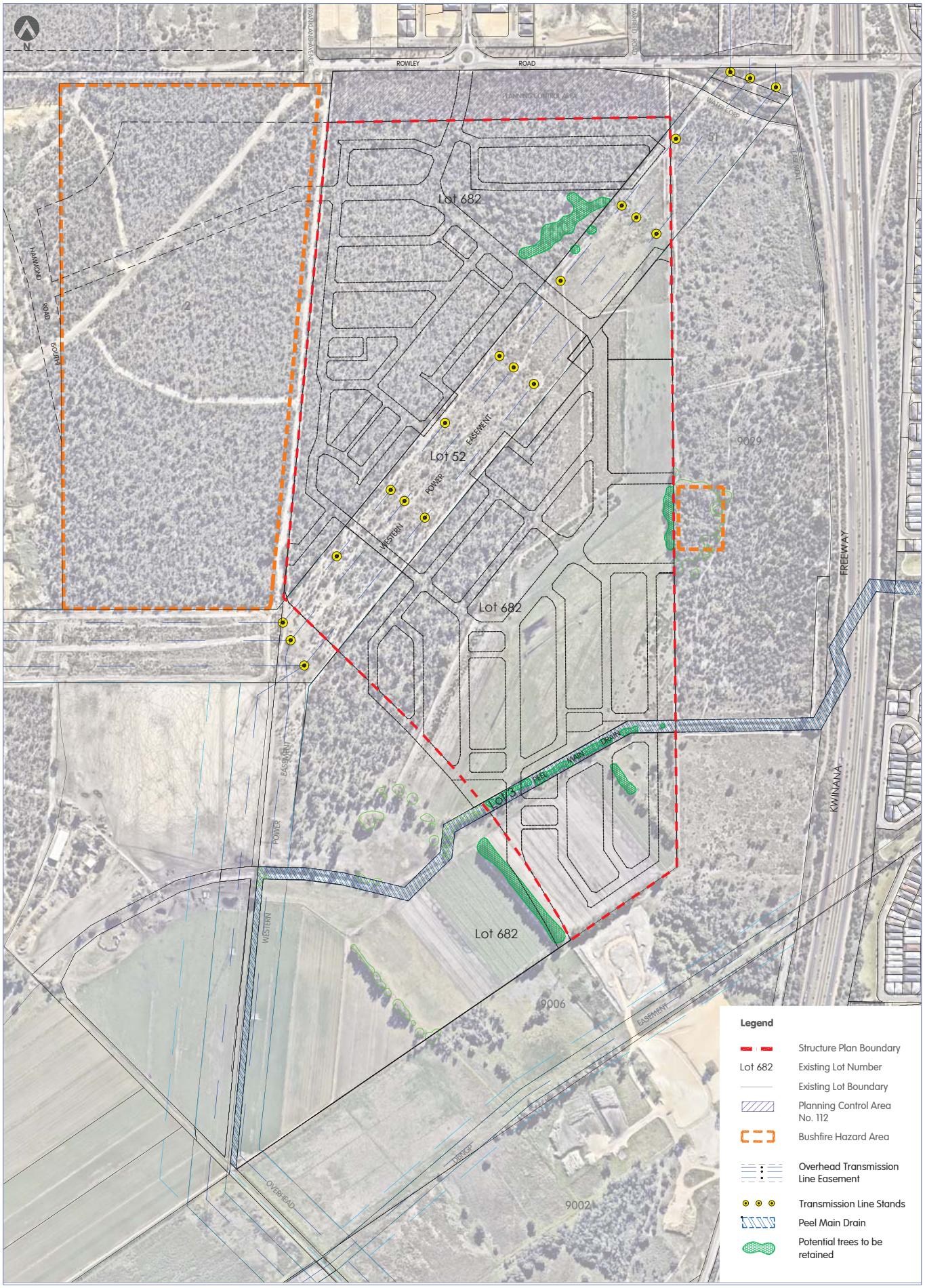


FIGURE 11: Concept Design Overlay

3.0 Land Use and Subdivision Requirements

3.1 Land Use

The MWLSP sets out land uses, residential densities, public open space network, public and private transport provision, environmental considerations and servicing requirements.

The MWLSP is proposed to comprise residential development with density codes ranging from R30 up to R60. The MWLSP also comprises a range of local and neighbourhood public open space areas in accordance with Liveable Neighbourhoods requirements, as well as a Local Centre, Primary School and playing fields to service the Mandogalup catchment.

