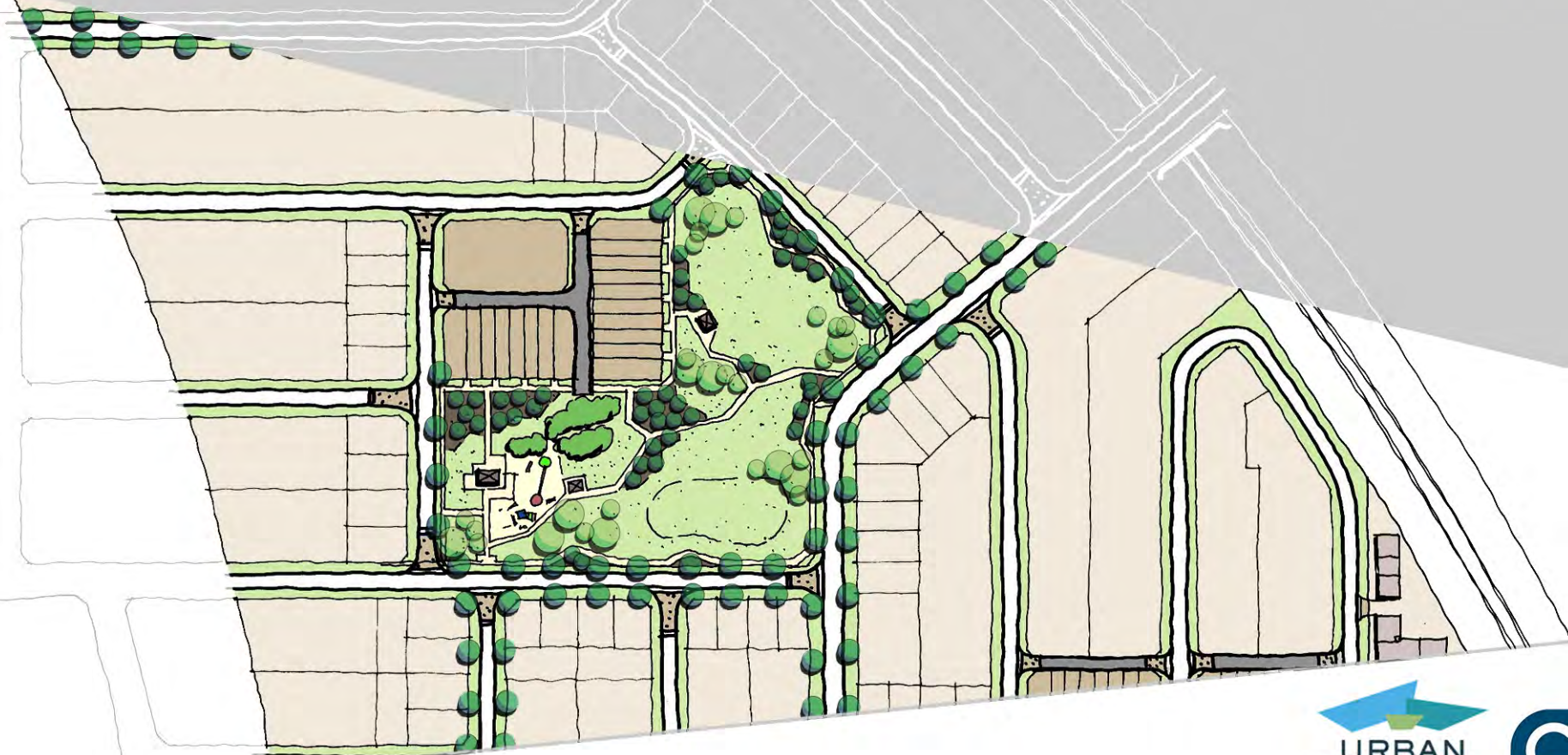


WESTERN PRECINCT LOCAL STRUCTURE PLAN

LOT 6 TARONGA PLACE, EGLINTON

PART ONE - IMPLEMENTATION SECTION
JANUARY 2018



LOT 6 WESTERN PRECINCT LOCAL STRUCTURE PLAN

PART ONE - IMPLEMENTATION SECTION

Prepared by:



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3109Rep32D
January 2018

This structure plan is prepared under the provisions of the City of Wanneroo
District Planning Scheme No 2:


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

..... 3 May 2018 Date

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



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



..... Witness

..... 3 May 2018 Date

..... 3 May 2028 Date of Expiry

TABLE OF AMENDMENTS

Amendment No.	Summary of the Amendment	Amendment type	Date approved by WAPC

TABLE OF DENSITY PLANS

Density Plan No.	Area of density plan application	Date approved by WAPC
1	WAPC/155700	21 December 2017

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EXECUTIVE SUMMARY

The Western Precinct Local Structure Plan (WPLSP) captures approximately 28ha of land immediately west of the rail corridor in Eglinton and forming part of Lot 6 Taronga Place, Eglinton in the City of Wanneroo. The WPLSP represents the logical commencement of local structure planning for Lot 6, which will be continued in an eastward direction across the balance of the site as part of future structure planning.

The WPLSP allows for the creation of a residential neighbourhood that responds to the surrounding land use context and natural environment, as well as the planning framework established by the Alkimos Eglinton District Structure Plan. The urbanisation and development of the WPLSP provides further opportunities to maximise the catchment to existing and planned infrastructure through consolidation of urban development, while satisfying State Government housing targets.

Through the inclusion of a permeable road local road network, the LSP establishes an interconnected interface for both existing and future development of the surrounding land.

The WPLSP area is identified for urban development in strategic and statutory documents, zoned 'Urban' and 'Urban Development' zone under the Metropolitan Region Scheme (MRS) and the City of Wanneroo District Planning Scheme 2 (DPS 2) respectively. The Lot 6 WPLSP is lodged pursuant to the City of Wanneroo DPS 2, which requires a structure plan prior to development or subdivision for land zoned 'Urban Development'.

The WPLSP draws on the key elements of the Alkimos-Eglinton District Structure Plan (2010), which provides a high level framework

for future land use and development in the area. The WPLSP fulfils strategic planning for the area with Perth and Peel@3.5 Million and the draft North West Metropolitan Sub-regional Planning Framework designating the subject site for urban development.

With densities allocated ranging from R-MD25 to R-MD60, the WPLSP can deliver a residential target of 27 dwellings per site hectare, achieving State government density targets. Medium to high density housing will be located around areas of public open space and key transport routes.

The WPLSP can be readily serviced, with essential infrastructure located within proximity and easily extended to the site. To support and inform the WPLSP the following technical reports have been prepared, and are summarised in the Part 2 – Explanatory Report, with complete copies included as technical appendices:

- Environmental Assessment
- Bushfire Management Plan
- Transport Assessment
- Local Water Management Strategy
- Landscape Master Plan and Cross Sections
- Transportation Noise Assessment
- Engineering Report
- Rail Interface Cross Sections

The abovementioned technical reports comprehensively address all of the relevant planning considerations, and demonstrate that the land is suitable for urban development in the form proposed.

