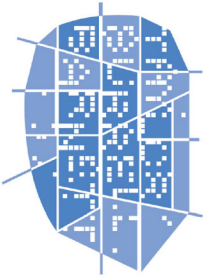


Lots 503 and 504 Tamblyn Place and
Lots 505, 507 and 900 Johnson Road, Wellard

Taylor
Burrell
Barnett



LOCAL STRUCTURE PLAN



Prepared for **LWP Wellard Pty Ltd**



DOCUMENT STATUS

		Revision	Reviewer	Date Issued
Prepared By:	Taylor Burrell Barnett Town Planning and Design 187 Roberts Road SUBIACO WA 6008 Phone: 9382 2911 Fax: 9382 4586 admin@tbbplanning.com.au	0	LM	July 2015
		1	LM	August 2015
		2	LM	October 2015
		3	LM	July 2016
In association with:	Cossill & Webley RPS ICS Group Emerge Associates			



TABLE OF AMENDMENTS

Amendment No.	Summary of the Amendment	Amendment Type	Date Approved by the WAPC



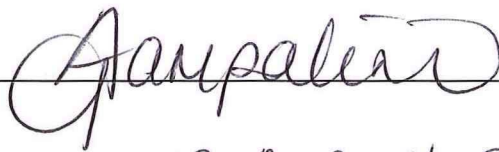
This structure plan is prepared under the provisions of the City of Kwinana Town Planning Scheme No.2

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: 12 August 2016

Signed for and on behalf of the Western Australian Planning Commission



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



Witness

12 August 2016.

Date

Date of Expiry: 12 August 2026

EXECUTIVE SUMMARY

This Local Structure Plan (LSP) is prepared to guide the subdivision and development of Lots 503-505, 507 and 900 Johnson Road, Wellard hereafter referred to as the 'structure plan area', 'subject site' or 'site'. The Rural zoned portion of the site is excluded from the LSP.

The subject site is located:

- within the municipality of the City of Kwinana;
- approximately 3km south east of the Kwinana Town Centre; and
- approximately 500m west of the intersection of the Kwinana Freeway with Mortimer Road.

The subject site encompasses cleared, formerly grazed lands and forms part of the Bollard Bulrush Swamp wetland area.

The LSP proposes development of the land for:

- 'Residential' purposes comprising a mix of low to medium residential densities;
- Public Open Space (POS) including wetland buffer; and
- access streets.

The subject site falls within the boundaries of, and is consistent with, the adopted Jandakot District Structure Plan and City of Kwinana Eastern Residential Intensification Concept District Structure Plan (ERIC). The LSP includes Lot 900 which has a City of Kwinana adopted LSP covering it.

STRUCTURE PLAN SUMMARY

Item	Data	Structure Plan Ref (section no.)
Total area covered by the Structure Plan	31.9117 hectares (excluding existing road reserves)	1.2 & 3 CTs – Appendix B
Area of each proposed Land Use Zones		
<ul style="list-style-type: none"> • Residential Reserves 	16.3578 hectares	3.3
<ul style="list-style-type: none"> • Road Reserve 	7.7322 hectares	
<ul style="list-style-type: none"> • Public Open Space 	7.9785 hectares* *includes 0.185 hectares of drainage	
Estimated Lot and Dwelling Yield	415 lots / dwellings	3.3 Development Concept – Figure 6
Estimated Residential Density		
<ul style="list-style-type: none"> • Dwellings per gross hectare (as per Directions 2031) 	15.4 dwellings per gross hectare (includes wetland buffer)	3.3
<ul style="list-style-type: none"> • Dwellings per site hectare (as per Liveable Neighbourhoods and Perth and Peel@3.5million) 	25.4 dwellings per site hectare	
Estimated Population	1,162 people @ 2.8 people/household	3.3
Estimated area and percentage of Public Open Space given over to:		
<ul style="list-style-type: none"> • Neighbourhood Parks 	2.0944 hectares (26.87%)	3.5
<ul style="list-style-type: none"> • Local Parks 	0.8805 hectares (11.3%)	
<ul style="list-style-type: none"> • Other Parks (wetland buffer) 	4.8186 hectares (60.4%)	
Estimated percentage of natural area	7.9785 hectares (25%)	3.5

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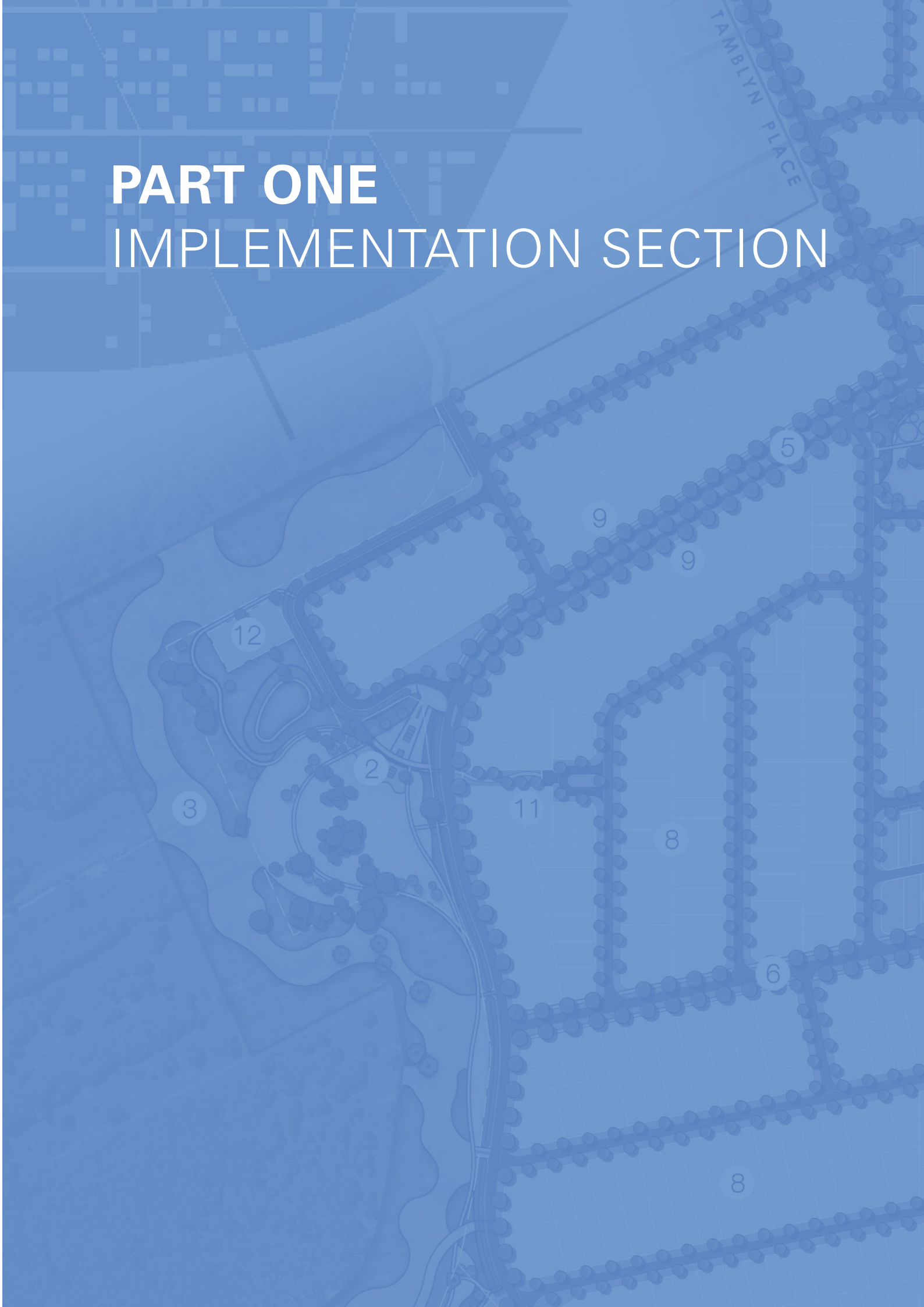
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PART ONE

IMPLEMENTATION SECTION



1. STRUCTURE PLAN AREA

This Structure Plan applies to the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan Map.

2. OPERATION

The Structure Plan commences operation on the date it is approved by the Western Australian Planning Commission (WAPC).

3. STAGING

The staging of subdivision and development will be influenced by the construction of a new wastewater pump station within Lot 503. Lot 900 will be subdivided first as it is not reliant on the new wastewater pump station, with lots connecting into the existing sewerage system within Tamblyn Place. The remainder of the site is reliant on the construction of the wastewater pump station. Following Lot 900, subdivision will be staged on the basis of 30-50 lot stages constructed to the west and then to the south.

4. SUBDIVISION AND DEVELOPMENT REQUIREMENTS

- a) Residential densities for the structure plan area are the residential densities shown on the Structure Plan Map.
- b) Public open space is to be provided in accordance with the Structure Plan Map.
- c) Land use permissibility within the structure plan area shall accord with the corresponding land use classification in the City of Kwinana Town Planning Scheme No. 2.
- d) This structure plan is supported by a Bushfire Management Plan (BMP), *Bushfire management plan – Lots 503-505, 507 and 900 Johnson Road, Wellard* (3 August 2015) by ICS Group, as amended. 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.

e) Notifications on Title

The Council shall recommend to the Western Australian Planning Commission 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:

- That a lot with a bushfire attack level (BAL) rating of 12.5 or higher is subject to a *Bushfire Management Plan*.

f) Management plans

The Council shall recommend to the Western Australian Planning Commission that a condition be imposed on the grant of subdivision approval to respond to the following as identified by the structure plan:

- The preparation, approval and implementation of a wetland management plan providing for the protection of the adjoining conservation category wetland; and
- A mosquito and midge management plan.

5. LOCAL DEVELOPMENT PLAN

Local Development Plan(s) are to be prepared for lots with one or more of the following attributes:

- a) Rear-loaded vehicle access;
- b) Having the potential for grouped and/or multiple dwellings;
- c) With frontages of less than 12 metres;
- d) Abutting public open space; and
- e) With a bushfire attack level of 12.5 or greater.

6. OTHER REQUIREMENTS

- a) Development Contribution Arrangements

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

- Development Contribution Area 1 for the funding of the traditional infrastructure;
- Development Contribution Area 7 – Standard infrastructure for a district sporting ground; and
- Development Contribution Area 12 for community infrastructure.