The following sections describe the design response proposed under the MWLSP and address the relevant elements of Liveable Neighbourhoods (LN). Please also refer to the land use summary table provided below and Plan 1 – Mandogalup West Local Structure Plan.

TABLE 2: Land Use Summary

Item	Data	Section number referenced in report
Total area covered by the Structure Plan	68.46 ha	1.3.2
Estimate area of each land use proposed: Zones Residential Local Centre	 32.71 ha 0.15 ha	3.0
Reserves Public Open Space Existing Drainage Reserve Public Purpose -Primary School Road Transmission Line Easement	 6.673 ha 0.7 ha 2.0 ha 14.74 ha 11.32 ha	
Estimated lot yield:	900	3.4
Estimated number of dwellings	900	3.4
Estimated residential site density (dwellings/hectare gross subdivisible area):	13.15	3.4
Estimated population (@ 2.8 people per household)	2520	3.4
Number of high schools	0	3.7
Number of primary schools	1	3.7
Estimated commercial floor space (nett lettable area):	750m2	3.8
Estimated area and percentage of public open space given over to: Regional open space District open space Neighbourhood parks Local parks	 Nil 1.358 ha (playing fields) 4.18 ha, 2 parks 1.25 ha, 4 parks	3.3
Estimated number and area of natural area	0ha	3.3

3.2 Open Space

Under the provisions of LN, a range of site responsive urban parkland is required, which appropriately addresses district, neighbourhood and local needs of residents, comprising a mixture of unrestricted and restricted open space.

The MWLSP therefore provides a hierarchy of public open space (POS) areas across the site, considering the requirements for drainage and vegetation retention. Detailed subdivision design will provide further refinement to the MWLSP POS network, defining specific configuration, uses and treatment within each POS area. In accordance with LN, the MWLSP complies with the required POS provision of 10 per cent of the gross subdivisible (refer Table 2).

The POS network is generally configured around a central avenue, which forms a green corridor flowing through and connecting the entire neighbourhood. A series of POS areas along the avenue strengthen the recreational and land value of both the avenue and major areas of open space. This will perform the role of breaking the road into legible, smaller sections and create vistas towards and through these areas of amenity. A series of complimentary secondary links will cross connect each of the parks, creating a network of walking circuits for the community.

The MWLSP POS areas have been configured and located to take into consideration results of the tree survey, engineering report and site topography, to allow the retention of significant existing mature trees. The design of the overall MWLSP POS network will ensure the majority of residents are within a 400 metre walkable catchment of a park that can cater for a variety of recreational uses. This has resulted in the proposed park sizes ranging from 3000sqm for smaller pocket parks to larger parks of approximately 2.4 hectares (refer Figure 12). This range in POS sizes will create spaces that are fit for purpose and provide for both passive and active recreation.

The City of Kwinana Public Open Space Local Planning Policy (POS Policy) outlines that each suburb area should generally provide 40% of its open space contribution as conservation areas. In the context of the MWLSP open space areas, further discussion and negotiation with the City of Kwinana have resulted in an agreement that the retained vegetation with POS A and POS D, plus the localised retention of trees within road reserves, will meet the conservation area requirement of the POS Policy.

The POS network has been updated to provide additional open space areas around the Peel Main Drain (Lot 3), which provides an improved design response, improved integration between the MWLSP area and the Peel Main Drain and brings the MWLSP in line with the design of the adjacent MELSP.

The POS network helps dictate the design of other major features of the development including the location of medium density residential lots, movement networks, water management features and links to educational facilities. The neighbourhood configuration therefore responds to the location of POS areas and draws amenity through the development with a series of vistas, vista terminations and lots with a direct outlook across green spaces. This is anticipated to be further defined through the planting of primary and secondary street trees to create a "garden setting".

Given the importance of the POS spine in the creation of amenity and identity for the future community in Mandogalup, Plan E have prepared a Landscape Principles Plan (refer Appendix F).