Table 1 – Land Use Summary

Item	Data	Section number referenced within the Structure Plan Report
Total area covered by the structure plan	28 hectares	1.2.2
Area of each land use proposed		
- Residential	17.6 hectares	
- Road Reserve	7.5 hectares	
- Public Open Space Reserve	2.9 hectares	
Estimated Lot Yield	460 lots	
Estimated Number of Dwellings	460 dwellings	
Estimated Residential Density		
- dwellings per gross urban zoned hectare (as per Perth & Peel@3.5 million)	16.4 dwellings per gross hectare	
- dwellings per site hectare (as per Liveable Neighbourhoods)	27 dwellings per site hectare	3.2
Estimated Population	1288 people @ 2.8 people/household	
Amount of Public Open Space	2.8 hectares (total creditable POS) 2.36 hectares (unrestricted POS) 0.36 hectares (restricted POS)	3.3

1.0 STRUCTURE PLAN AREA

The Lot 6 Western Precinct Local Structure Plan (WPLSP), applies to land contained within the inner edge of the broken line denoting the structure plan boundary as shown on Plan A: Local Structure Plan, being the western portion of lot 6 Taronga Place, Eglinton.

2.0 STRUCTURE PLAN CONTENT

This Local Structure Plan comprises:

- Part One – Implementation Section
- Part Two – Explanatory Report
- Appendices – Technical Reports

Part One of the Local Structure Plan comprises the structure plan map and planning provisions. Part Two of the Local Structure Plan justifies and clarifies the provisions contained in Part One, and is used as a reference guide to interpret Part One.

3.0 OPERATION

The WPLSP comes into effect on the date that it is approved by the Western Australian Planning Commission.

4.0 INTERPRETATION AND RELATIONSHIP WITH STATUTORY PLANNING FRAMEWORK

The WPLSP constitutes a Local Structure Plan required to be prepared prior to subdivision and development of the subject land pursuant to City of Wanneroo District Planning Scheme No. 2 and the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 – Deemed provisions for local planning schemes*.

The Structure Plan Map (Plan A) outlines future land use, zones and reserves applicable within the structure plan area.

Pursuant to the *Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 – Deemed provisions for local planning schemes*, a decision maker of an application for development approval or subdivision approval is to have due regard to the provisions of this Local Structure Plan, including the Structure Plan Map, Implementation Report, Explanatory Report and Technical Appendices.

5.0 STAGING

Development staging will follow an orderly sequence and shall not exceed the extension of essential servicing infrastructure or constructed road access.

6.0 SUBDIVISION AND DEVELOPMENT REQUIREMENTS

6.1 Land Use and Zones

Land use permissibility within the Structure Plan area shall be generally in accordance with the corresponding zone or reserve under the Scheme, or as otherwise outlined in this Structure Plan.

6.2 Residential

6.2.1 Dwelling Target

In accordance with the Directions 2031 target, subdivisions are to achieve a minimum average density of 26 dwellings per site hectare across the structure plan area.

6.2.2 Density

- a) Plan A defines the broad residential density ranges that apply to specific areas within the Structure Plan. Lot specific residential densities, within the defined residential ranges, are to be subsequently assigned in accordance within a Residential Code Plan approved by the WAPC at subdivision stage.
- b) A Residential Code Plan is to be submitted at the time of subdivision to the WAPC and shall be consistent with the Structure Plan, and the Residential Density Ranges identified on Plan A and locational criteria contained in Clause 6.2.3.
- c) The Residential Code Plan is to include a summary of the proposed dwelling yield of the subdivision.

- d) Approval of the Residential Code Plan shall be undertaken at the time of determination of the subdivision application by the WAPC. The approved Residential Code Plan shall then form part of the Structure Plan and shall be used for the determination of future development applications.
- e) Variations to the Residential Code Plan will require further approval of the WAPC.
- f) Residential Code Plans are not required if the WAPC considers that the subdivision is for one or more of the following:
 - i) The amalgamation of lots;
 - ii) Consolidation of land for 'superlot' purposes to facilitate land assembly for future development;
 - iii) Purpose of facilitating the provision of access, services or infrastructure; or
 - iv) Land which by virtue of its zoning or reservation under the Structure Plan cannot be developed for residential purposes.

6.2.3 Locational Criteria

The allocation of R-codings on the Residential Code Plan shall be in accordance with the following criteria:

- a) A base density code of R30 applies to all residential lots within the R30-R60 range.
- b) A density coding of R60 can be applied to residential lots directly adjacent to POS.
- c) A density coding of R40 can be applied to residential lots:
 - i) fronting public open space, including all lots with a clear view of the open space; and
 - ii) along neighbourhood connectors, with the exception of lots directly abutting the railway reservation.
- d) Allocation of R-codings shall result in a consistent R-coding applying across each side of the street block(s).

6.3 Public Open Space

The provision of a minimum of 10% POS being provided generally in accordance with Plan A and the following Table.

Table 2 – Indicative POS Site Area

POS 1	0.4 hectares
POS 2	0.5 hectares
POS 3	1.75 hectares
POS 4	0.25 hectares

7.0 DEVELOPMENT

7.1 Local Development Plans

Local Development Plans are to be prepared and approved under a condition of subdivision approval, to require:

- i) Sites adjoining Public Open Space to address: built form orientation, visually permeable fencing and window openings from habitable rooms to overlook POS and provide for passive surveillance.
- ii) Lots adjoining/fronting the railway reserve and affected by rail noise, to address quiet house design in accordance with the recommendations of the Transportation Noise Assessment (Lloyd George Acoustics, March 2017) .

7.2 R Code Variations

The variations set out in the City of Wanneroo's Medium Density Housing Standards (R-MD) Local Planning Policy 4.19 apply to the Structure Plan and thereby constitute acceptable development.

8.0 OTHER REQUIREMENTS

8.1 Additional information

The following technical report is to be prepared and submitted at the time of lodgement of a subdivision application (where applicable):

- Bushfire Management Plan (BAL Assessment)