LEGEND

LOCAL SCHEME

LOCAL SCHEME RESERVES

 Parks, Recreation & Drainage

ZONES

 R25 Residential R25

 R30 Residential R30


 R60 Residential R60

OTHER


 Major Access Street

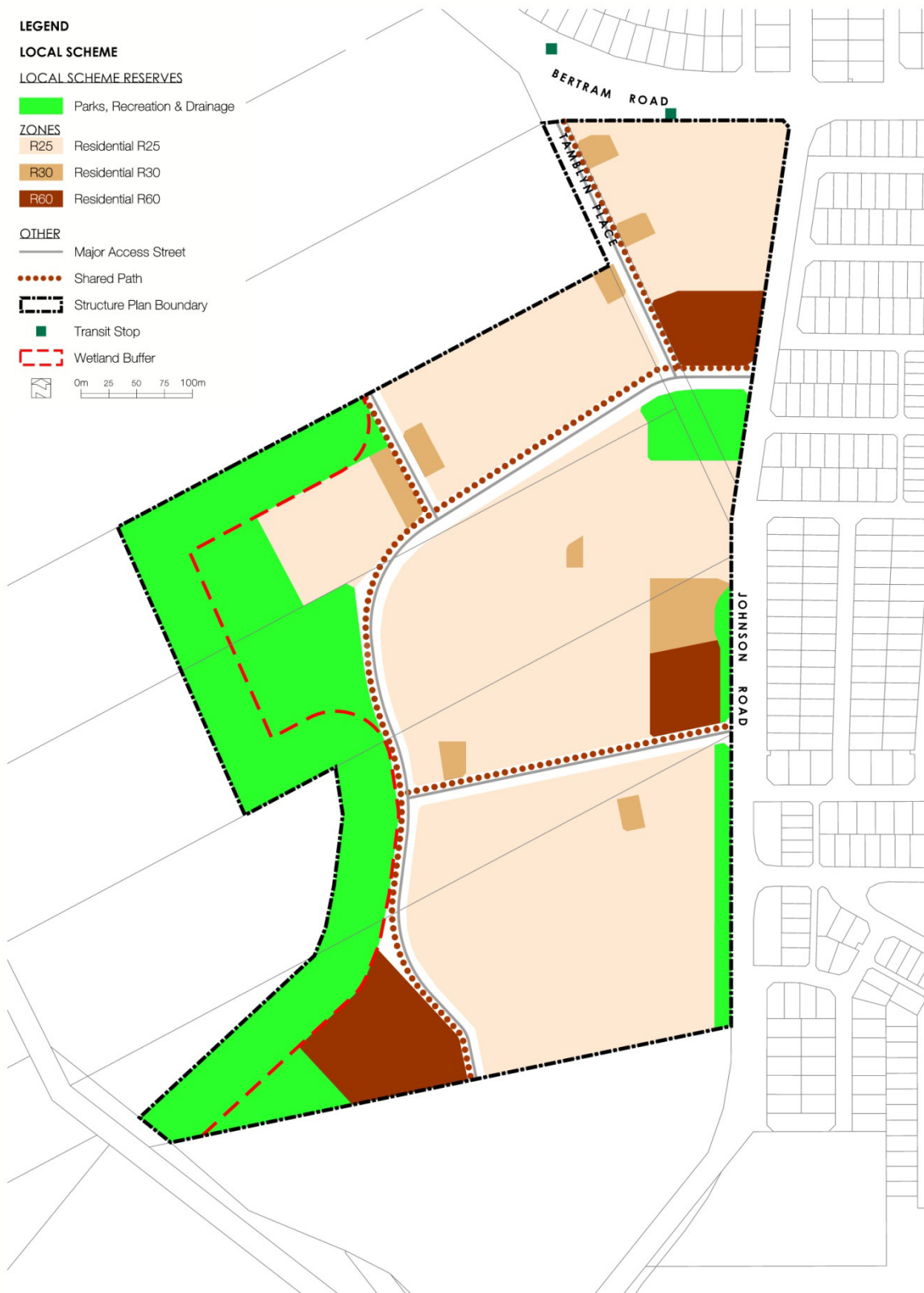
 Shared Path

 Structure Plan Boundary

 Transit Stop

 Wetland Buffer

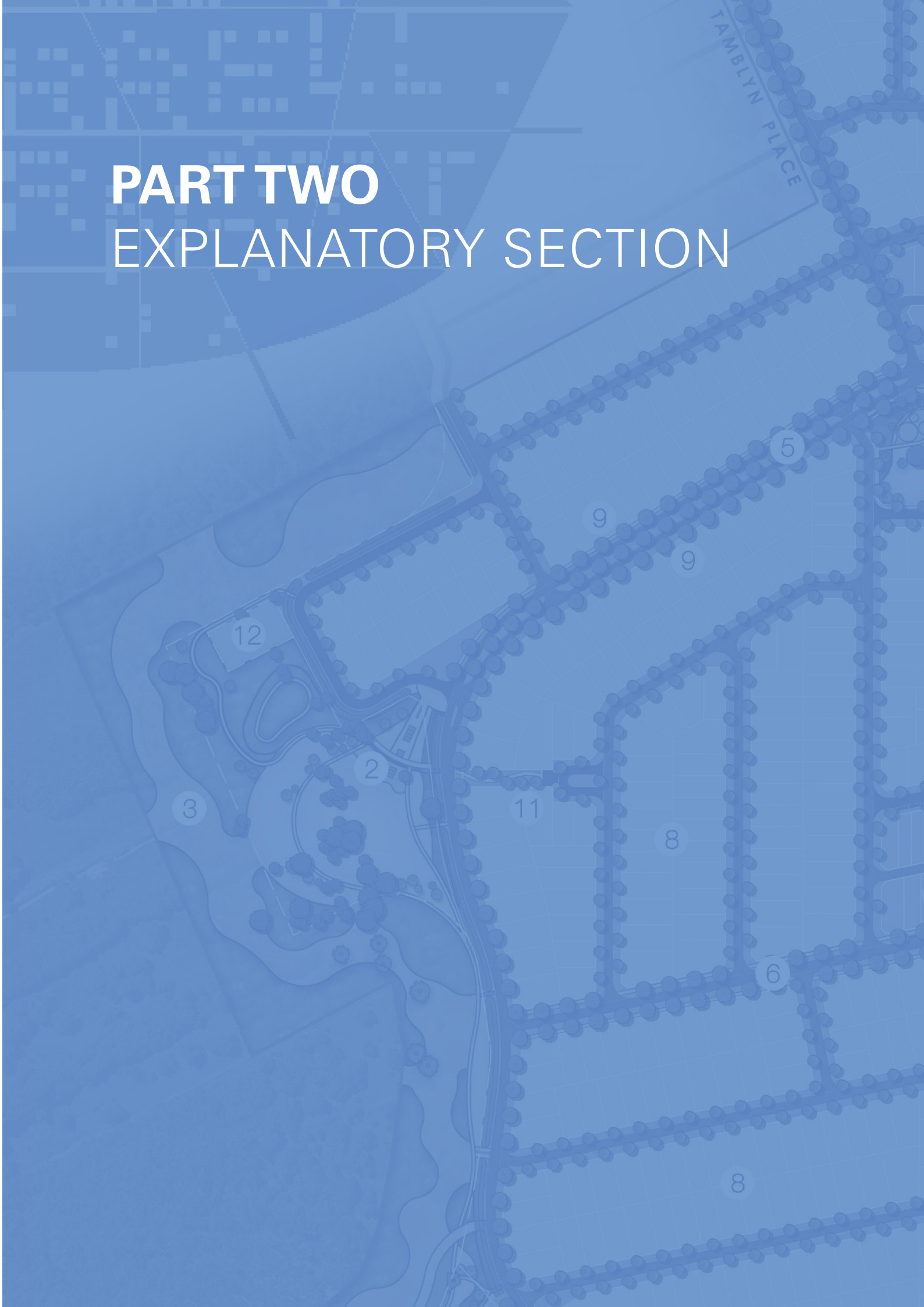
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Lots 503 & 504 Tamblin Place and Lots 505, 507 & 900 Johnson Road, Wellard Local Structure Plan

PART TWO

EXPLANATORY SECTION



1 PLANNING BACKGROUND

1.1 INTRODUCTION AND PURPOSES

This LSP has been prepared on behalf of LWP Wellard Pty Ltd and covers a portion of the land located between Bollard Bulrush Swamp and Johnson Road in Wellard.

The LSP will accommodate the future subdivision and development of the site for residential purposes, providing an additional level of detail over the existing district structure planning framework, including:

- Jandakot District Structure Plan; and
- Eastern Residential Intensification Concept District Structure Plan.

The LSP has been prepared to address the requirements of the City of Kwinana Town Planning Scheme No. 2 and the Planning and Development (Local Planning Schemes) Regulations 2015. The LSP and report has been prepared in accordance with the Western Australian Planning Commission's (WAPC) Structure Plan Framework August 2015. The LSP will guide future subdivision and development of the site with the determining authorities having due regard for it in the assessment of development and subdivision applications.

The following technical documentation has been prepared in support of this town planning report:

- Environmental Assessment Report (refer **Appendix C**);
- Engineering Servicing Report (refer **Appendix D**);
- Landscape Strategy(Refer **Appendix E**);
- Bushfire Management Plan (refer **Appendix F**); and
- Local Water Management Strategy (refer **Appendix G**).

The Project Team, responsible for preparing the information contained within this report, (in consultation with the City of Kwinana and relevant Service Authorities) include those detailed in **Table 1**.

TABLE 1: PROJECT TEAM RESPONSIBILITIES

Project Role	Consultant
Town Planning and Urban Design	Taylor Burrell Barnett
Civil Engineering	Cossill and Webley
Environment and Hydrology	RPS
Bush Fire Hazard Assessment and Management	ICS Group
Landscape	Emerge Associates

1.2 LAND DESCRIPTION

LOCATION

The subject site is located within the suburb of Wellard, situated within the City of Kwinana. Locally, the subject site is located:

- east of the Peel Main Drain;
- north of undeveloped Urban zoned land which is adjacent to surrounding Urban zoned land under development;
- west of Johnson Road; and
- south of Bertram Road and undeveloped Urban zoned land.

Tamblyn Place is located between Lots 900 (western boundary) and Lots 503-504 (eastern boundary).

The surrounding area consists of Rural zoned land to the west containing the western portion of the wetland associated with Bollard Bulrush Swamp; and Urban zoned land under development for residential purposes to the south west, east and north.

The subject site is located approximately 500m from the Mortimer Road and Kwinana Freeway intersection (refer **Figure 1**).

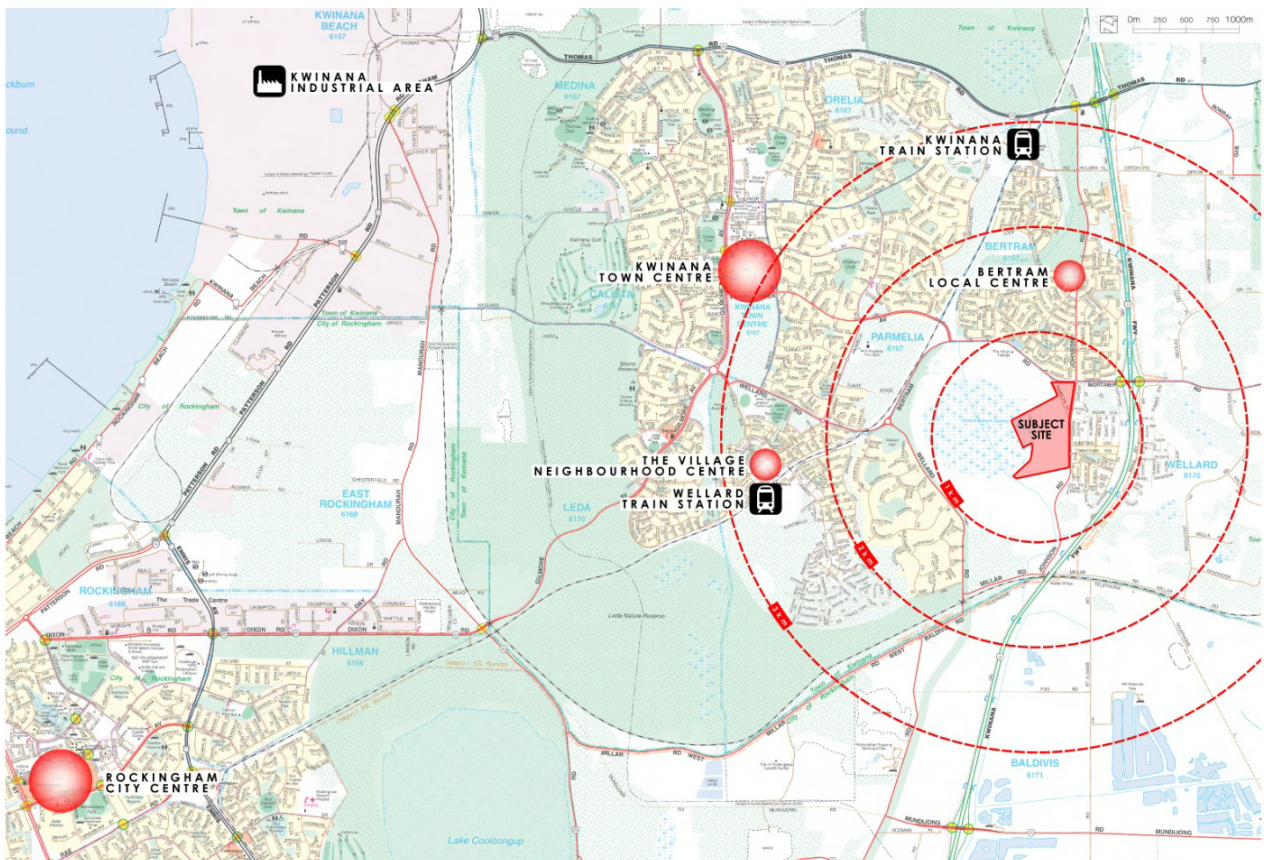


Figure 1: Location / Context

AREA AND LAND USE (EXISTING)

The subject site consists of 5 separate allotments with their areas, including Urban and Rural zoned portions under the Metropolitan Region Scheme, detailed in **Table 2**.

The subject site consists of two definable areas, including Rural zoned land, which contains the wetland associated with Bollard Bulrush Swamp and Urban zoned land, which is generally cleared and has been grazed in the past (refer **Figure 2**).

TABLE 2: LOT AREA DETAILS

LOT	AREA (HA)	URBAN AREA (HA)	RURAL AREA (HA)
503	10.6927	7.0535	3.6392
504	10.6286	7.0861	3.5425
505	9.9188	5.6781	4.2407
507	9.4347	8.8047	0.6300
900	3.2893	3.2893	-
TOTAL	43.9641	31.9117	12.0524

LEGAL DESCRIPTION AND OWNERSHIP

The property details and ownership of the subject site are detailed in **Table 3**.

Copies of the Certificates of Title are attached as **Appendix B**.