FIGURE 12: POS Plan

TABLE 3: INDICATIVE POS SCHEDULE

Site Area (Local Structure Plan boundary)					68.46ha
Less					
Peel Main Drain	0.7 ha				
1 hr:1 yr Drainage	0.3375 ha				
Transmission Line Easement	11.32 ha				
Total				**12.3575 ha**	
Nett Site Area					56.1025 ha
Deductions					
Primary School	2.0 ha				
Gross Subdivisible Area					54.1025 ha
POS @ 10 per cent					5.41 ha
Public Open Space					
Min. 80% unrestricted POS	4.33 ha				5.41 ha
Max. 20% restricted POS	1.08 ha				
POS Reference Number	**TOTAL POS AREA**	**Unrestricted POS Areas**	**Credited Restricted POS Areas**	**Total Credited POS Area**	**Excluded (Deducted) 1hr:1yr Areas**
A	2.55 ha	2.327 ha	0.006 ha	2.333 ha	0.2170 ha
B	0.36 ha	0.36 ha	0 ha	0.36 ha	0ha
C	1.36 ha	1.36 ha	0 ha	1.36 ha	0 ha
D	1.63 ha	1.537 ha	0.006 ha	1.543 ha	0.087 ha
E	0.19 ha	0.19 ha	0 ha	0.19 ha	0 ha
F*	0.70 ha	0.6635 ha	0.003 ha	0.6665 ha	0.0335 ha
Total	**6.79 ha**	**6.4375 ha**	**0.015 ha**	**6.451 ha**	**0.3375 ha**
Total Credited POS Provision				**6.451 ha (11.92%)**	

* Only a portion of the overall Catchment D Storage Basin (as per Figure 14 of LWMS) is located within POS F; as per the following storage volume breakdowns – 1yr 1hr ARI = 335m2 (of overall 630m2); 5yr ARI = 365m2 (of overall 690m2) and 100yr ARI = 370m2 (of overall 700m2). The remainder of the Catchment D Storage Basin is located outside the MWLSP area.

3.3 Residential

An indicative subdivision layout has been prepared for the MWLSP area, identifying an approximate yield of 900 lots (approximately 900 dwellings). Based on approximately 900 dwellings within the MWLSP area, the site achieves an overall density of approximately 13.15 dwellings per gross urban hectare. Once significant site constraints that are unable to be developed are considered (in particular the transmission line easement and the Peel Main Drain), the overall density increases to 15.94 dwellings per site hectare. This is considered appropriate for the site considering its location and context.

The MWLSP allocates a density code range of R30-R60 across the residential zoned portions of the structure plan area. Indicative residential density codes have been allocated across the site and have been used in the preparation of the indicative subdivision layout and density calculations. The MWLSP assumes a base density code of R30, with areas of R40 and R60 concentrated around higher amenity and access areas, including (but not limited to) the future local centre, the primary school, public open space and adjacent to public transport or neighbourhood connector routes.

For reference, an indicative Lot Type Plan is provided at Figure 13. It is noted that this plan is provided for explanatory purposes only and is subject to review and detailed design at the subdivision stage.

The density code range facilitates the provision of a diversity of lot product across the site, providing for a range of dwelling types to cater for the broad cross-section of community housing needs. The preparation of Local Development Plans will also assist in facilitating the delivery of diversity in lot product, as well as seeking to achieve built form outcomes consistent with the development intent of the site.

The MWLSP design also allows that the majority of residential lots will be able to achieve optimal solar orientation, particularly along an east-west alignment.