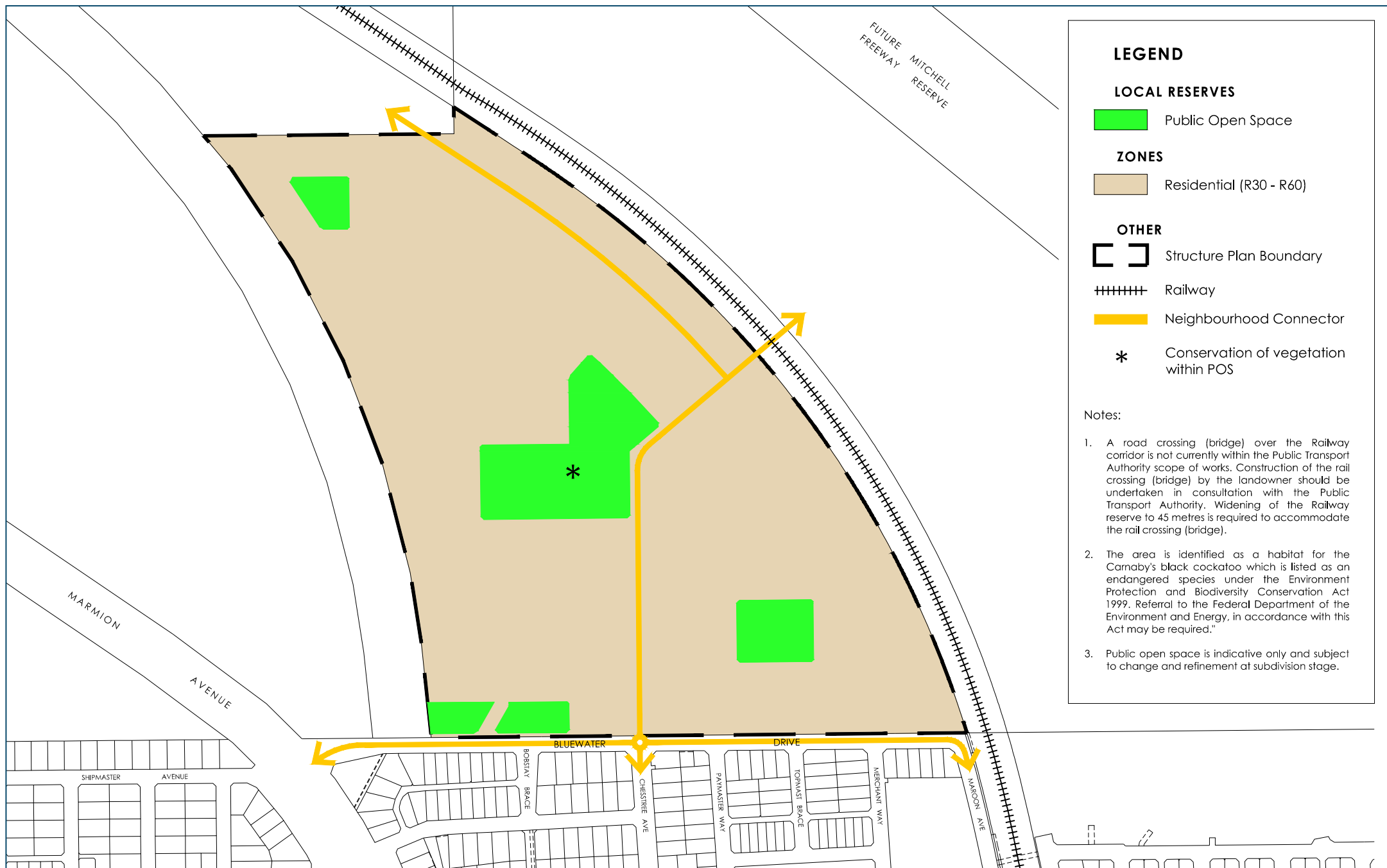
8.2 Conditions of Subdivision Approval

The following technical reports are to be prepared and submitted as a condition of subdivision approval (where applicable):

- Construction of railway noise mitigation barriers in accordance with the recommendation(s) of the Transportation Noise Assessment (Lloyd George Acoustics, March 2017);
- Urban Water Management Plan;
- Fauna Management Plan, for the relocation of fauna, prior to commencement of subdivision works; and
- a Conservation Area Management Plan, regarding identified 'Conservation of vegetation within the POS', prior to commencement of subdivision works.

8.3 Developer Contributions

Land within the Structure Plan is within Developer Contribution Area 1 (DCA1) as identified on the Scheme Map. The Alkimos-Eglinton Development Plan Report should be read in conjunction with the Structure Plan.



WESTERN PRECINCT LOCAL STRUCTURE PLAN

LOT 6 TARONGA PLACE, EGLINTON

PART TWO - EXPLANATORY REPORT
JANUARY 2018



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LOT 6 WESTERN PRECINCT LOCAL STRUCTURE PLAN

PART TWO - EXPLANATORY REPORT

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January 2018

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DEVELOPER

Urban Quarter

PROJECT TEAM

Town Planning - CLE Town Planning + Design

Environmental - Strategen

Civil Engineering - Cossill & Webley

Landscape Design - Plan E

Bushfire - Strategen

Traffic & Transport - GTA

Acoustic Assessment - Lloyd George

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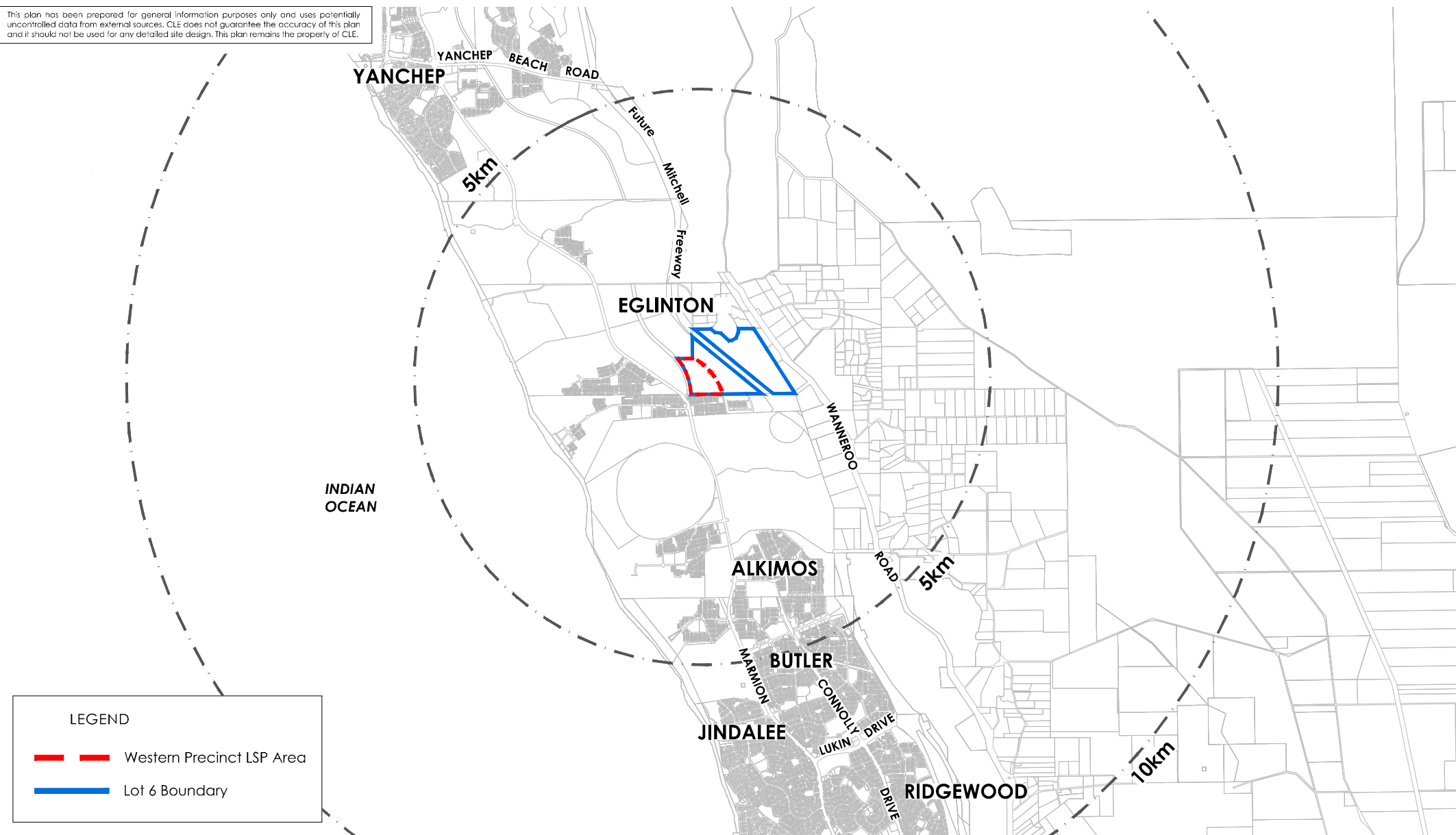
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1.0 PLANNING BACKGROUND