TABLE 3: PROPERTY DETAILS

Lot No.	Volume	Folio	Deposited Plan	Owner
900	2800	19	71057	LWP Wellard Pty Ltd
503	2796	132	70999	LWP Wellard Pty Ltd
504	2796	133	70999	LWP Wellard Pty Ltd
505	2796	134	70999	LWP Wellard Pty Ltd
507	2863	823	76139	Peter Mathew Hoeberigs*

*LWP Wellard Pty Ltd is contracted purchaser with settlement to occur mid August, 2015

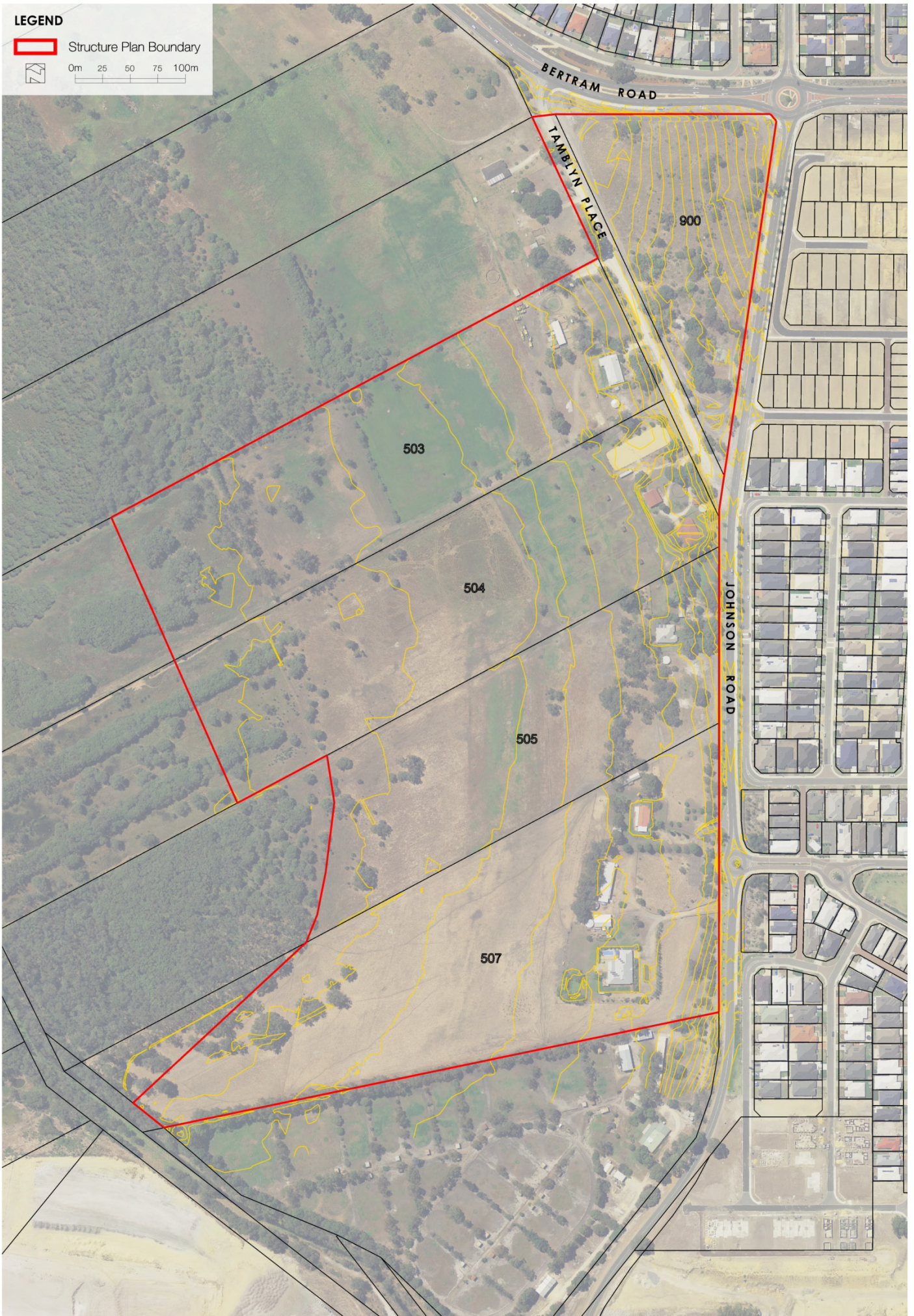


Figure 2: Site

1.3 PLANNING FRAMEWORK

ZONING

METROPOLITAN REGION SCHEME

The subject site is zoned Rural and Urban under the Metropolitan Region Scheme (MRS) (refer **Figure 3**). The zonings applicable to the site are based on a defined wetland boundary which was determined as part of MRS Amendment No. 1158/57.

CITY OF KWINANA TOWN PLANNING SCHEME NO. 2

The subject site is zoned Rural and Development under the City of Kwinana *Town Planning Scheme No. 2* (the Scheme), corresponding with the MRS. At the time of preparing this report the Scheme map had not been updated as a result of the WAPC's adoption of a recent Urban Deferred lifting request.

For the subdivision and development of land within the 'Development' zone to take place, an LSP is to be prepared and approved.

PLANNING AND DEVELOPMENT (LOCAL PLANNING SCHEMES) REGULATIONS 2015

The assessment and approval of this LSP will be considered under the WAPC's *Planning and Development (Local Planning Schemes) Regulations 2015* as detailed under Schedule 2 Part 4.

CITY OF KWINANA DEVELOPER CONTRIBUTIONS

The subject site is contained within Development Contribution Area 1 (DCA 1) (traditional infrastructure); Development Contribution Area 7 (DCA 7) – Standard infrastructure for a district sporting ground; and Development Contribution Area 12 (DCA 12) – Wellard West (community infrastructure). The former will be finalised upon gazettal of Scheme Amendment No. 132. The developer acknowledges its obligations in this regard, and anticipates imposition of a condition on subsequent subdivision and/or development applications requiring appropriate arrangements to be made, in negotiation with the City.

JANDAKOT DISTRICT STRUCTURE PLAN 2007

The subject site is contained within the study boundaries of the Jandakot District Structure Plan. The Jandakot District Structure Plan provides the foundations for potential development areas, road networks, major community facilities, conservation wetlands, Bush Forever sites and neighbourhood structure. In this regard, the subject site, excluding wetland areas, is identified for "short-term urban" and within an area identified for "further investigations to determine specific areas that may be available for future urban land uses." The latter was addressed through the MRS amendment process which determined the extent of developable land following referral to the Environmental Protection Authority (EPA).

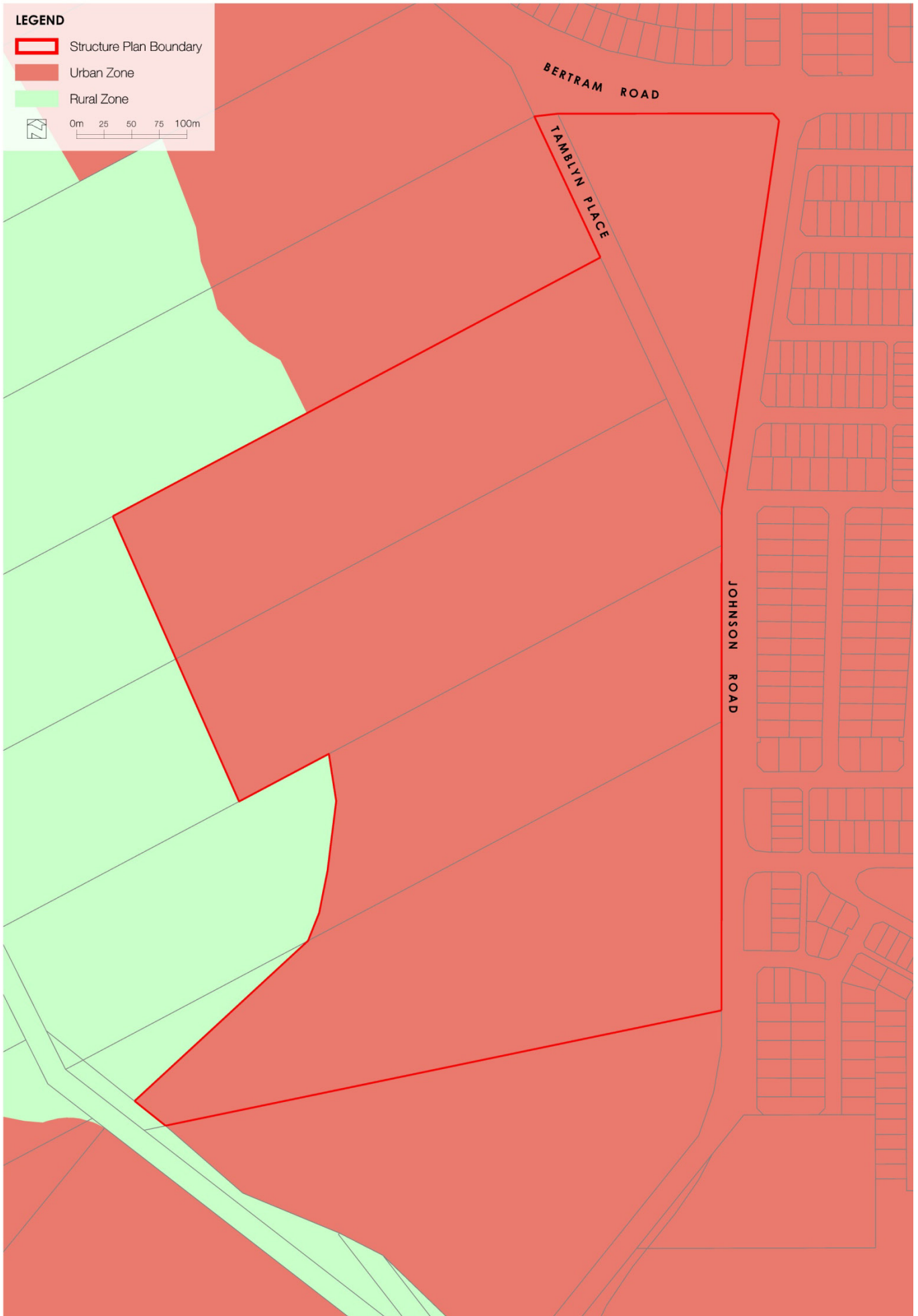


Figure 3: Metropolitan Region Scheme

EASTERN RESIDENTIAL INTENSIFICATION CONCEPT DISTRICT STRUCTURE PLAN (ERIC)

The City of Kwinana's *Eastern Residential Intensification Concept District Structure Plan* (ERIC) further refines the recommendations of the Jandakot District Structure Plan. The subject site (excluding Lot 900 which is not included within ERIC) is assigned the following recommendation:

“Future urbanisation may be considered following full technical environmental review of impacts of urbanisation on wetland area (to be undertaken by landowner/developer in consultation with DoE).”

The wetland extents and buffers were addressed as part of the MRS amendment which established a developable area that the LSP adheres to.

SURROUNDING LOCAL STRUCTURE PLANNING

Local structure planning surrounding the subject site is established and well advanced, generally on the basis of the extent of development which has occurred to the north and east of the site. The closest Local Structure Plan to the subject site, albeit not an adjoining site, recently prepared and being implemented is to the south west covering Eastcourt's Providence Estate.

1.4 PLANNING STRATEGIES

DIRECTIONS 2031 AND BEYOND

Published in August 2010, Directions 2031 and Beyond: Metropolitan Planning Beyond the Horizon “is a high level spatial framework and strategic plan that establishes a vision for future growth for the metropolitan Perth and Peel region...”. It “provides a framework to guide the detailed planning and delivery of housing, infrastructure and services necessary to accommodate a range of growth scenarios.”

In addition to providing broad strategic guidance on accommodating Perth’s population into the future, *Directions 2031* divides the metropolitan area into sub-regions, and discusses how growth should be accommodated within these specific geographic units. The subject site is located within the south-west sub-region, where an additional 41,000 dwellings are anticipated as being required to accommodate a projected population of 278,000 by 2031. Based on the preferred ‘connected city’ pattern, this growth is to be achieved through a combination of infill and green field development.

PERTH AND PEEL@3.5MILLION AND SOUTH METROPOLITAN PEEL SUB-REGIONAL PLANNING FRAMEWORK

Perth and Peel@3.5Million is a suite of documents released by the WAPC in 2015 for the Perth and Peel Metropolitan Regions to identify:

- where future homes and jobs should be located;
- how to protect important environmental assets;
- how to best utilise existing and proposed infrastructure; and
- appropriate areas for greater infill development and residential density.

As part of this documentation, sub-regional planning frameworks have been developed to guide future development. These will then become sub-regional structure plans to guide residential and industrial development, and supporting infrastructure. The subject site is included within the study boundary of the *South Metropolitan Peel Sub-regional Planning Framework*. Consistent with the MRS, the subject site is identified as “Urban” under the Sub-regional Planning Framework, with a short-term development timeframe (i.e. 2015-2021). The Rural zoned portion of the site is identified as “proposed open space – nature / passive recreation”.

CITY OF KWINANA LOCAL PLANNING STRATEGY

The City of Kwinana *Local Planning Strategy* is currently under review. The Local Planning Strategy Map 2015 identifies the subject site as “Future Residential Areas.”