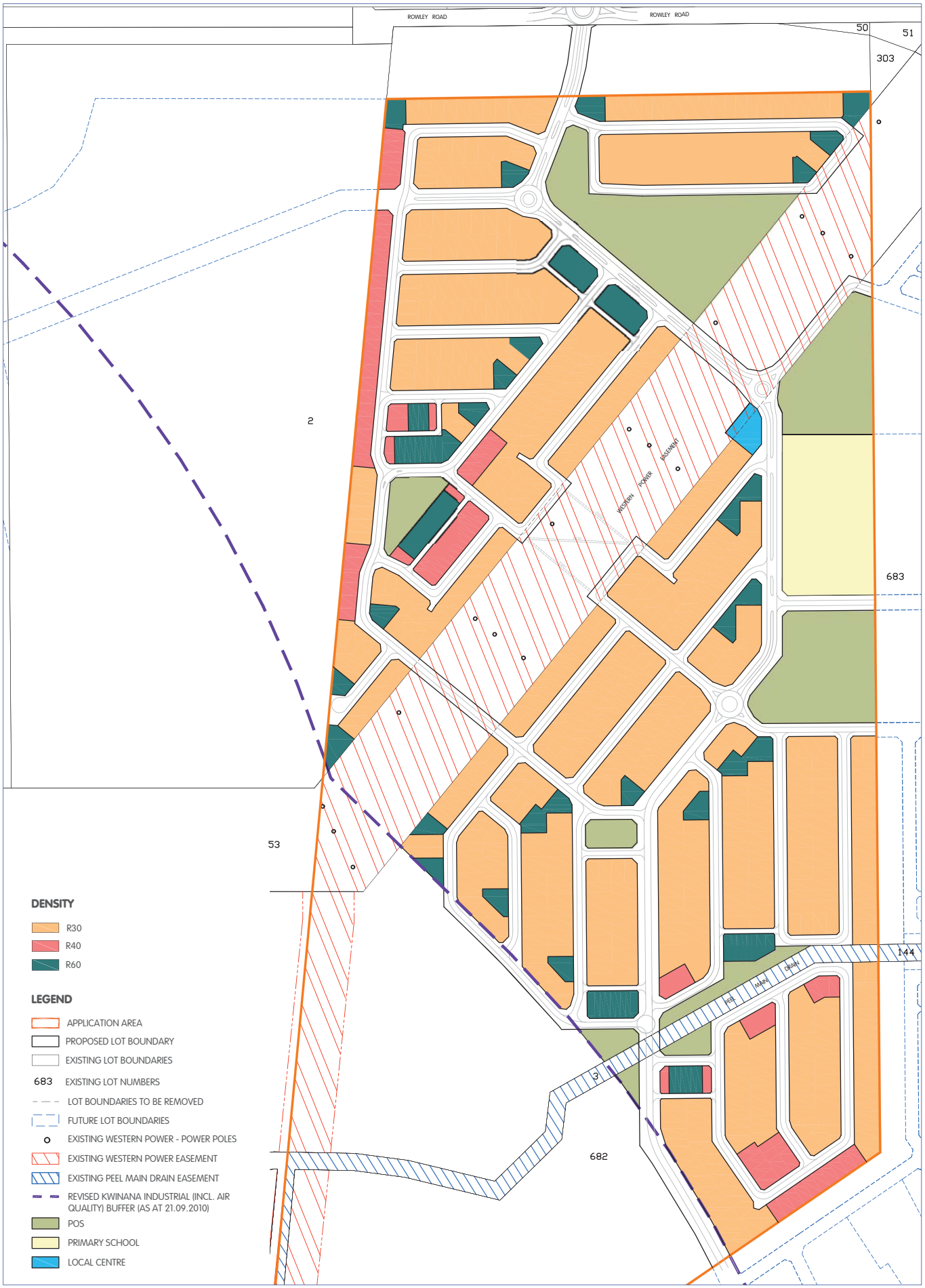


FIGURE 13: Lot Type Plan

3.4 Movement Networks

The overall movement network has been designed to optimise walking and cycling environments, particularly the central cycleway spine and cross connections to the Principle Shared Path located to the west of Kwinana Freeway. This will allow uninterrupted cycleway access from the Mandogalup neighbourhood through to the Aubin Grove rail station, optimising the use of public transport and increasing commuter options to the city.

The interconnected network of streets with dual use and pedestrian paths also provide ready access to localised areas of high amenity and walking circuits connecting parks, the primary school and the future neighbourhood centre. In addition, it allows sight lines, vista points and visual connections through to retained vegetation, emphasising its importance in creating a sense of place for the community.

The proposed street network has also made extensive and significant effort to avoid view lines and associated visual impacts associated with the transmission line stands.

The hierarchy of streets within and adjacent to the MWLSP area is based on the hierarchy defined within LN. The proposed design provides for a permeable, interconnected road network that allows for the free flow of pedestrians, cyclists and motorists within the MWLSP area (refer Figure 14 and 15).

The north-south Neighbourhood Connector A road is the key entry and exit point into the new Mandogalup neighbourhood. The connector road will link the community to areas of amenity and the primary school, which have been positioned to emphasise the key north south axis. In addition, the proposed cross section for the Neighbourhood Connector A will provide for a multi-functional movement route. As well as performing its function of channelling traffic through the area, the road will be designed with off-road cycle paths, footpaths on both sides, on-street parking, and will be planted with street trees to emphasise its avenue nature and intended position as a central meeting point. The placement of the road also emphasises the natural fall of the land, with it entering the LSP area through a natural amphitheatre at POS A, before following an existing contour to provide a flat connection through the neighbourhood to the primary school.

Rowley Road is classified as a District Distributor Integrator A road and is currently constructed as a rural standard single carriageway. It provides an east-west linkage between South Western Highway, Tonkin Highway, Kwinana Freeway and Rockingham Road and has been identified as a primary freight route to the Naval Base and Kwinana Industrial Area. In the future, it will be constructed to four lanes and divided according to Main Roads WA standards.

Rowley Road also provides the main point of access into the MWLSP area through its intersection with the proposed north-south Neighbourhood Connector A road. The intersection is proposed at an appropriate distance to ensure the full functioning of the Kwinana Freeway. Ultimately, when Mandogalup Road is extended, the Neighbourhood Connector intersection will be downgraded to a left in left out, with full access being transferred to the west.