1.1 Introduction & Purpose

The Lot 6 Western Precinct Local Structure Plan (WPLSP) is prepared on behalf of the landowner Daws and Sons Pty Ltd, represented by Urban Quarter. The WPLSP is lodged in accordance with the provisions of the City of Wanneroo District Planning Scheme No. 2 (incorporating the Schedule 2 Deemed Provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015*) to guide the subdivision and development of the western portion of Lot 6 Taronga Place, Eglinton.

This report, consistent with the WAPC's Structure Plan Framework (2015) comprises a Part 1 section outlining implementation requirements and the plan, with Part 2 outlining the background, policy context and rationale for Part 1. Technical Appendices have been prepared to inform and support Parts 1 and 2. The *Planning and Development (Local Planning Schemes) Regulations 2015* require that due regard be given to the provisions of the WPLSP in determining statutory planning applications for the site.

The Technical Appendices are as follows –

- Environmental Assessment Report;
- Bushfire Management Plan;
- Transport Assessment;
- Local Water Management Strategy;
- Landscape Master Plan and Cross Sections;
- Transportation Noise Assessment;
- Engineering Report; and
- Rail Interface Cross Sections.

The WPLSP has been prepared in the context of the Alkimos Eglinton District Structure Plan (AEDSP), which covers the site and surrounding area. Its objective is to facilitate coordinated development of the site in conjunction with the surrounding area, taking into consideration the specific attributes of the site, the intentions of the landowner and the various policy requirements impacting its design and delivery as an urban development site.

Preparation of the WPLSP has involved consultation with the City of Wanneroo and relevant service authorities in accordance with the Framework.

The WPLSP will facilitate the growth of the existing Alkimos Eglinton community, and the commencement of development of the Lot 6 landholding in a logical eastward direction. The WPLSP will facilitate the creation of approximately 460 lots, as well as contributing to the extensive public open space network and expanding the existing local road network.

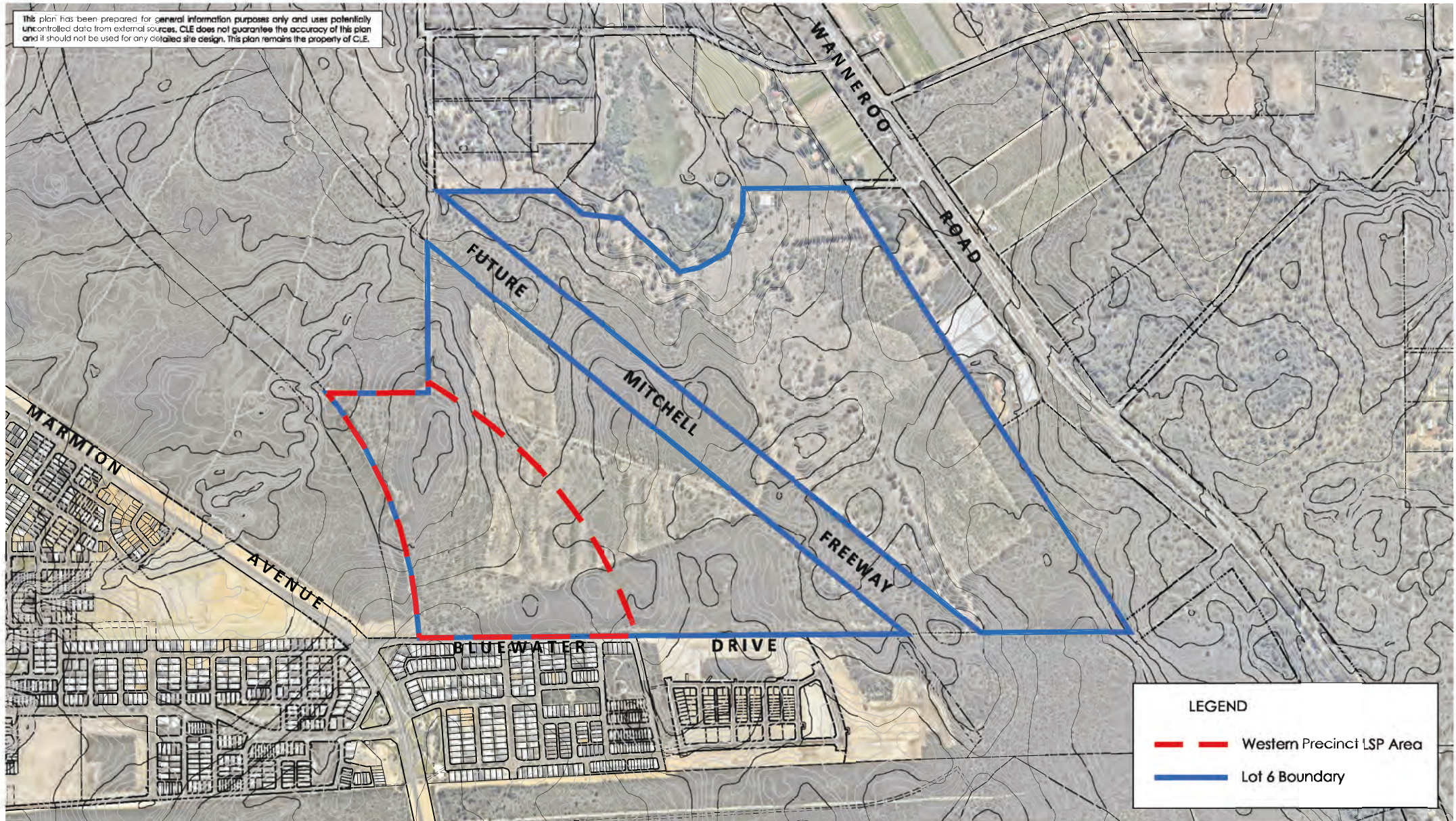
1.2 Land Description

The following section provides a brief summary of the location, land use and ownership within the WPLSP area.