1.5 RELEVANT PLANNING POLICIES

STATE PLANNING POLICIES

SPP 2.1 – PEEL HARVEY COASTAL PLAIN CATCHMENT

By virtue of its location, the LSP is subject to the requirements of the *Peel-Harvey Coastal Plain Catchment Policy*, which seeks to control and negate land use changes likely to cause environmental damage to the Peel-Harvey estuarine system. Objectives of the policy, which have influenced the Local Water Management Strategy (refer **Appendix E**), include:

- improving the social, economic, ecological, aesthetic and recreational potential of the catchment;
- to balance environmental protection with the economic viability of the primary sector;
- to increase high water-using vegetation cover within the catchment; and
- to prevent land uses likely to result in excessive nutrient export into the drainage system.

OPERATIONAL POLICY – LIVEABLE NEIGHBOURHOODS

Liveable Neighbourhoods (LN) is the WAPC's operational policy guiding the design and approval of structure plans for green field sites. The objective of LN is the delivery of new developments that provide high quality living, working and recreational environments, thereby contributing to the successful implementation of the *State Planning* and *State Sustainability Strategies*. The LSP meets the aspirational requirements of LN, with a particular focus on the following key aims:

- an urban structure based on interconnected, safe and walkable neighbourhoods;
- creating a sense of community, identity and a sense of place;

- providing a variety of lot sizes and housing types to cater for the diverse housing needs of the community at a density that can support local services and public transport; and
- maximising land efficiency wherever possible.

DRAFT SPP 3.7 PLANNING FOR BUSHFIRE MANAGEMENT AND GUIDELINES – PLANNING FOR BUSHFIRE PROTECTION

Draft SPP 3.7 *Planning for Bushfire Management* forms the foundation for land use planning to address bushfire risk management in Western Australia. Once adopted, it will be used to inform and guide decision makers, referral authorities and proponents on achieving acceptable fire protection outcomes on planning proposals in bushfire prone areas.

In support of Draft SPP 3.7 and pursuant to 'State Planning Policy 3.4 – Natural Hazards and Disasters', the *Planning for Bushfire Protection Guidelines* set out a range of matters that need to be addressed at various stages of the planning process, to provide an appropriate level of protection to life and property from bushfires, and avoid inappropriately located or designed land use, subdivision and development on land where a bushfire risk is identified.

Bushfire considerations form an integral part of the LSP design, as outlined in Section 2.4 of this report and the Bush Fire Hazard Assessment and Management Plan attached at **Appendix F**.

2 SITE CONDITIONS AND ENVIRONMENT

2.1 ENVIRONMENTAL ASSETS AND CONSTRAINTS

An Environmental Assessment Report (EAR) has been prepared by RPS in support of the LSP (refer **Appendix C**). The objective of the EAR is to describe the relevant environmental characteristics of the site and present management and mitigation strategies in response to potential environmental impacts. The key environmental influences relating to the subdivision and development of the site include:

- Bollard Bulrush Swamp;
- water quality and drainage within the Peel Inlet-Harvey Estuary catchment; and
- management of Acid Sulfate Soils (ASS).

VEGETATION AND FLORA

ENV's Flora and Vegetation Assessment undertaken as part of MRS Amendment 1188/57 found that one Vegetation Unit occurred within the amendment area, Low Woodland of *Melaleuca rhapsiophylla*, *Eucalyptus rudis* subsp. This Vegetation Unit is restricted to the vegetated wetland areas of the site. The majority of the remainder of the site is in a Completely Degraded condition.

No Threatened or Priority species nor Threatened or Priority Ecological Communities are recorded in the developable area; however, infestations of Priority 1 Declared Plant species, Arum Lily, were recorded within the site.

FAUNA

ENV's Fauna Assessment as part of MRS Amendment 1188/57 found that one fauna habitat occurred within the developable area, Melaleuca Dampland. The distribution of this habitat type is restricted to the vegetated wetland areas of the site, with the remainder of the site in a Degraded to Completely Degraded condition of limited or no habitat value for fauna species.

Based on ecological requirements, known distributions and the type and quality of fauna habitats, there are two conservation significant species likely to occur within the developable area (Cattle Egret and Eastern Great Egret). However, it is concluded that these bird species are unlikely to be impacted by development as they are both highly mobile and can easily move to another area.

During the reconnaissance survey the presence of one conservation significant fauna species was detected in the developable area (Southern Brown Bandicoot). It is considered that this area is not capable of supporting a large population of Southern Brown Bandicoot due to a lack of native understorey and the seasonal inundation of low lying areas. Given that no fauna habitat has been mapped within the developable area it is considered unlikely that residential development would significantly impact the population of Southern Brown Bandicoots.

WETLANDS

As part of MRS Amendment 1188/57 the EPA requested the, then, Department of Environment and Conservation to review the wetland management categories assigned to Bollard Bulrush Swamp. This resulted in the majority of the wetland being reclassified and upgraded from Resource Enhancement Wetland (REW) to Conservation Category Wetland (CCW).

As part of the EPA's assessment of the MRS Amendment it:

- determined that the final MRS Amendment 1188/57 boundary and the 50m wetland buffer was adequate to protect the wetland;
- acknowledged that a small area of the REW to the east of the 50m wetland buffer, which is in a Degraded to Completely Degraded condition and considered to have limited or no fauna habitat value, is proposed for development;

- considered that the preparation and implementation of a Wetland Management Plan (WMP) will ensure that the EPA's objective for the environmental quality of Bollard Bulrush Swamp will be met;
- identified that the REW portion of Bollard Bulrush Swamp (not rezoned by MRS Amendment No. 1188/57) would also be included in the WMP; and
- expressed an expectation that the portion of the REW within the Bollard Bulrush Swamp buffer would be managed, restored and protected with the aim of achieving CCW status.



2.2 LANDFORM AND SOILS

LANDSCAPE AND TOPOGRAPHY

The topography of the site is generally flat with a gradual decline from east to west. The eastern boundary of Lot 900 is approximately 15 metres Australian Height Datum and gradually declines towards Bollard Bulrush Swamp.

SOILS

Department of Industry and Resources geology mapping indicates the site is underlain by sandy silt, associated with the Beeliar Chain of Wetlands which divide the Bassendean and Spearwood dune system. The soils of the Beeliar Wetlands are of lacustrine origin, being formed by sedimentation in lakes, and comprise of dark brownish-grey sandy silts with disseminated fine grains of quartz sand and variable organic matter.

Geotechnical investigations have been undertaken for the site which has revealed some evidence of peaty topsoils. Refer to Engineering Servicing Report contained within **Appendix D**. The areas most impacted are the western edge abutting the wetland buffer and the south western corner. As a consequence of these findings, the areas with deepest peaty materials, which would be subject to most site mitigation and expense, have been identified as POS to ensure significant mitigation works (including dewatering) are limited.

ACID SULFATE SOILS

The WAPC Acid Sulfate Soils (ASS) risk mapping shows the site is mapped almost entirely as “*high to medium risk of acid sulphate soils within 3 m of the natural soil surface*”.

Dewatering, soil disturbance, compaction or lateral displacement in areas of ASS will be avoided where possible. To construct future subdivision fill will be required to achieve the required separation from ground water levels to reduce flooding risk.

The final fill levels, and subsequent excavation (e.g. for sewer lines / engineering services) and dewatering requirements, will dictate whether a preliminary investigation and an ASSDMP is required to be prepared prior to development of the site occurring.

2.3 GROUNDWATER AND SURFACE WATER

GROUNDWATER

FLOWS AND LEVELS

Groundwater generally flows in a south-westerly direction towards the Peel Main Drain.

Groundwater monitoring has been undertaken which has determined the Maximum Groundwater Level (MGL) recorded across the developable area ranged between 4.5m AHD and 5.5m AHD, with the average Depth to MGL being 0.34 m. For Lot 900 the average MGL recorded across the lot was 4.45m AHD.

QUALITY

The distribution and concentrations of nutrients across the developable area are generally consistent with the current agricultural land use with elevated Total Nitrogen levels in the south and Total Phosphorus generally low. Slightly higher levels of Total Nitrogen were recorded for Lot 900.

SURFACE WATER

The Peel Main Drain drains stormwater run-off from the local catchment into the Serpentine River and ultimately the Peel Inlet-Harvey Estuary. The drainage of the site is primarily influenced by the proximity of the Peel Main Drain, low permeability of the underlying soils and generally flat topography. These influencing factors lead to high amounts of surface runoff travelling as sheet flow towards the drain and accumulating in low points on the site.

FLOOD LEVELS

The Jandakot Drainage and Water Management Plan identifies the pre-development flood levels within the Peel Main Drain and resulting flood fringe within the Bollard Bulrush Swamp. Upstream flood level of the 10 and 100 year Average Recurrence Interval (ARI) events are 4.99 m AHD and 5.62m AHD respectively. Central flood levels for the 10 and 100 year ARI events are 4.81 m AHD and 5.60m AHD respectively. Downstream flood levels for the 10 and 100 year ARI events are 4.79 m AHD and 5.60m AHD respectively.

To mitigate the impact from flooding of the Peel Main Drain, during a 100 year event, the finished floor level in the flood fringe impacted areas within the developable area will be raised through the introduction of suitable fill to be 6.1m AHD, thereby ensuring that a 500mm separation distance from the 100 year ARI top water level of the Peel Main Drain is achieved.



2.4 BUSHFIRE HAZARD

A Bushfire Management Plan (BMP) has been prepared by ICS Group in support of the LSP (refer **Appendix F**). The BMP is a strategic level plan which identifies the bushfire protection measures to be applied to development on the subject site to accommodate compliance with:

- Planning for Bushfire Protection Guidelines;
- Draft Planning for Bushfire Risk Management Guidelines;
- Draft State Planning Policy 3.7 Planning for Bushfire Risk Management;
- Australian Standard for the construction of buildings in bushfire-prone areas (AS3959-2009); and
- City of Kwinana Firebreak Notice 2014-15.

The objectives of the BMP are to:

- provide bushfire protection solutions to enable the proposed development, houses within the development and residents to withstand a bushfire event on days where the fire danger index is 80 (FDI 80);
- document bushfire attack levels within the proposed development in accordance with AS3959;
- achieve consistency with the objectives and requirements of the current and proposed bushfire risk management planning regulations, policy and guidelines; and
- nominate individuals and / or organisations responsible for bushfire risk management and associated works in the context of the proposed development.

BUSHFIRE ATTACK LEVEL ASSESSMENT

As depicted on the Bushfire Attack Level map contained within the BMP, subject to management some lots will be contained within the Bushfire Attack Level (BAL)-12.5 area and will consequently be subject to AS3959. The majority of the lots are outside the BAL-12.5 area and are not considered to be subject to a bushfire hazard risk.

2.5 HERITAGE

ABORIGINAL

A search of the Department of Aboriginal Affairs' Aboriginal Heritage Inquiry System was undertaken on 24 April 2015 and no matches were recorded for the site.

EUROPEAN

A search of the Heritage Council's inHerit database was undertaken on 24 April 2015 with one match recorded for Bollard Bulrush Swamp (Place No.: 12107).

The interface of urban development with the Bollard Bulrush Swamp was agreed to by the EPA as part of the formal assessment of MRS Amendment 1188/57.

2.6 MOVEMENT NETWORK

REGIONAL ROADS

The subject site is connected to the regional road network (Kwinana Freeway) via Bertram Road which connects into Mortimer Road.

DISTRICT AND LOCAL ROADS

BERTRAM ROAD

Bertram Road is classified as a District Distributor Road B under Main Road WA's Functional Road Hierarchy. Bertram Road is constructed to a dual carriageway standard with central median, in both directions. No upgrading will be required. Traffic volumes (existing and predicted):

- 10,590 as at 2011
- 16,137* as at 2031

JOHNSON ROAD

Johnson Road is classified as a Local Distributor under the Functional Road Hierarchy. Johnson Road is constructed to a single carriageway standard. No upgrading will be required. Traffic volumes (existing and predicted):

- 3,455 as at 2011
- 13,962* as at 2031

*Calculated based on PM hourly peak of 1,291 for Bertram Road and 1,117 for Johnson Road, both representing 8% of total vehicles per day in both directions as informed by City of Kwinana traffic modelling.

TAMBLYN PLACE

Tamblyn Place is a Local Access Street constructed to a limestone, unsealed standard. Upgrading will be required when the adjoining land is subdivided. The alignment of its intersection with Johnson Road is addressed as part of this LSP.

WALKING AND CYCLING

Dual use paths (2.5m) are located along the northern and part southern side of Bertram Road (Perth Cycle Network) and the eastern side of Johnson Road.

PUBLIC TRANSPORT

The subject site is located within 2.5km of the Wellard Train Station and 2.3km of the Kwinana Train station.

A public bus stop is located on Bertram Road (southern side) immediately north of Lot 900 and on the northern side of Bertram Road to the north west of Lot 900. These bus stops have services which connect to the Kwinana Town Centre and Kwinana Train station.



2.7 SERVICE INFRASTRUCTURE

An Engineering Servicing Report has been prepared by Cossill and Webley in support of the LSP (refer **Appendix D**). The objective of the Servicing Report is to identify the matters to be addressed as part of the subdivision stage and to confirm that the land is capable of being developed for residential purposes. The Servicing Report suggests there are no constraints which will significantly impact the development of the site.