An off-road cycleway will run along the north-south Neighbourhood Connector road, providing a safe bike link from existing infrastructure on Rowley Road, through the neighbourhood, past the primary school, and development to the south. Access Streets B and C will also be provided with Dual Use Paths to connect cyclists to the future Neighbourhood Centre, the regional bike networks and the principal shared path that follows the route of the Kwinana Freeway. Footpaths are also proposed throughout the entire neighbourhood. The key pedestrian and cyclist routes will be planted with street streets to emphasise the safe, green networks that will be developed throughout the area and promote walking and cycling.

A Transport Assessment Report has been prepared that provides a detailed analysis of existing and proposed infrastructure, traffic generation calculations and intersection treatments (refer Appendix G).

▲ Proposed cycleway character

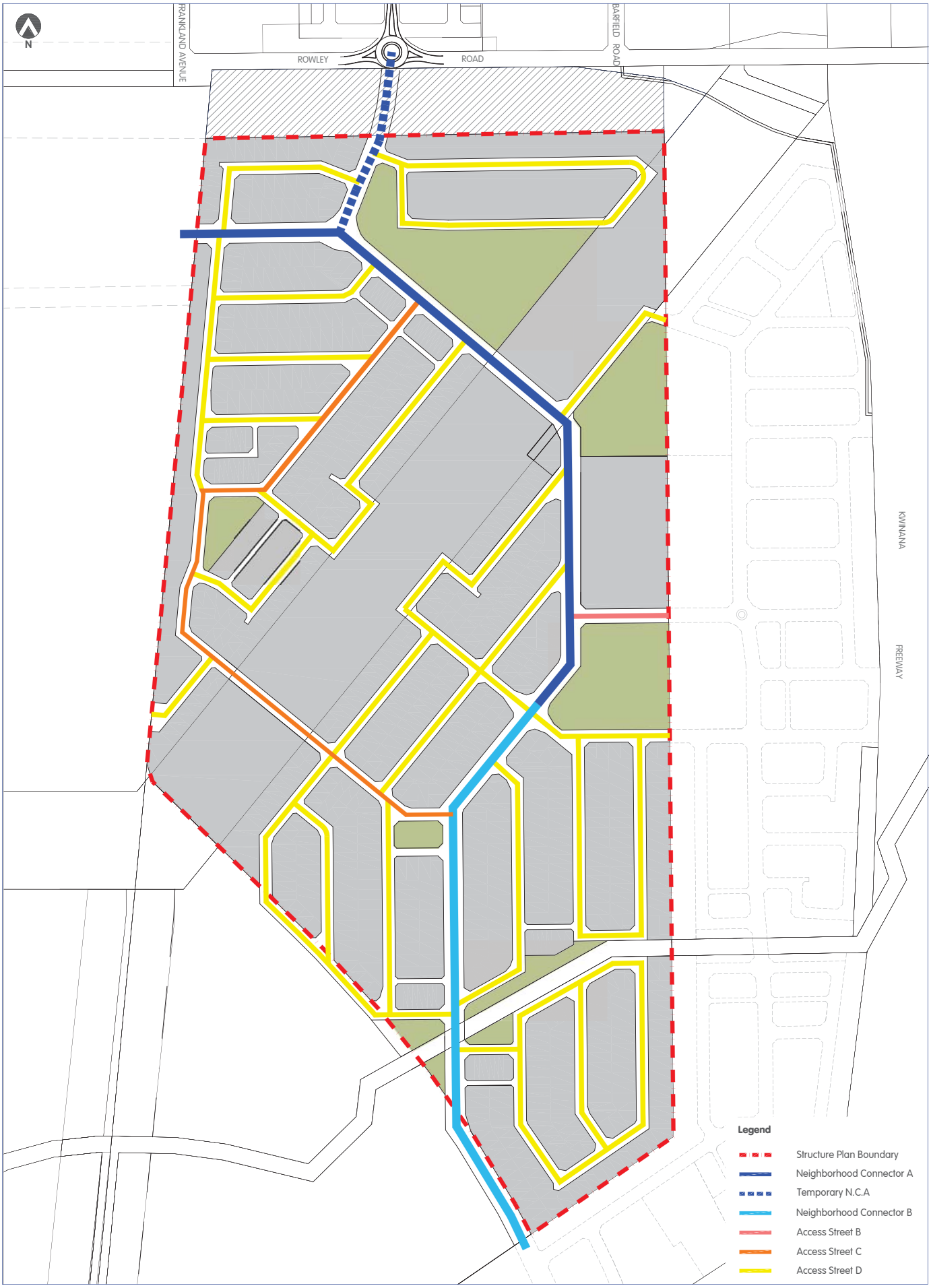


FIGURE 14: Road Hierarchy Plan

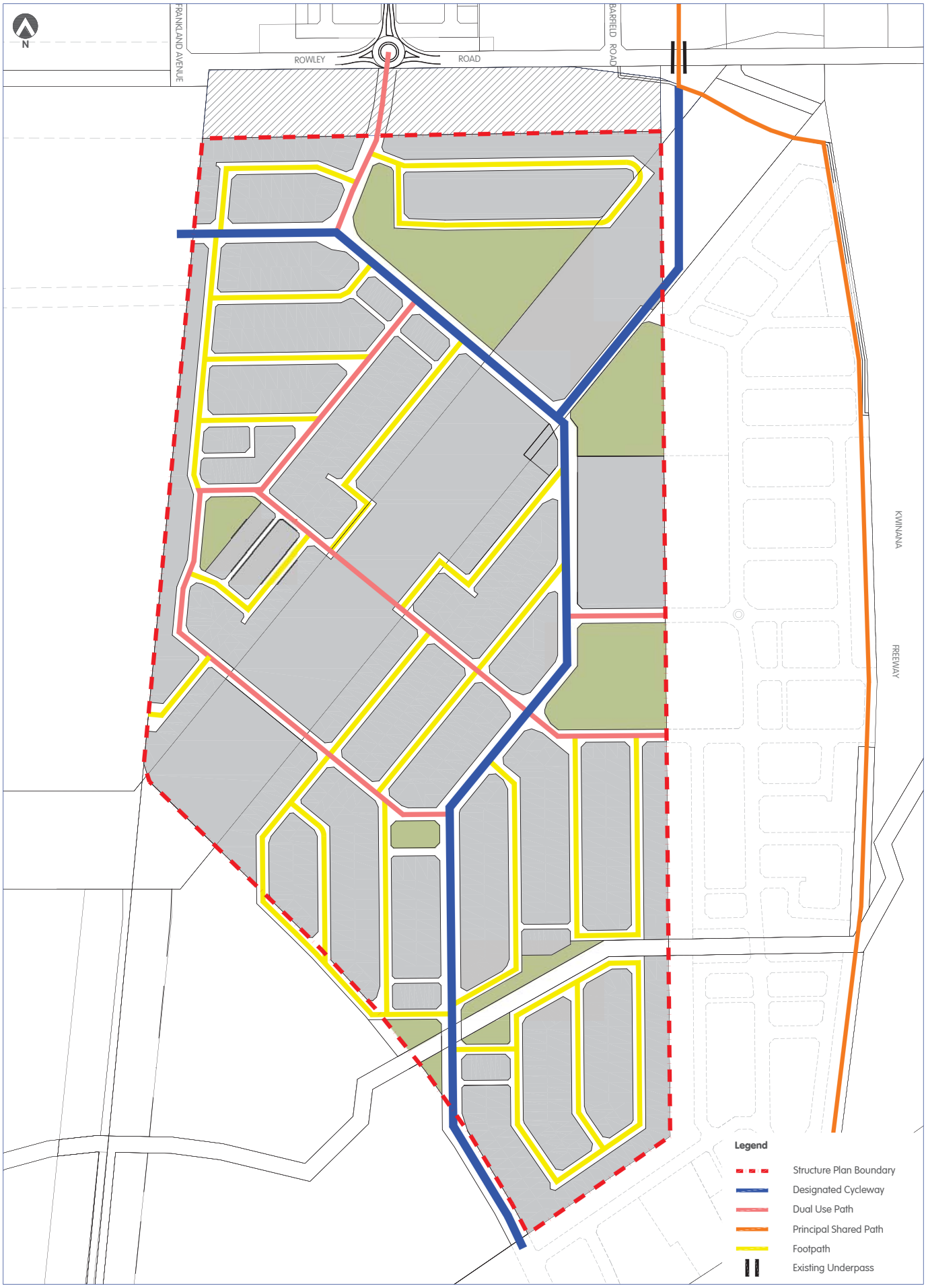


FIGURE 15: Cycle/Footpath Plan

3.5 Local Development Plans

A Local Development Plan is required in the following circumstances:

- Lots with an area of 260 square metres or less;
- Irregular shaped lots;
- Lots where specific vehicle access and egress control is required;
- Lots abutting public open space;
- Lots with particular site constraints;
- Lots subject of a notification on title;
- Lots abutting the Western Power transmission line easement;
- Lots abutting / adjacent to the Peel Main Drain;
- Lots with a BAL rating of 12.5 or greater; and
- Lots that require Quiet House Design for noise attenuation through deemed to comply noise target/limit package and for lots identified as subject to specialist acoustic advice.