1.2.1 Location

Lot 6 Taronga Place, Eglinton ('Lot 6') is located immediately north east of Bluewater Drive, approximately 170 metres (m) west of Marmion Ave, 2.9 kilometres (km) west of the coast, and 42 km north of the Perth Central Business District (CBD). The WPLSP area covers the western most portion of Lot 6 (refer Figure 1 - Location Plan). The WPLSP is located within the City of Wanneroo.

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LEGEND

- Western Precinct LSP Area
- Lot 6 Boundary

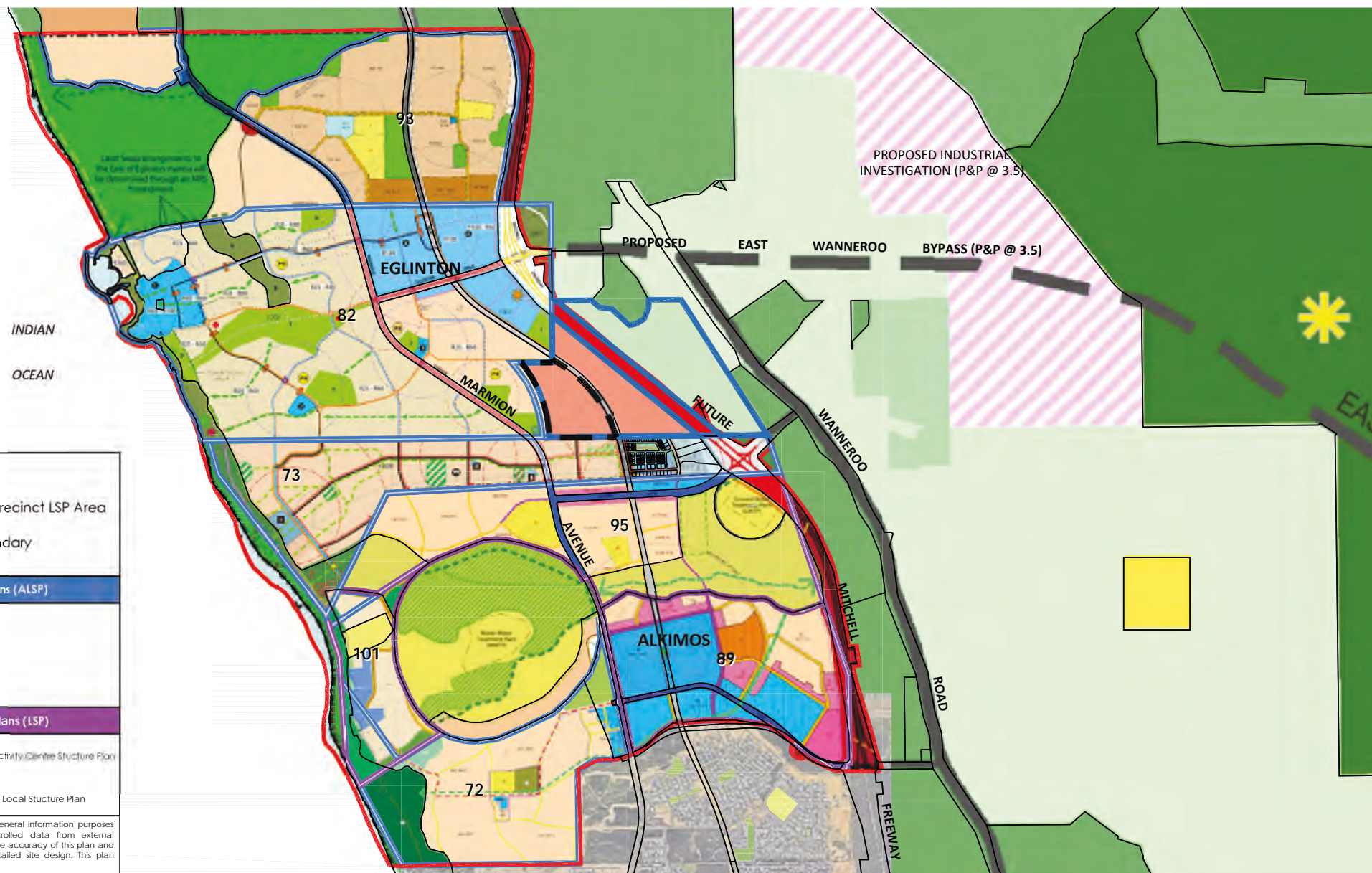


1.2.2 Area and Land Use

Lot 6 constitutes a total area of approximately 140 hectares (ha) and is currently vacant. It has previously been used for broad acre agricultural purposes. Lot 6 is bisected by the (unconstructed) Mitchell Freeway road reserve and an (also unconstructed) railways reserve running parallel to and west of the Freeway reserve. The WPLSP applies to the 28ha portion west of the rail reserve ('the WPLSP area' or 'the site') (refer Figure 2 - Site Plan).

1.2.3 Legal Description and Ownership

The site is defined on Certificate of Title 1909/63 and is owned by Daws and Son Pty Ltd (refer Appendix 1).



1.2.4 Surrounding Land Use and Context

The WPLSP sits within the context of the AEDSP which provides for the urban development of approximately 2606ha of previously predominantly rural land within Perth's North-West Corridor, including the subject site. Staged development of the AEDSP area is proceeding with the land immediately to the south and west of the site being subdivided to accommodate residential and mixed use development, and, further to the south, the Alkimos City Centre (refer Figure 3 – District Context Plan).

The portion of Lot 6 east of the Freeway (outside the LSP area) forms part of a precinct of rural and semi-rural lifestyle lots running north up Wanneroo Road. The Alkimos Waste Water Treatment Plant is located approximately 1.5km south-west of the site, on the far side of Marmion Avenue.

Whilst Marmion Avenue was constructed to Yanchep under a joint agreement to provide a regional transport link to the corridor, the planned extension of the north-west corridor rail line (the 'Joondalup line') and the Mitchell Freeway beyond its current terminus at the Butler Station remain unscheduled at this time.



1.3 Planning Framework

1.3.1 Metropolitan Region Scheme Zoning

The WPLSP is zoned 'Urban' under the Metropolitan Region Scheme ('MRS') and adjoins a 40m wide Railways reserve on its eastern boundary (refer Figure 4 – Metropolitan Region Scheme Zoning).

The development provided for within the WPLSP is consistent with the site's zoning under the MRS.

1.3.2 City of Wanneroo District Planning Scheme No. 2

The WPLSP is zoned 'Urban Development' under the City of Wanneroo's District Planning Scheme No. 2 ('DPS2') (refer Figure 5 – District Planning Scheme No. 2 Zoning). The purpose of the Urban Development zone is to *"provide for the orderly planning and development of larger areas of land in an integrated manner with a regional context whilst retaining flexibility to review planning with changing circumstances...."* (DPS2). Subdivision and development of Urban Development zoned land is generally required to accord with a local structure plan prepared and approved in accordance with the provisions of the Scheme.

The development provided for within the WPLSP is consistent with the site's zoning under the local planning scheme.