DRAINAGE, EARTHWORKS AND MANAGEMENT

The subject site falls within the Peel Main Drain catchment with site surface water being conveyed to the Bollard Bulrush Swamp and Peel Main Drain. The wetland area provides detention storage, essentially slowing the flows before entering the Peel Main Drain.

A preliminary earthwork design for the site has been prepared which indicates that the minimum lot level will be set at RL 6.1, which is 500mm above the 1:100yr ARI level of the Peel Main Drain.

In relation to stormwater collection from public roads and laneways, two strategies will be implemented:

- collection of stormwater into roadside and median swales; and
- balance of site to have traditional kerbs and piped drainage to detention basins sized to contain the 1:1yr ARI event, located within the POS at the western edge of the developable area.

Any bypass from the 1:1yr ARI treatment basins will flow towards the wetland buffer by navigating existing ground contours. Pollutant traps will be required at the drainage outlets located within the POS discharging piped stormwater, to treat water quality prior to entry into the wetland.

The design of the road network will be graded in a manner which facilitates the conveyance of the major stormwater event of 5yr ARI and greater into the on-site POS. This arrangement is subject to the preparation and approval of an Urban Water Management Plan. Further discussion on water management will be addressed within section 3.6.

In order to effectively manage groundwater and provide adequate groundwater separation to lots along the western portions of the site, subsoil drains are likely to be installed within road reserves where separation to groundwater and nearby lot levels are less than 1.5m-1.8m. The subsoil pips will discharge through a free-draining outlet located within a POS drainage basin. Exact subsoil requirements will be stipulated in the approved UWMP.

WATER RETICULATION

The subject site is located within the current boundary of the Water Corporation's Water Supply Scheme incorporating provision for residential development over the subject site. Current planning indicates that the site would likely be serviced by an extension of the existing 250mm and 300mm reticulation mains on Johnson Road.

SEWERAGE RETICULATION

The subject site is part of the Water Corporation's Kwinana – SD042 conceptual planning scheme which includes developing strategies for providing deep sewerage to all urban land within the surrounding area. This strategy focuses on the development of a number of discreet catchment areas which are served by pump stations and pressure mains.

Lot 900 will be serviced with sewerage infrastructure by connection to the existing gravity sewer main in Tamblyn Place. Development of the site west of Tamblyn Place and Johnson Road is reliant on the construction of Wastewater Pump Station M, located within Lot 503. A 30m buffer for odour surrounding the Pump Station will exclude sensitive land uses such as residential.

In order to protect the existing pressure main located within the proposed POS along Tamblyn Place, an easement will be created.

POWER

The initial stages of development can be supplied from the existing network (as per preliminary advice received from Western Power; confirmation of which will be obtained upon commencement of design of the first stage of works) adjacent the subject site with some modifications.

There is an existing underground HV network running along Johnson Road and Mortimer Road to which the development is planned to connect to following construction of a new switchgear and transformer on site.

A pole top transformer located along Tamblyn Place is currently servicing the land west of Tamblyn Place, but will need to be removed and replaced with a pad mount transformer as part of the subdivision. All power to the proposed development will be underground and fed from transformers and switchgears located strategically within the site.

TELECOMMUNICATIONS

The subject site is within NBN Co's fibre footprint and can be serviced with optic fibre under their NBN roll-out scheme for Greenfield developments.

GAS

Experience with the provision of ATCO Gas to any development area indicates that connection into existing live mains is required.

3 LOCAL STRUCTURE PLAN

The LSP covers the Urban zoned portion of the site owned or under contract by LWP Wellard Pty Ltd. The extent of the LSP is as agreed to with Council’s technical officers based on subdivision context being provided to the north and south of the subject site to demonstrate clear links and an indicative subdivision layout on the adjoining land (refer **Figure 6** for development context).

Specific Residential Density Codes have been applied to the LSP as the Department of Planning’s technical officers recommended this approach as opposed to density code ranges supported by a Density Code Plan.



Indicative Northern Subdivision Context



Indicative Southern Subdivision Context

3.1 DESIGN PRINCIPLES

STRUCTURE PLAN RESPONSE TO ENVIRONMENTAL ASSETS AND PHYSICAL CONSTRAINTS

SITE ANALYSIS

An Opportunities and Constraints exercise was undertaken in preparation for design considerations over the site. As detailed in section 2 of this report, the subject site is relatively free of significant environmental and physical constraints. The principle considerations are identified on the Site Analysis in **Figure 4** and with the design responses in **Table 4**:

TABLE 4: DESIGN RESPONSE TO SITE ANALYSIS

ANALYSIS ITEM	RESPONSE
Wetland (CCW and REW)	A 50m buffer from the western boundary of the Urban zoned portion of the site is provided in POS, as recommended by the EPA Wetland vegetation amenity opportunities have been celebrated with view-line orientation
Established Tree Stands (outside of wetland)	Protected where achievable within POS and subject to development engineering requirements Tree stands adjacent Johnson Road present amenity uplift to adjoining residential development
Peaty soils (deep locations)	Residential development has been located away from these areas with POS areas located over deeper peat
Bertram and Johnson Roads Neighbourhood Connector Status	Direct vehicle access from lots is precluded Residential development is orientated to external roads to provide active edge and surveillance
Existing Tamblyn Place alignment and intersection with Johnson Road	Tamblyn Place southern access intersection removed Direct connection between Johnson Road and Bertram Road (along Tamblyn Place) removed to improve functional road hierarchy
Topography (drainage)	Overland drainage direction to be incorporated into subdivision design POS and road-side swales appropriately located for stormwater retention
Bush Fire Hazard	Lots separated from fire hazard by road, access path or POS
Established key intersection connections	Road connections respect design separation requirements and maintain network functionality
Planned road connectivity and existing bus stops	Design considers integration and pedestrian connectivity

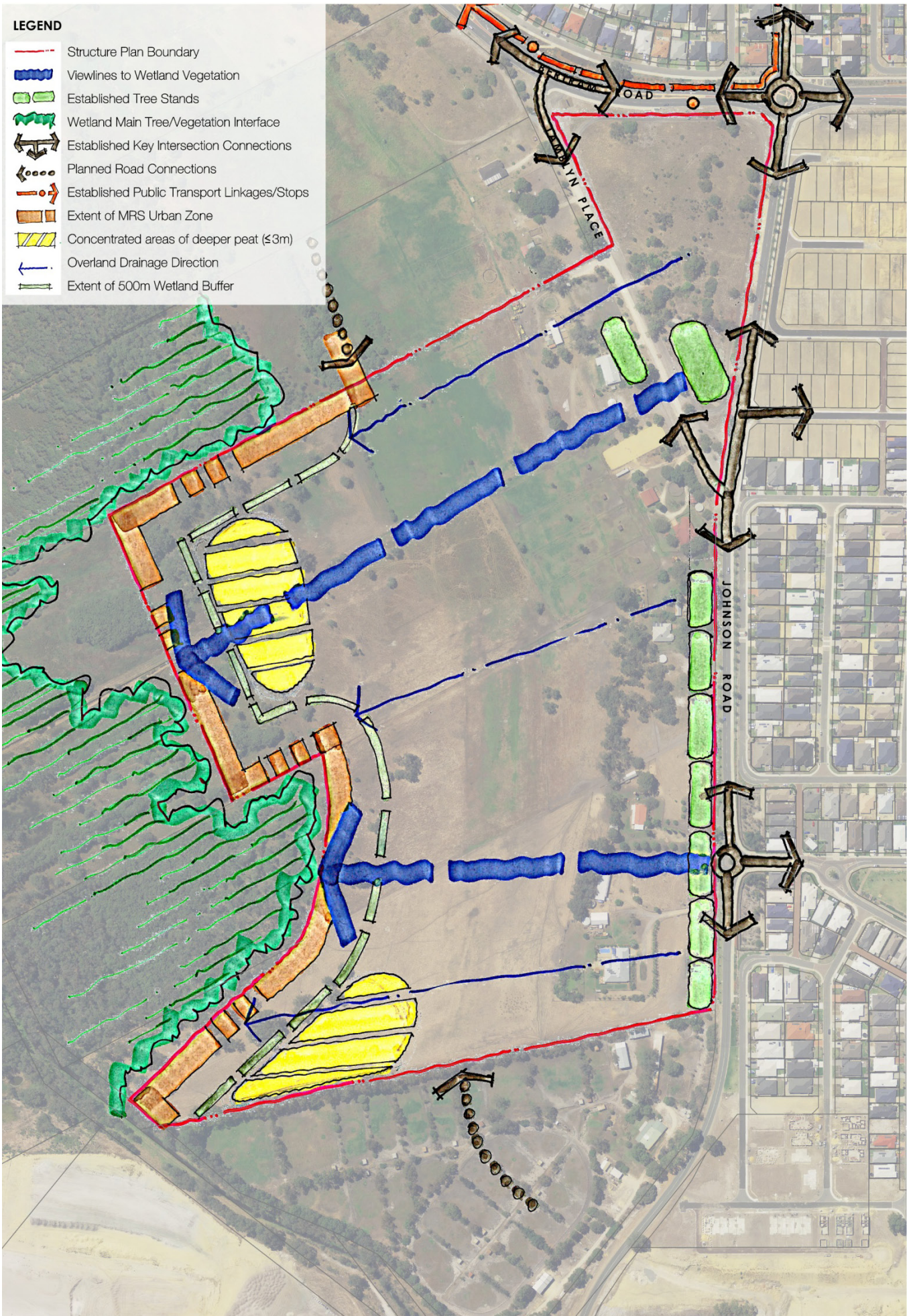


Figure 4: Site Analysis

CONCEPT CHARACTERISTICS

In response to the Site Analysis, specific design characteristics were prioritised in preparing the Development Concept Plan. These primary considerations are identified on the Concept Characteristics in **Figure 5** and comments in **Table 5**:

TABLE 5: KEY DESIGN CHARACTERISTICS

CHARACTERISTIC	COMMENT
Key Road Connections	Fluid road geometry provides 'organic' design response to wetland shape while maintaining permeable and connected network Key streetscapes are to be characterised with strong landscape outcomes and incorporate main pedestrian and cycle connections
Drainage flow routes	Orientate local roads to support drainage direction and where desirable provide road-side swales for unique streetscape amenity and stormwater management
Key view-lines	Subdivision road direction should enhance view lines along these public realm corridors between the wetland setting and the tree stands retained along Johnson Road Site topography also assists key vistas of the wetland canopy when entering the estate
Public open space and key landscaped streets	Position POS in response to existing site characteristics of trees, geology, drainage patterns and buffer requirements Interlink POS elements with a robust pedestrian pathway network
Development Node locations	Sensitively locate development options to formalise landmark elements within the estate, manage vehicle access, and provide appropriate built form framework.



Figure 5: Concept Characteristics

3.2 DEVELOPMENT CONCEPT PLAN

The Development Concept Plan in **Figure 6** has been prepared to support the LSP by providing an illustration of the development intent. This illustration is indicative only; however, it assists in understanding and guiding residential density allocation and movement network recommendations.

Importantly, the Development Concept Plan establishes the key design themes in which the subdivision and estate development will be guided. Key elements / Development Concept Plan Notes include:

1. **Eastern Parkland:** Important element for the estate character. Initial open space element and theme establishment for the 'nature-based' quality of the estate at this entrance. Potential active play area to be incorporated for immediate catchment. Located, in-part, to accommodate existing services and Tamblin Place road reserve.
2. **Western Parkland:** Provides several recreational functions:
 - a) estate focal point/node on key entry view-line;
 - b) landscaped to accommodate key active play area(s);
 - c) passive interface to buffer and wetland amenity; and
 - d) natural outlook for adjacent residential development.
3. **Wetland Buffer:** Part of the expanded open space network accommodating pedestrian access to unique landform qualities in close proximity to core wetland.
4. **Tree Parkland:** Specifically located to allow retention and protection of key existing vegetation within original landform levels. This parkland strip will enhance Johnson Road quality by maintaining current adjacent tree canopy and visually mitigate adjacent residential development.
5. **Boulevard Entrance Road:** Landscaped entrance road providing high amenity, natural themed character and a centralised drainage function. Intended to enhance network of landscaped connections for pedestrian amenity.
6. **Secondary Estate Entrance Road:** Landscaped entrance road with distinctive road cross section to maximise amenity and integrated drainage functionality. Single sided driveway access is proposed to prioritise objectives for this road.
7. **Service Street:** Specifically located service roads to achieve perimeter development orientation without direct driveway vehicle access from restricted Bertram and Johnson Roads.
8. **Lot Diversity - Traditional Lots:** Main lot type, front vehicle access and orientated to achieve solar efficiencies for buildings. A diverse lot size range is achievable in proposed structure with use of various lot depths and frontage widths.
9. **Wide Traditional Lots:** Proposed front access wider lots located on boulevard entrance road to achieve a specific streetscape appearance and themed estate entrance.
10. **Terrace Lots:** Medium density, rear accessed lots proposed in close proximity to enhance key points of estate amenity and formalise landmark elements within the overall structure. These options will provide the most affordable housing product for the estate.
11. **Pedestrian Access:** Resident access to public amenity has been prioritised with the location of a well surveilled Pedestrian Access Way (PAW) maximising neighbourhood permeability and POS entry.
12. **Pump Station:** Site identified for Waste Water Pump Station which takes into consideration a 30m buffer to residences.