Local Development Plans are to address, as a minimum, the following:

- Dwelling orientation;
- Type of fencing;
- Location of carports/garages and vehicular access;
- Surveillance;
- Setback variations; and
- Requirements for dwelling construction compliant with an approved Bushfire Management Plan and Noise Management Plan.

In preparing Local Development Plans, the design responses and interface treatments between the MWLSP and MELSP will need to be considered to ensure the effortless transition between the two developments, whilst noting the different design objectives of the two estates to create individual character and sense of place.

The residential developable land within the MWLSP has been assigned an associated density code range of R30 to R60. As such, future development of lots within the MWLSP, for residential single dwellings, can be in accordance with the requirements of the Medium-Density Single House Development Standards – Development Zones, as published by the Western Australian Planning Commission in Planning Bulletin 112/2016.

3.6 Water Management

A Local Water Management Strategy (LWMS) has been prepared by JDA for the MWLSP (refer Appendix D). The LWMS requires stormwater runoff generated from the proposed development of the site be detained and infiltrated on-site in POS areas, in accordance with the DWMS.

Groundwater recharge will be maximised through the adoption of 'Best Management Practices' that promote the dispersion and infiltration of runoff as close to source as possible. The LWMS proposes the diversion of runoff into a pit and pipe network combined with inter-allotment drainage soakwells to infiltrate runoff from building roofs and private open space areas and the disposal of road runoff into infiltration basins within POS areas.

Drainage from public roads and lanes is to be collected via conventional gullies. The drainage collection and conveyance system will be designed to cater for the runoff from storms with up to a 1 in 5 year recurrence interval. A series of interconnected detention basins will store runoff to the pre-development peak flow rates for the 5, 10 & 100 year ARI events. The dispersion of stormwater disposal throughout the site will maximise the area of recharge down through the soil profile to the shallow aquifer, thereby maximising the potential for nutrient stripping and water quality improvements.

Overflow drainage from POS A is proposed to be accommodated within the transmission line easement. The area identified in the LWMS already performs this role and is a natural low point on the site, and therefore is the practical and logical choice for post-development overflow drainage. The use of the area minimises the need for earth working and reduces the impact of drainage on the adjoining POS. Drainage in an open space area is a non-sensitive land use and will allow for the purposeful use of the land within the transmission line easement.

The easement will be developed as restricted use local open space, catering to passive recreational activities, and vested to the local government for ongoing management. The proposed use of the easement as local open space will comply with the Western Power guidelines for transmission line easements. It is noted that the MWLSP does not seek a public open space credit for the open space provided in the easement.

3.7 Education Facilities

The MWLSP (and in part the MELSP) provides for a shared primary school site. The catchment for the future Mandogalup Primary School is contributed to by the proponents of the MWLSP and Satterley Property Group, being the proponent of the adjacent MELSP.

Given the importance of the north-south Neighbourhood Connector road in providing a walking and cycling route along a flat and high amenity area, it was integral that the primary school site be located in close proximity to this design feature.

The primary school is proposed to be co-located with the City of Kwinana's shared use playing fields. The layout shown on the MWLSP map has been prepared in consultation with the Department of Education and City of Kwinana. The size and location of the primary school, plus the shared playing fields, have been agreed to by all stakeholders, including the proponents of the MELSP.

3.8 Activity Centres and Employment

A Retail Needs Assessment (refer Appendix A) has been prepared by Taktics 4 in response to uncertainty surrounding the requirement for a local centre in the area. The report concludes that without a local centre, the community of Mandogalup would be underserviced for retail options and would need to travel almost twice as far as other urban communities to gain access to everyday goods and services. In short, the report indicated the need for the provision of a small supermarket based local centre of approximately 750 square metres of retail floor space.

The proposed local centre will sufficiently service the future residents of Mandogalup and will provide for day-to-day goods, services, community facilities and employment opportunities. The proposed small supermarket local centre is expected to be developed following the establishment of a sufficient catchment in the new residential neighbourhoods. In line with the recommendations of the retail assessment, the MWLSP identifies an interim local centre, centrally located to the MWLSP and MELSP catchment.