Developer Contributions will be levied as a condition of subdivision under the provisions of the City of Wanneroo's District Planning Scheme No. 2 Development Contribution Area No.1 provisions. The contributions cater for the provision of range of district recreational and community facilities as outlined in Schedule 15 of the City's District Planning Scheme. The contributions are calculated based on m² rate rather than number of lots created.

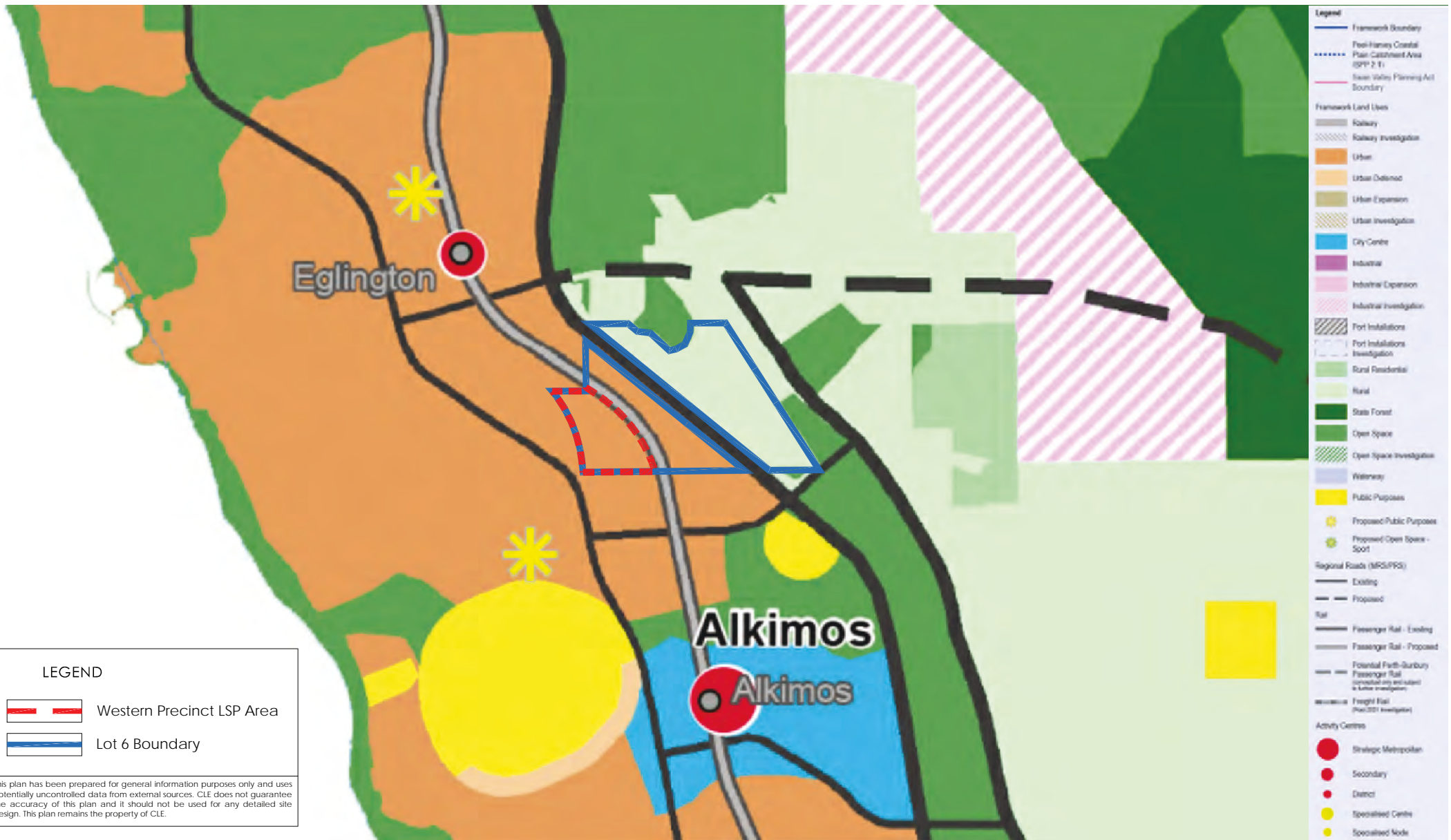
1.3.3 Alkimos-Eglinton District Structure Plan (2010)

The WPLSP is located within the Alkimos Eglinton District Structure Plan (AEDSP). The AEDSP was prepared to provide an overarching planning framework for the 2,606ha Alkimos-Eglinton area as part of the planned north-west metropolitan growth corridor. It also serves to guide more detailed local structure planning and subsequent development of the area. The AEDSP was adopted by the City of Wanneroo as Agreed Structure Plan No. 18 and endorsed by the Western Australian Planning Commission (WAPC) in March 2011 (refer Figure 6 - Alkimos Eglinton District Structure Plan). The AEDSP provides for:

- extension of the regional road network (including Marmion Avenue and the Mitchell Freeway) up through the DSP area;
- extension of the northern suburbs rail line with stations at Alkimos Secondary Activity Centre and Eglinton District Centre;
- construction of the Alkimos Waste Water Treatment Plant with appropriate buffers in place;
- reservation of coastal foreshore reserves and extension of open space linkages to connect these to the east;
- development of the Alkimos and Eglinton activity centres supported by a number of smaller neighbourhood centres and coastal nodes to service the retail, commercial and service needs of the catchment communities, and provide opportunities for local employment;

- a service commercial precinct intended to accommodate employment opportunities; and
- development of much of the balance of the land for urban purposes.

The AEDSP provides for the WPLSP to be developed for urban (residential) with which purpose this LSP accords.



1.4 Strategic Planning Framework

1.4.1 Perth and Peel@3.5 Million (2015) & Draft North West Metropolitan Sub-regional Planning Framework

The Perth and Peel @ 3.5 Million suite of documents (including the draft Sub-regional Planning Frameworks currently being finalised) provide the strategic direction and geo-spatial *framework* for the growth of the Perth and Peel metropolitan region to accommodate a population of 3.5 million (nominally assumed to be around 2050, depending on population growth rates).

The WPLSP is consistent with the direction of the strategy, accommodating expansion of the city and population growth within a carefully considered planning framework which balances considerations of environmental impact, sustainable urban form, accessibility and the like to optimise the outcomes for the future communities.

The draft North West Metropolitan Sub-regional Planning Framework designates the WPLSP for 'Urban' purposes, with which the WPLSP is consistent (refer Figure 7 - North West Metropolitan Sub-regional Planning Framework).

1.4.2 Other Planning Considerations

1.4.2.1 *State Planning Policy 3.7 (SPP3.7) - Planning in Bush Fire Prone Areas*

The current SPP 3.7 – Planning in Bushfire Prone Areas was gazetted in December 2015 and acts in concert with Regulations and Guidelines to inform planning decision making to limit risk to life and property associated with bushfire risk. The Policy requires assessment of bushfire risk at an escalating level of detail in the various stages of the planning process for all land identified as 'Bushfire Prone' with the maps published by the Office of Bushfire Risk Management.