Figure 6: Development Concept

3.3 LAND USE

The subject site will form part of a discrete urban cell with clearly defined boundaries. As a consequence of this; the LSP is focused on residential land uses and the supporting open space network. A summary of the land uses and their areas are provided in **Table 6**.

TABLE 6: LSP LAND USE SUMMARY

LSP Zone / Reserve	Area (Ha)
Residential	16.3578
Roads	7.7322
Public Open Space	7.9785
Drainage	0.1850
Other Utilities (Sewer Pump Station)	0.1097

RESIDENTIAL

The Residential zone is the only zone depicted on the LSP, consistent with the recommendations of the Jandakot Structure Plan and ERIC Plan.

The density codes and their applicable lot typology are detailed in **Table 7**. It is intended that when the WAPC has addressed its statutory planning framework relating to the Residential Design Codes' RMD Codes that these will be applied to site.

TABLE 7: DENSITY CODES AND LOT TYPOLOGY

Density Code	Typical Lot Type and Size
Residential R25	Traditional, front accessed lots:
	• 12.5m x 25.0m – 312.5m ²
	• 15.0m x 25.0m – 375m ²
	• 12.5m x 30.0m – 375m ²
	• 15.0m x 30.0m – 450m ²
Residential R30	• 17.0m x 30.0m – 540m ²
	• 'Squat', front accessed lots:
Residential R40	• 15.0m x 20.0m – 300m ²
	• Terrace, rear accessed lots:
	• 7.5m x 30.0m – 225m ²
	• 10.0m x 30.0m – 300m ²



DENSITY TARGETS

Directions 2031 and Beyond sets a target of '15 dwellings per gross urban zoned hectare' of land in new development areas within the Perth and Peel Metropolitan Regions. Element 1 of *Liveable Neighbourhoods* equates the measurement to '22 dwellings per site hectare' (encompassing land purely zoned for residential purposes) and requires that this be measured as a means of determining whether the residential densities proposed in an LSP will deliver the dwelling aspirations outlined in *Directions 2031 and Beyond*. In addition to this, the recently released *Perth and Peel @3.5million* recommends a Residential Site Density of 26 dwellings per residential site hectare.

The applicable density targets under the LSP as measured in accordance with *Directions 2031 and Beyond*; *Liveable Neighbourhoods*; and *Perth and Peel @3.5million* are 15.4 lots per gross Urban zoned hectare (including wetland buffer) and 25.4 lots per net site hectare; based on 415 lots.

The density codes applied and the resultant lot typology will accommodate maximum flexibility for the developer, whilst addressing the needs of the local residential housing market. There are a number of different lot types which will provide ample opportunities for purchasers to select their lot and a project home to meet their needs.

The Development Concept Plan suggests a potential yield of at least 415 lots. This could accommodate a total population of up to 1,162 based on 2.8 people per household.

OTHER LAND USES

Supporting the Residential land use is the relevant open space reserves, as will be discussed under section 3.5; and public utilities for roads; and the Sewer Pump Station required to service all residential development east of Bollard Bulrush Swamp to Johnson Road.

3.4 MOVEMENT NETWORK

Given the localised road network, it was agreed with Council's technical officers that a Transport Impact Assessment Report was unnecessary. The LSP and supporting Development Concept Plan have been designed based on the recommendations of LN relating to the movement network. The Movement Network Plan in **Figure 7** describes and supports this approach.

ROAD NETWORK

The subject site and the resulting road design are influenced by the existing major roads which abut the site's northern and eastern boundaries. Bertram Road is described as a District Distributor B and Johnson Road as a Local Distributor (Neighbourhood Connector) under the LN road hierarchy. Direct lot access will be prohibited from each of these roads with subdivision access to Bertram Road taken from the existing Tamblyn Place and two new access roads, constructed on a staged basis, intersecting with Johnson Road.

JOHNSON ROAD INTERSECTIONS

The alignment of the northern access road onto Johnson Road has resolved an existing intersection constraint where Tamblyn Place meets with it. The intersections of both new Major Access Streets with Johnson Road provide suitable separation from existing Johnson Road intersections to the east, in accordance with LN standards.

MAJOR ACCESS STREET

A Major Access Street forms the northern intersection with Johnson Road and will extend to the POS / wetland buffer edge along the western side of the developable area. This road will extend south into the adjoining landholding, further connecting with a new roundabout at Johnson Road (junction of new Local Centre and Primary School). This alignment has been agreed with the adjoining subdivider. The road will also provide access to a connecting road which extends north into adjoining Lot 502 providing a consistent 'hard' edge to the wetland buffer and any associated POS.

This Major Access Street will accommodate a boulevard style (23m) treatment extending from Johnson Road and act as the estate's main entrance road; incorporating a median swale for stormwater runoff. Along the POS / wetland buffer edge it will accommodate a road-side swale for stormwater runoff (17m). Indicative cross sections are provided in **Figures 8, 9 and 10**.

The second Major Access Street (18m) will extend from Johnson Road and will service the southern half of the LSP area. This road will also accommodate a road-side swale for stormwater runoff. An indicative cross section is provided in **Figure 11**.

These roads will be finished with a high standard of landscaping improving amenity for residents and providing suitable traffic calming in the local road network.

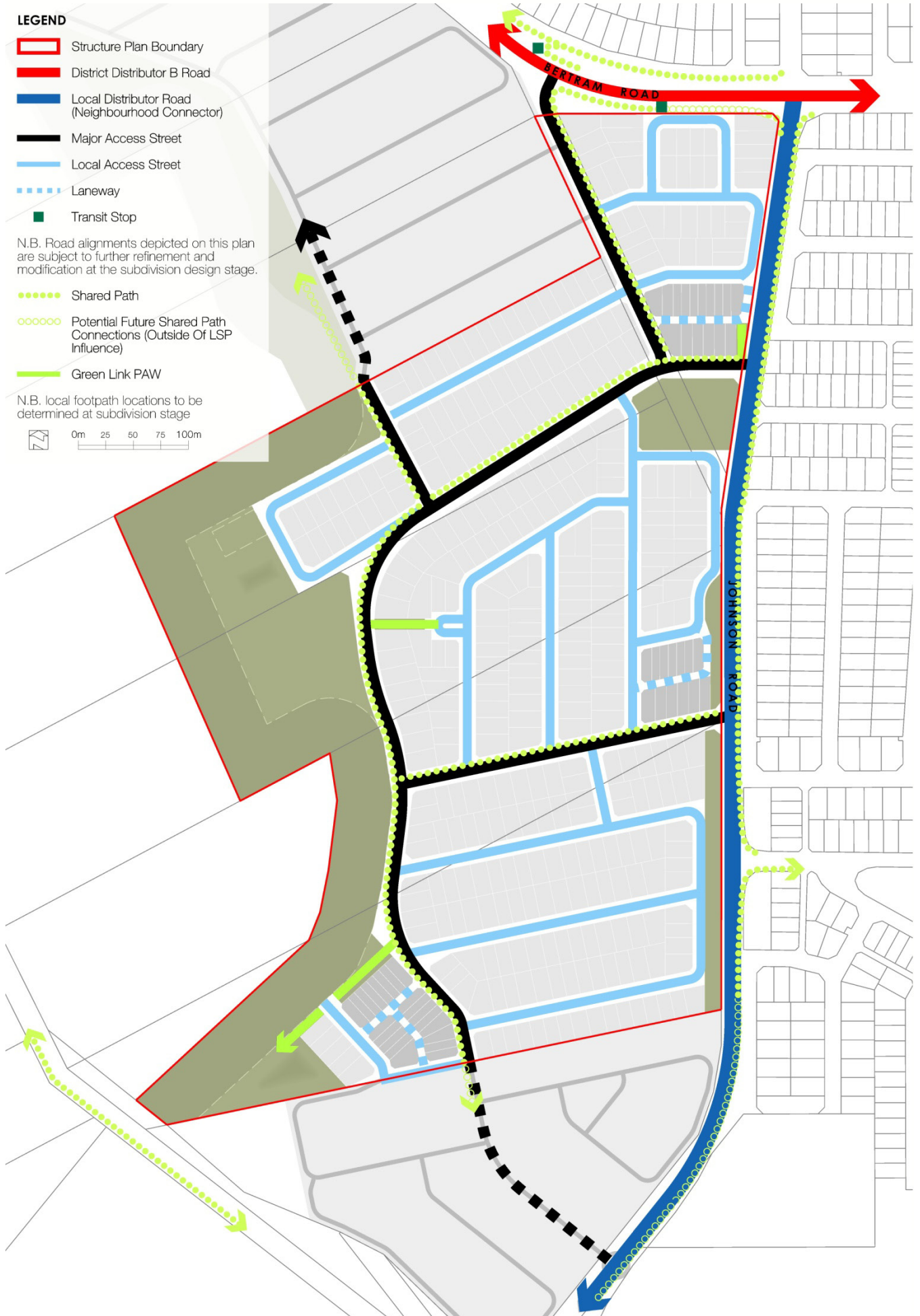


Figure 7: Movement Network

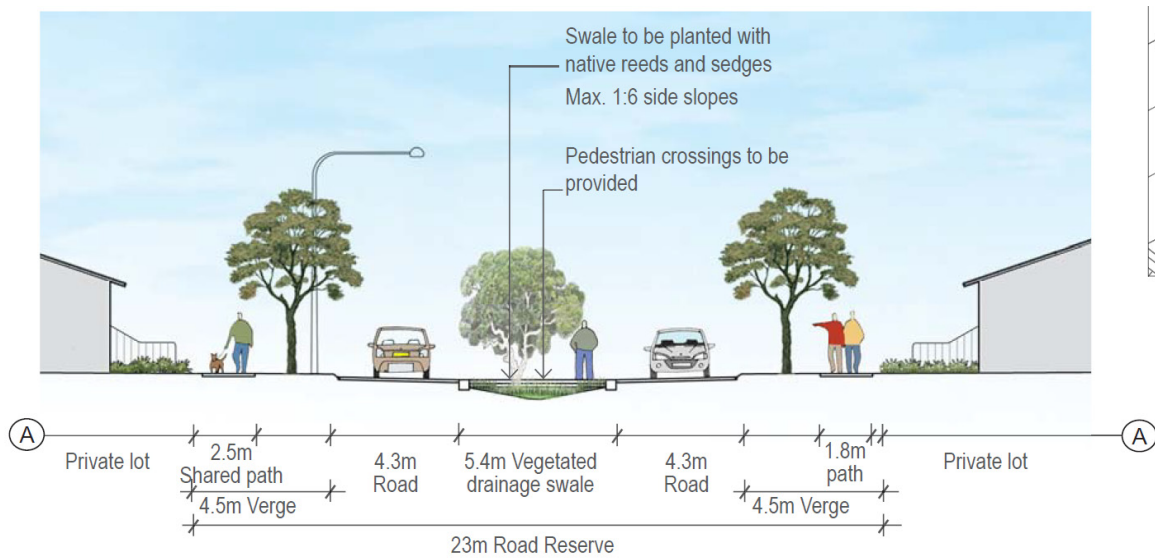
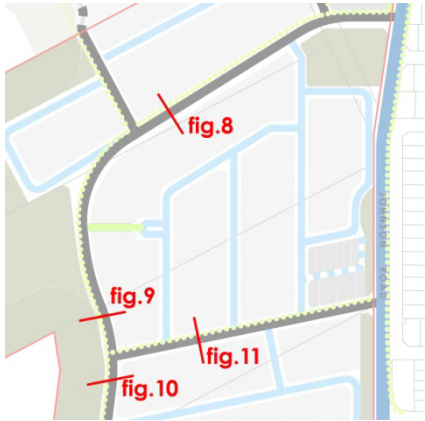


Figure 8: Major Access Street – Entrance Road Median Swale

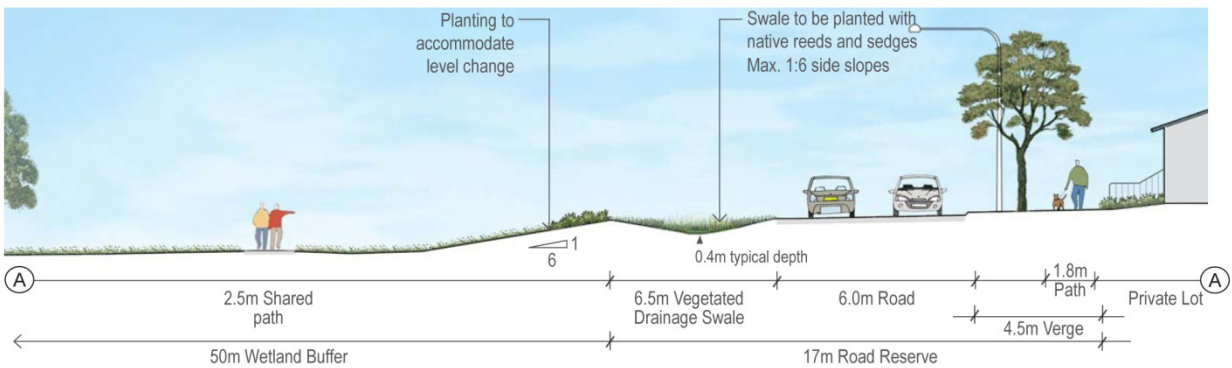


Figure 9: Major Access Street – Wetland Buffer Interface (central POS Path)