For higher order goods and services, it is expected that Mandogalup residents will utilise the secondary centres of Kwinana and Cockburn, which are located approximately 7km south and north of the MWLSP area, respectively. These centres, in addition to the Kwinana and Henderson Industrial areas, are expected to provide a wide variety of jobs and employment opportunities for the resident community.

Should expansion of the retail catchment occur, there may be the opportunity to provide a larger centre. The location of a larger centre in an alternative location to that currently identified under the MWLSP would be subject to zoning and further detailed planning. Any future planning for the expansion of the Mandogalup residential catchment should be cognisant of providing and planning for additional retail activity.

3.9 Infrastructure Coordination, Servicing and Staging

The following provides a summary of the infrastructure and servicing for the MWLSP. Further information is contained within the Engineering Servicing Report prepared by Cossill and Webley (refer Appendix C).

3.9.1 Sewer

The site forms part of the Water Corporation's Thompson's Lake waste water reticulation system and planning has been undertaken to develop strategies for providing deep sewerage to urban land within the area. The site is proposed to be serviced by connection to a future DN300 reticulation sewer, discharging to a future type 180 Waste Water Pumping Station 98-174B located off site to the south of the proposed development. More detailed assessment of the current Water Corporation planning for the site has been undertaken by VDM Group through work associated with the neighbouring, western landholding.

3.9.2 Water Reticulation

The site is located within the current boundary of the Water Corporation's Water Supply Scheme and overall planning for the scheme has made provision for residential development of the site.

The Water Corporation has however indicated that water distribution planning for the area is under review. The current planning indicates that the site will ultimately be serviced by extension of an existing 610mm distribution main in Hammond Road that currently terminates north of the intersection with Russell Road. This extension is a Water Corporation capital project, and would be extended south as demand requires.

3.9.3 Power

Electrical consultant UDP has advised that the site and proposed development can be supplied from the existing power network located on the northern side of Rowley Road. All site power will be underground and fed from transformers located strategically within the site.

3.9.4 Gas

ATCO Gas has advised that the site and proposed development can be supplied with reticulated gas via a connection to the existing system, approximately 1.3km north of the site.

3.9.5 Telecommunications

The National Broadband Network Company (NBN Co.) are able to prioritise new developments of more than 100 dwellings to have optic fibre infrastructure installed. As a number of surrounding developments in the immediate vicinity are within NBN Co.'s fibre footprint, extension of the current network does not pose an issue for the site and proposed development.

Under the current scheme, the developer is required to enter into an agreement with NBN Co. to provide design and pit and pipe infrastructure which is handed over free of charge to NBN Co. upon completion. NBN Co. will then cover the cost of fibre deployment and any off-site extensions required to service the proposed development.

3.9.6 Staging

The proposed staging allows for lots adjacent to Rowley Road to be brought to market first, given their ease of servicing and access. The proposed vegetation screen adjacent to Rowley Road within PCA No. 112 will provide an entry into the neighbourhood, as will the area of POS adjacent to the north-south Neighbourhood Connector A road.

Lot development will then generally progress in a southerly direction and the timing of the release of lots will depend on market sales rates.

3.10 Developer Contribution Arrangements

The MWLSP is situated within the Mandogalup cell for the purposes of Developer Contribution arrangements, and forms part of the Development Contribution Area b (DCA 8) for community infrastructure and Development Contribution Area 6 (DCA 6) for traditional infrastructure.

DCA 8 was introduced by way of Scheme Amendment 115 (Gazetted on 19 June 2012). However, the City of Kwinana has since reviewed the requirements for community infrastructure on the basis of current planning and population forecasts, in accordance with a revised draft Community Infrastructure Plan (2011-2031). The City of Kwinana therefore advertised Amendments 145 and 100A, concurrently with the Community Infrastructure Plan (2015) between 16 October and 30 November 2015, seeking to amend DCA 8 and introduce DCA 6 to TPS 2. Amendment 100A was subsequently adopted by Council on 23 November 2016, however it is yet to be considered by the Minister and Gazetted. It is understood Amendment 145 and the Community Infrastructure Plan will be adopted by Council in the relatively near future.

Whilst the Amendments are considered to be seriously entertained proposals, should these not be Gazetted prior to subdivision with the MWLSP area, it is likely a legal agreement will be entered into between the City of Kwinana and the Developer for the payment of interim costs. These costs are to be reconciled upon the Gazettal of the Amendments. This is consistent with the approach taken for the Wandi North LSP (DCA 9 and DCA 5). This approach is subject to further discussion and negotiation with the City of Kwinana.