The subject site is (like much of the undeveloped land within the state) designated Bushfire Prone within these maps. As a consequence, a detailed bushfire hazard assessment has been prepared by Strategen to ascertain the existing and future level of risk and to recommend, through a Bushfire Management Plan, how that risk is to be managed in order to accord with the Policy. This assessment demonstrates that the development proposed within the WPLSP can comply with the requirements of the Policy.

The Bushfire Management Plan prepared for the site is discussed further in section 3.5 below.

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1.4.2.2 State Planning Policy (SPP 5.4) Road and Rail Transport Noise and Freight Considerations in Land Use Planning

SPP 5.4 – Noise and Rail Transport Noise and Freight Considerations was gazetted in 2009 and seeks to assess and mitigate against excessive transport noise in sensitive development areas (including residential areas) to limit adverse impact on amenity and associated conflict. Amongst other things, the Policy requires assessment of anticipated transport noise for development in the vicinity of rail lines, designated freight corridors and roads carrying or anticipated to carry in excess of 20,000 vehicles per day (VPD). This requires assessment of the potential noise impacts stemming from the planned extension of the rail line immediately east of the site. A Transportation Noise Assessment has consequently been undertaken of the WPLSP proposal by Lloyd George Acoustics which concludes that transport noise reaching residential properties could be contained within the thresholds specified by the Policy.

The Transportation Noise Assessment prepared for the site is discussed in further detail in section 3.7 below.

1.4.2.3 Liveable Neighbourhoods

Liveable Neighbourhoods is the WAPC's primary operational policy guiding structure plan and subdivision design for residential neighbourhoods. The document outlines a series of objectives and design requirements seeking to deliver more sustainable, amenable and 'liveable' suburbs for new communities. The policy is largely based on a 'new urbanist' approach to design, integrating transport, land use, water management and other elements making up new urban areas into an integrated whole.

The proposed WPLSP (and the DSP framework within which it operates) are generally consistent with Liveable Neighbourhoods through their:

- Application of a connected and legible 'modified grid' road network;
- Integration of pedestrian and cycle facilities in transport planning;
- Provision of a hierarchy of open space areas, accommodating a range of functions including recreation, vegetation retention and water management; and
- Application of urban densities consistent with state targets, and responsive to local context and amenities.

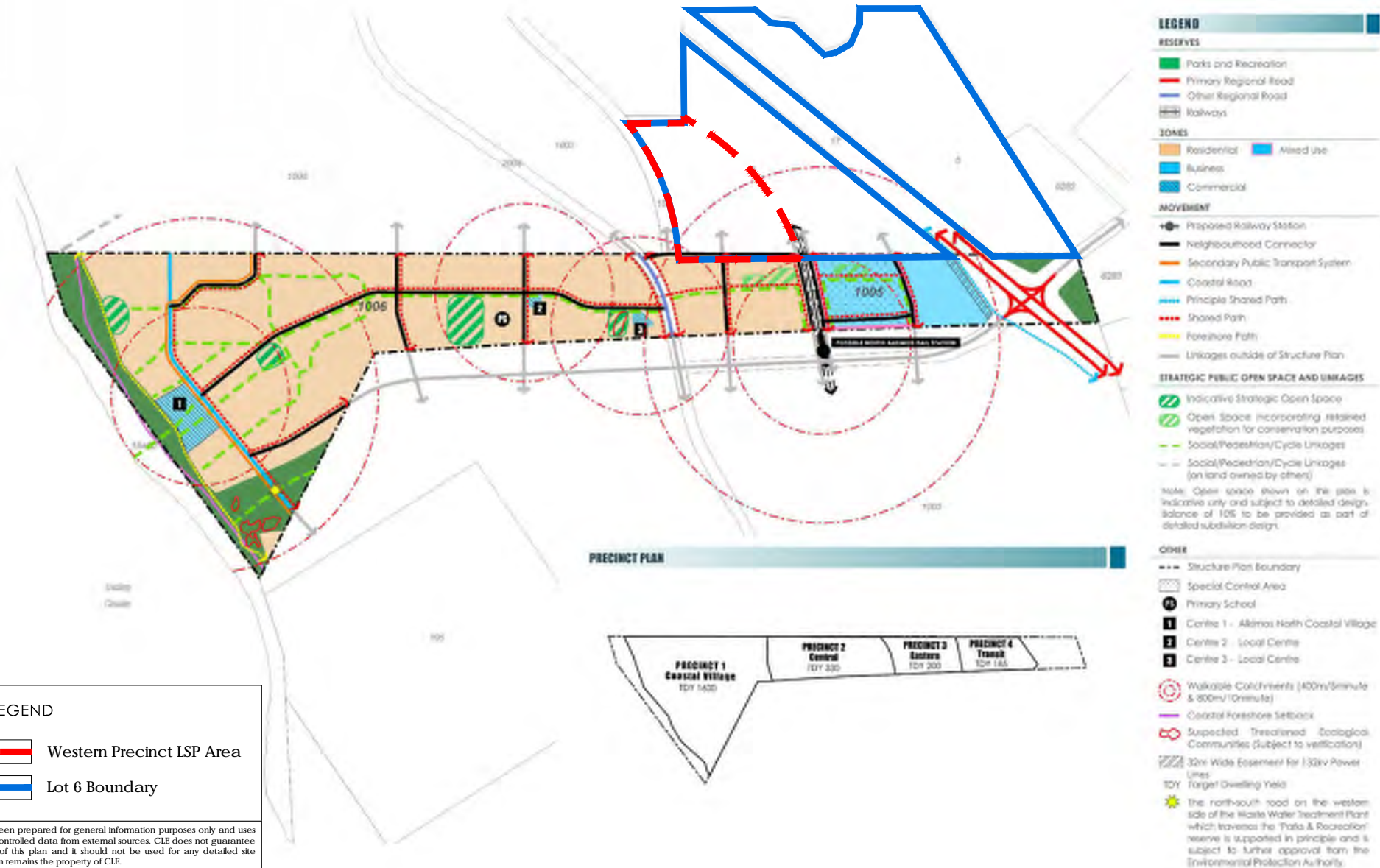
Further discussion of these elements is detailed in subsequent sections below.

LEGEND

Western Precinct LSP Area

Lot 6 Boundary

This plan has been prepared for general information purposes only and uses potentially uncontrolled data from external sources. CLE does not guarantee the accuracy of this plan and it should not be used for any detailed site design. This plan remains the property of CLE.



1.5 Other Approvals and Decisions

1.5.1 North Alkimos Local Structure Plan 73

The North Alkimos Local Structure Plan No. 73 (NALSP) is located immediately south and south-west of the subject site (refer Figure 8 - North Alkimos Local Structure Plan No. 73). The NALSP was endorsed by the WAPC in June 2015 and provides for development of the subject land for residential, mixed use and business purposes, with a coastal village providing a key amenity where the site abuts the foreshore.