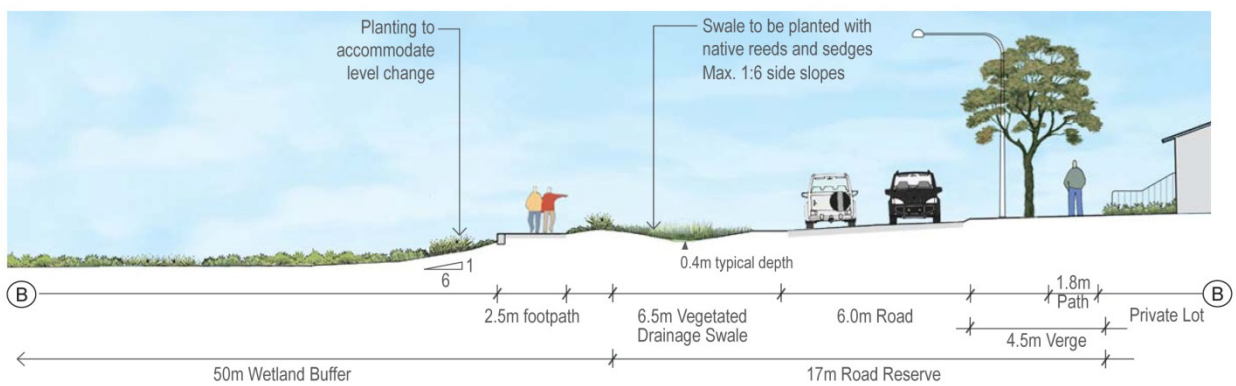
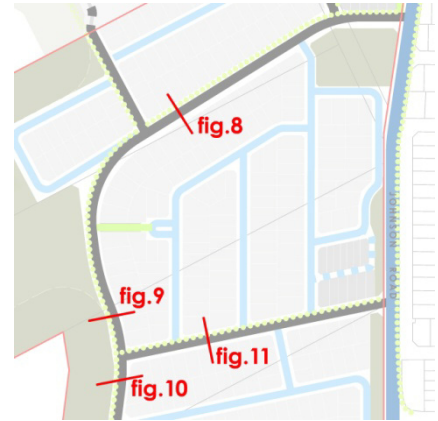


Figure 10: Major Access Street – Wetland Buffer Interface (edge POS Path)

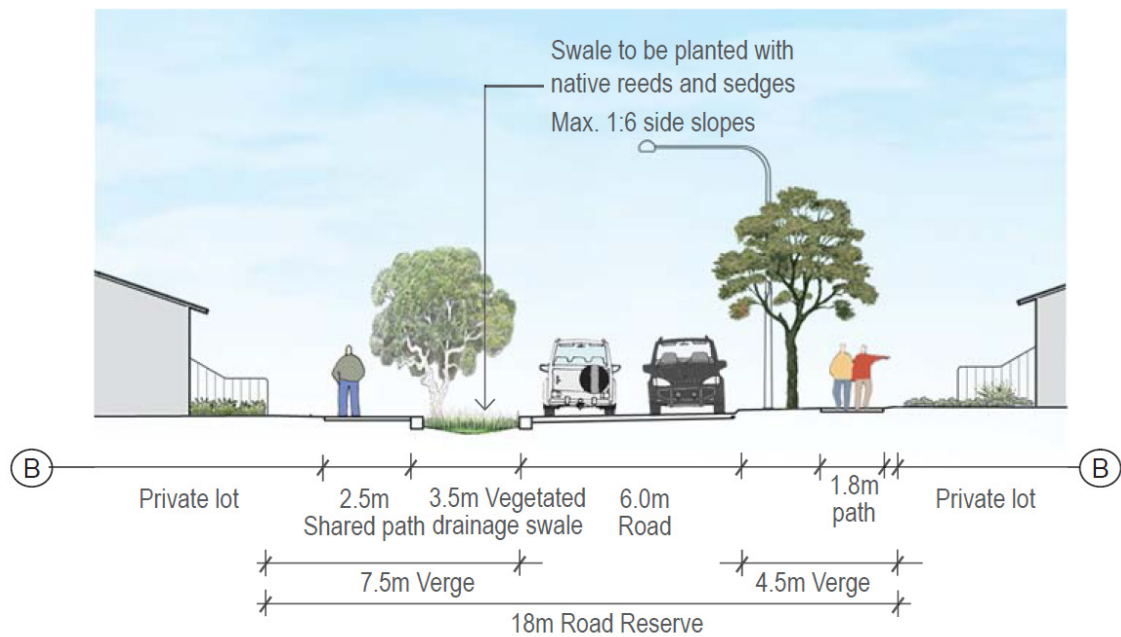


Figure 11: Secondary Major Access Street – Entrance Road Side Swale

LOCAL ROADS

The remaining roads within the subdivision will consist of Access Streets (15m) and Laneways (6m). The Access Streets layout is based on a modified grid to accommodate ease of access to the Major Access Streets, with short trips to Johnson Road and Bertram Road via Tamblyn Place; finally connecting with the regional road network. The road network has a strong north south and east west layout to maximise solar efficiencies for dwellings.

TAMBLYN PLACE

The LSP has provided an opportunity to realign the intersection of Tamblyn Place and Johnson Road to improve the local road network. As part of this design process the Tamblyn Place road reserve has been rationalised from its current 20m width. Refer **Figure 12** Tamblyn Place Rationalisation, detailing:

- road closure to accommodate a final 16m wide reserve;
- conversion of part of the road reserve to POS; and
- restricting direct through traffic, promoting Johnson Road as the main connector to Bertram Road.

There will be a small gain of net developable area through a standard road closure process to run concurrently with the LSP. This approach has been supported by Council's technical officers.

An existing sewer main along the north-eastern side of the road reserve will need to be protected by an easement for the portion contained within the new POS reserve.

WALKING AND CYCLING NETWORK

As detailed under section 2.6, there is an existing Shared Path network adjacent to the subject site. The LSP will provide Shared Paths along the Major Access Streets and along Tamblyn Place. These will provide a direct connection to the Shared Paths within Johnson Road and Bertram Road. The location of local Footpaths will be determined at the subdivision stage and will connect into the Shared Path network and the Council's surrounding local path network, including alignment adjacent to the Peel Main Drain.

The Path Network will be supported by Green Links and PAWs providing a permeable walking network linked to Open Space and the surrounding Shared Path network. This pedestrian network is detailed on **Figure 7**.

PUBLIC TRANSPORT ROUTES

As detailed under section 2.6, there are two bus stops adjacent to the subject site on the southern and northern sides of Bertram Road. The road and path network will provide appropriate connectivity for residents to access the public transport network in a safe manner.



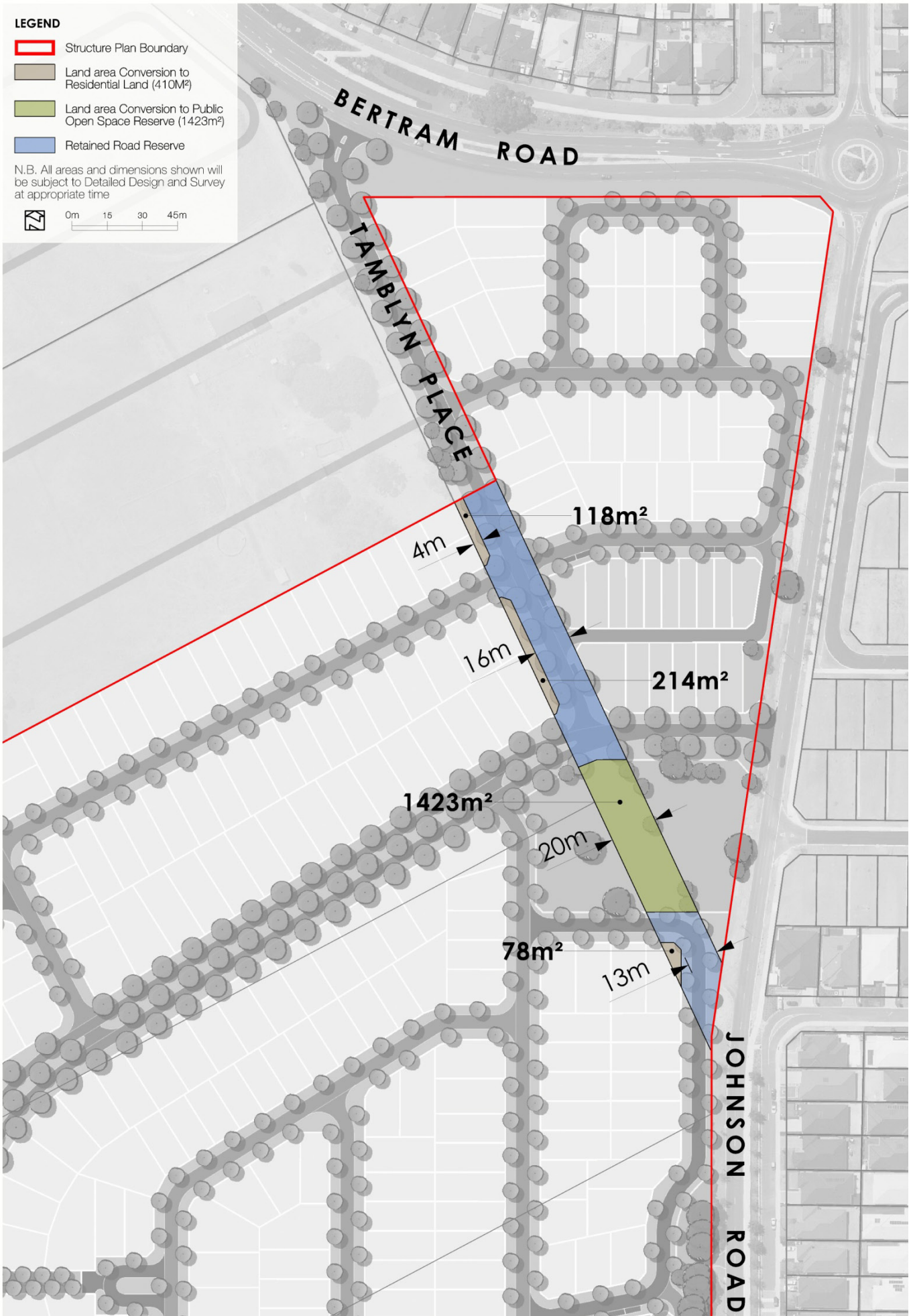


Figure 12: Tambllyn Place Rationalisation

3.5 OPEN SPACE

A total of 7.9785 hectares of Open Space is provided on the LSP of differing forms and functions. The Open Space network, as detailed on **Figure 13** Public Open Space, consists of the following, with the purpose of each respective POS area detailed in **Table 8**:

TABLE 8: PUBLIC OPEN SPACE NETWORK

Open Space Type	Purpose
1. Neighbourhood Park	<ul style="list-style-type: none"> • Main active area to accommodate play (minimum ‘kick-about’ area provided) • Landscaped Park • Drainage function (1:1 storm event) • Located over area of deeper peaty soils • Extension of wetland buffer • Adjoining Sewer Pump Station site (surrounds to be landscaped)
2. Local Park	<ul style="list-style-type: none"> • Landscaped Park • Drainage function (1:1 storm event) • Located over area of deeper peaty soils • Extension of wetland buffer
3 & 4. Tree Retention Area	<ul style="list-style-type: none"> • Existing stand of trees along Johnson Road to be protected • Continuation of landscaped edge along eastern side of LSP area extent from Bertram Road to LSP’s southern end
5. Neighbourhood Park	<ul style="list-style-type: none"> • Landscaped Park • Potential active play area no. 2 • Estate entrance statement • Tree retention • Refer cross section within Figure 14 to demonstrate level difference to Johnson Road providing safety element
6. Local Park	<ul style="list-style-type: none"> • Extension of wetland buffer

POS identification number referenced on POS Plan

PUBLIC OPEN SPACE

The location and purposes of each POS has addressed site constraints generally associated with the wetland on the western edge of the site; areas of deeper peaty soils; and tree retention along the eastern edge of the site. These POS areas have been provided in close proximity of each residence within the LSP area as demonstrated by the walkable catchments detailed on the POS Plan; providing only a short walking distance for all residents to active play areas. The POS will be linked by the permeable road; shared path and footpath network, with key linkages provided by the Major Access Streets (‘green streets’) between Johnson Road and the main POS area in the western portion of the site.

A POS calculation has been prepared in accordance with LN, as detailed in **Table 9**. The POS table identifies a surplus of POS in comparison to the minimum 10% requirement under State Government planning policy. The total POS provided will be refined at the subdivision stage with the developer to meet its obligations.

The POS to be provided in accordance with the LSP and the POS Schedule in Table 9 will be landscaped by the developer to a standard commensurate to, or above, LN requirements.

POS PROVISION SUMMARY

①	Neighbourhood Park (Active Play Area)	1.5359ha
②	Local Park	0.3127ha
③	Tree Retention / Neighbourhood Amenity	0.3806ha
④	Tree Retention / Neighbourhood Amenity	0.1339ha
⑤	Neighbourhood Park (Potential Active Play Area)	0.5585ha
⑥	Local Park	0.0533ha
ⓓ1	Wetland Buffer	4.8186ha
ⓓ2	Future Conservation	12.0524ha
ⓓ3	Pump Station Site	0.1097ha
ⓓ4	Drainage Swale	0.0750ha
ⓓ5	Drainage Swale	0.1100ha



Figure 13: Public Open Space

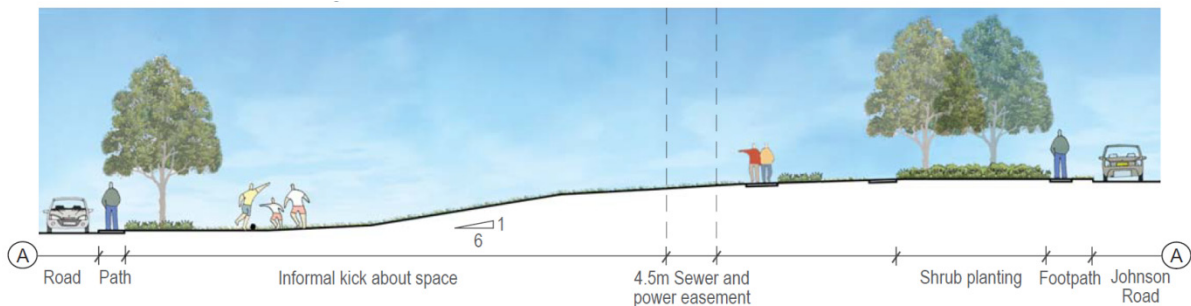


Figure 14: Public Open Space (Johnson Road)

TABLE 9: PUBLIC OPEN SPACE SCHEDULE

Lots 503-505, 507 and 900 (structure plan area only)	31.9117	
Total Structure Plan Area		31.9117
DEDUCTIONS		
Drainage Reserves (1:1 ARI)	0.1850	
Pump Station	0.1097	
Surplus Restricted Public Open Space (wetland buffer)	4.2677	
Total Deductions	4.5624	
Gross Subdivisible Area		27.3493
Required Public Open Space (10%)		2.7349
PUBLIC OPEN SPACE REQUIREMENTS		
Unrestricted public open space (minimum 80% total)	2.1879	
Restricted public open space (maximum 20% total)	0.5470	
Total		2.7349
PUBLIC OPEN SPACE PROVISION		
Unrestricted Public Open Space		
Formalised POS	2.9749	
Total Unrestricted Public Open Space		2.9749
Restricted Public Open Space		
Wetland Buffer	4.8186	
		4.8186
Total Credited Restricted Public Open Space		0.5470
Total Credited Public Open Space		3.5219
Percentage of Public Open Space Provided		12.9%
(Unrestricted and Restricted Public Open Space Contribution)		12.9%
<i>Surplus Unrestricted POS provided</i>	<i>0.7870</i>	
<i>Total Percentage of structure plan area provided as Unrestricted Public Open Space</i>		9.32%
<i>Total percentage of structure plan area provided as Restricted Public Open Space</i>		15.09%

Notes: All areas are in hectares

WETLAND AND BUFFER

The western portion of the subject site, which is zoned Rural under the MRS, contains Conservation Category and Resource Enhancement wetlands. These were identified for protection under MRS Amendment No. 1158/57 which zoned the eastern portion of the site Urban. The Rural zoned portion of the site is not contained within the LSP.

As part of the EPA's assessment of the Amendment it supported the extent of the developable area (Urban zoned portion) of the site and recommended that a buffer of 50m offset from the Rural / Urban zoning boundary, be applied. The wetland buffer will provide an extension of Local POS Parks numbered 1, 2 and 6 on the POS Plan. The wetland buffer is predominately cleared and, as a result, provides a suitable safe buffer to the wetland core, which is considered a fire hazard. It is proposed to keep any landscaping within the wetland buffer and POS areas to a standard which will not create a fire hazard and cause additional separation distances to residences.

MANAGEMENT ARRANGEMENTS

Final management of the wetland core and wetland buffer is to be determined by the Department of Planning. It is understood, at this stage, that the wetland core will be ceded as a Reserve for Conservation and a management order established to be controlled by a State Government department. The wetland buffer is likely to be managed by the City of Kwinana as part of its standard responsibilities for local parks.

LANDSCAPE DESIGN

A Landscape Strategy has been prepared by Emerge Associates in order to inform open space development, the LWMS and bushfire hazard assessment (refer **Appendix E**).

The landscape treatments for the development will occur over a series of distinct areas as outlined below. The project theming, detailing and material selection will unite the project's various areas into one cohesive whole. Refer **Figure 6** which includes the Landscape Concepts.

WETLAND BUFFER

The wetland buffer will consist of non-irrigated dryland tube stock planting to assist in providing a stable planted surface that accommodates some environmental improvement while maintaining all fire setback and planting density requirements. Plant species will comply with the requirements for low threat vegetation listed in AS3959-2009 and cross referenced with Council's preferred environmental planting suggestions. Clear views to the existing wetland trees will be maintained.

STREETSCAPES

The streetscapes consist of a variety of treatments from typical residential streets with street trees on standard alignments to wider verges in major roads which accommodate landscape planting and drainage where possible. Footpaths will be located in accordance with LN and will link the project together. Plantings will be predominantly native based on location adjacent the wetland area, some deciduous trees are proposed in certain locations based on homestead plantings historic to this formerly rural area. Johnson Road verge will be planted with groundcovers and the majority of mature trees will be retained as soft interface and a landscape greenway around the site's perimeter.

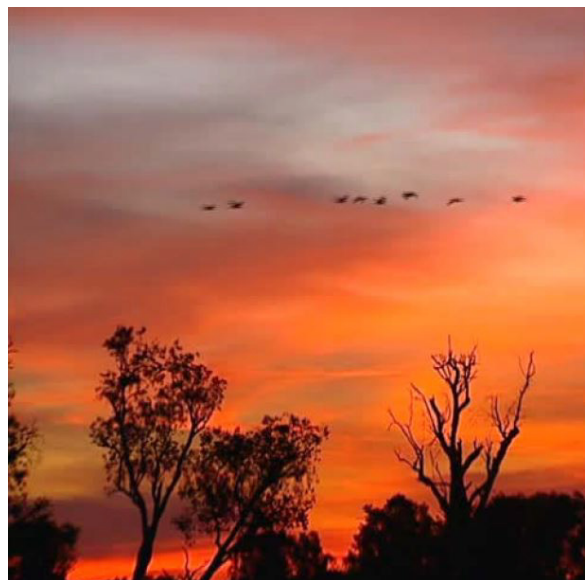
PUBLIC OPEN SPACE

POS areas will contain public facilities deemed suitable for the intended local population in consultation with the project team and the City through the subsequent approval process. POS areas have been located to retain significant vegetation in key locations. POS areas will include mounding and earthworks to create interest. The POS areas will contain a variety of materials that suit the project's theming and meet the City's long-term maintenance needs. The POS locations are arranged to provide high level distribution of facilities accessible by all future residents and meeting CPTED and good urban design principles.



DRAINAGE

Drainage will be managed through a variety of treatment typologies including at-source swales located in and among road reserve verges and medians where suitable width and depth can be created to provide a suitable outcome. POS areas will also contain distinct areas of drainage in defined areas that cater for sustainable design approaches and good urban water management practices.



3.6 WATER MANAGEMENT

LOCAL WATER MANAGEMENT STRATEGY

A Local Water Management Strategy (LWMS) has been prepared by RPS in support of the LSP (refer **Appendix G**). The LWMS has been developed to establish the concepts and broad level design measures for flood mitigation and stormwater management for the site. The intention of the LWMS is to guide the general stormwater management principles and to guide the preparation of the Urban Water Management Plan (UWMP) that will be prepared at the subdivision stage.

The LWMS has been prepared to:

- provide the conceptual stormwater management framework for urban development;
- describe the proposed design measure and Best Management Practices (BMP) to be incorporated in the stormwater management system;
- minimise development construction costs and ongoing operation and maintenance costs for landowners and the City of Kwinana; and
- to obtain the Department of Water and City of Kwinana's support for the stormwater management strategy.

The LSP has responded to the recommendations of the LWMS and drainage strategy by:

- incorporating locations for appropriate stormwater storage;
- accommodating a road network which addresses the site's topography and the preferred stormwater drainage system, in particular, by reducing stormwater storage within POS areas; and
- sufficient road widths to accommodate road side swales where necessary which allow for infiltration close to the source.

3.7 EDUCATION FACILITIES

PRIMARY SCHOOL SITE

A future Primary School site has been identified to the south east of the subject site on Johnson Road, within the Emerald Park Structure Plan area. Residents within the LSP area will be able to utilise this school as the closest in the locality. The developer will be required to pay a per lot contribution to the Department of Education at the subdivision stage.

3.8 ACTIVITY CENTRES AND EMPLOYMENT

LOCAL ECONOMY, RETAIL AND EMPLOYMENT OPPORTUNITIES

Given the close proximity of the Kwinana Town Centre (within 3km) and Rockingham City Centre (categorised as a 'Strategic Metropolitan Centres'), there is no requirement for retail or commercial uses to be provided for in the LSP area.

Daily convenience and comparison shopping needs will be met by the approved network of surrounding centres, identified in the City's Local Planning Strategy for Wellard and surrounding suburbs such as Bertram. Taktics 4 has undertaken a review of the subject site to better understand its position in the retail, economic and employment hierarchy. Taktics 4 advise that the suburbs of Bertram and Wellard are well served by retail activity. In this regard, there is market demand for retail activity in the area. However, this seems to be satisfied by the Kwinana Town Centre, two centres in Wellard and a planned centre to the south. Future residents of the subject site will be expected to support the Wellard neighbourhood centre.

The small Local Centre located to the south east of the subject site is on Johnson Road within the Emerald Park Local Structure Plan. This site is yet to be developed.

4 IMPLEMENTATION AND STAGING

4.1 LSP AND SUBDIVISION

Lot 900 has a Council adopted LSP covering it, prepared by the previous landowner. The subject LSP will supercede the LSP adopted by Council, as agreed with the Department of Planning and City of Kwinana's technical officers.

The Department of Planning and the City of Kwinana also support a subdivision application being lodged covering Lot 900 that is consistent with the subject LSP. If consistent with the LSP, the subdivision application would be considered by the WAPC following public advertising of the LSP, subject to any necessary modifications to the LSP and or subdivision application as a result of advertising.

A subdivision application(s) will be lodged for the balance LSP area nearing completion of the approvals process for the LSP. Following adoption by Council and the WAPC of the LSP, the subdivision application can be considered and approved.

4.2 MANAGEMENT PLANS

Amongst others, the following key management plans will be prepared at the subdivision stage:

- Urban Water;
- Acid Sulfate Soils;
- Mosquito and Midge; and
- Landscape.

4.3 STAGING

Development staging is still to be refined; however the following provides the basis for future decision-making:

- Lot 900 to be subdivided first (likely to include a Display Home Village);

- Lot 503 to follow allowing construction of the Sewer Pump Station in its western portion (developable area);
- northern Major Access Street to be constructed as part of Stage 1 or 2 to accommodate main estate access; and
- development to extend from the north to the south.

4.4 DEVELOPER CONTRIBUTION ARRANGEMENTS

As described under Section 1.3, the subject site is contained within the following Developer Contribution Areas:

- Development Contribution Area 1 (DCA 1) (traditional infrastructure);
- Development Contribution Area 7 (DCA 7) – Standard infrastructure for a district sporting ground; and
- Development Contribution Area 12 (DCA 12) – Wellard West (community infrastructure).

DCA 1 and DCA 7 are still to be finalised under Amendments No. 132 and 100A respectively to the Scheme. In this regard, the City of Kwinana has recently concluded advertising of Local Planning Policy *Administration of Development Contribution Plans* which addresses interim Developer Contribution arrangements. If Amendments No. 132 and 100A are not finalised prior to subdivision clearances being sought, the provisions of this Policy will apply.

A per lot contribution will be paid by the developer for each Developer Contribution Plan prior to seeking subdivision clearances for the particular stage of development.