Implementation of the NALSP is well advanced by Peet Pty Ltd as the Shorehaven Estate, with the staged release of residential lots in train and the foreshore park recently opened and proving a popular attraction for the district community. The eastern end of the NALSP abuts the WPLSP area with Bluewater Drive (shown as a Neighbourhood Connector on the NALSP) providing a shared road along this common boundary. The NALSP is likely to provide a range of services to future residents within the WPLSP area via the coastal village and foreshore park, as well as commercial and employment opportunities. Basic land use coordination and urban structuring has been established via the AEDSP with the LSPs and subsequent subdivision addressing more detailed design integration.

The WPLSP ensures integration with the established road network within the NALSP, in particular extending the central most north south Neighbourhood Connector into the WPLSP area.

LEGEND

- ZONES**
- Residential
 - Centre
 - Commercial
 - Mixed Use
- RESERVES**
- Parks & Recreation
 - Railway
- MOVEMENT**
- Railway Station
 - Primary Distributor
 - Integrator Arterial (A)
 - Integrator Arterial (B)
 - Neighbourhood Connector
 - Coastal Road
 - Light Controlled Intersection
 - Special Transit Systems/ Indicative Bus Stops
 - Principal Shared Path
 - Shared Path
 - Regional Foreshore Shared Path
 - Social/Pedestrian/Cyclist Linkages
- OTHER**
- Eglinton Local Structure Plan Boundary
 - Proposed 132kV Transmission Line
 - Proposed Zone Substation
 - Primary School
 - Possible Private School
 - Inclusive School - Kindergarten to year 12
 - Centre 1 - Eglinton Marina Centre
 - Centre 2 - Neighbourhood Centre
 - Centre 3 - Neighbourhood Centre
 - Centre 4 - District Activity Centre
 - Indicative Strategic Open Spaces
 - Regional Road Drainage
 - Possible Beachside Restaurants/ Cafe/Corner Store
 - Proposed Water Corporation Groundwater (Bore Sites)
 - 300 metre Well Head Protection Zones
 - Possible Foreshore Recreation Development Node
 - Walkable Catchment (400m - 5 min walk)
 - Walkable Catchment (800m - 10 min walk)
 - R-Code Boundary



LEGEND

- Western Precinct LSP Area
- Lot 6 Boundary

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1.5.2 Eglinton Local Structure Plan 82

The Eglinton Local Structure Plan No. 82 (ELSP) applies to the land west and north-west of the WPLSP, now commonly known as the Amberton Estate. The ELSP was endorsed by the WAPC in February 2013 and is now well advanced (refer Figure 9 - Eglinton Local Structure Plan No. 82). The ELSP similarly provides a range of services to future residents within the WPLSP and the WPLSP provides an important catchment for future uses such as the primary school to the west of the WPLSP area.

The WPLSP ensures coordination with key roads as shown on the ELSP to ensure a seamless interface can be provided between the adjoining structure plan areas.

1.6 Pre-Lodgement Consultation

This WPLSP has been prepared in consultation with a range of stakeholders including:

- The City of Wanneroo;
- Department of Planning;
- Department of Education;
- Public Transport Authority;
- Water Corporation;
- Western Power;
- Department of Parks and Wildlife;
- NBN; and
- Atco Gas.

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2.0 SITE CONDITIONS AND CONSTRAINTS

The Environmental Assessment prepared by Strategen demonstrates that all environmental factors affecting the WPLSP, including groundwater, drainage and bushfire management can be addressed through the planning approval process. A copy of the Environmental Assessment is included as Appendix 2.

The following section summarises the key findings of the Environmental Assessment.

2.1 Topography, Landform and Soils

The topography and the soils with the WPLSP area are suitable for urban development.

The WPLSP area is undulating and ranges from 29m to 44m Australian Height Datum (AHD).

The soil type is characteristic of the Spearwood dunes and ranges from white to yellow sands to light brown sandy loam.

A preliminary karst assessment was undertaken in 2016 indicating that karst in the WPLSP area posed a very low risk and can be managed through normal geotechnical investigation and design processes.

2.1.1 Acid Sulphate Soils

The Swan Coastal Plain Acid Sulphate Soils (ASS) risk mapping identified no known risk of ASS occurring within 3m of the natural surface of the WPLSP area. ASS investigations are therefore not considered necessary for the WPLSP area.

2.1.2 Contamination

The WPLSP is not located with any Department of Environmental Regulation (DER) listed contaminated sites, with the past and present use of the site not generating a high risk of contamination.

2.2 Biodiversity and Natural Assets

2.2.1 Flora and Vegetation

The WPLSP comprises both remnant vegetation and cleared areas, reflecting the site's previous rural use. Flora and vegetation surveys have been undertaken over the WPLSP by Strategen. The key findings of the surveys are as follows –

- Five vegetation types are found within the WPLSP including 0.37ha of planted trees and 7.25ha of regrowth;
- Historical (agricultural) land use has impacted the vegetation condition and composition through the introduction and spread of weeds, clearing and other human disturbance;
- There are no Bush Forever sites occurring with the WPLSP; and
- No threatened flora species were recorded within the WPLSP.

2.2.2 Fauna

The WPLSP was considered to potentially support the Carnaby's Black Cockatoo and the Southern Brown Bandicoot. Subsequent surveys and site inspections found no evidence of Southern Brown Bandicoot.

An inspection was undertaken of the WPLSP area for black cockatoo habitat including a vegetation assessment and significant tree assessment. The inspection found no potentially significant trees were recorded during the surveys and therefore no potential black cockatoo breeding or roosting habitat occurs within the WPLSP area. The inspection found no potentially significant trees were recorded during the surveys. The WPLSP area contains black cockatoo foraging habitat and the loss of this habitat is being addressed via a separate EPBC referral process.

2.3 Groundwater and Surface Water

2.3.1 Ground Water

Maximum groundwater level ranges from 2m to 4m AHD and groundwater flows across the WPLSP area from east to west. The depth to groundwater is over 20m across the entire WPLSP.

A portion of the WPLSP is located in a Priority 3 Public Drinking Water Source Area (PDWSA) and also within the Wellhead Protection Zone (WHPZ). Residential development is a permitted use within both a PDWSA and WHPZ.

2.3.2 Surface Water

There are no surface water bodies within the WPLSP area. The EPBC Protected Matters Search Tool indicates that there are no declared Ramsar wetlands present within 5km of the WPLSP area and no Wetlands of International Importance present within 2km of the WPLSP area.

2.4 Bushfire Management

The existing conditions of the site have been assessed from a bushfire risk and planning perspective as required under State Planning Policy 3.7 (SPP3.7) for sites containing areas identified as 'Bushfire Prone' within the state-wide mapping endorsed by the Fire and Emergency Services Commissioner. The assessment is documented in the Bushfire Management Plan (BMP) contained in Appendix 3 to this report. The BMP considers the site's topography and effective slope under vegetation, weather conditions, bushfire history and pre- and post- development bushfire hazard levels. It concludes that bushfire risk can be managed at an appropriate level consistent with SPP 3.7. More specifically, it notes that:

- The site currently contains or abuts Class B Woodland, Class C Scrubland and Class D Scrub vegetation types as defined under the SPP 3.7 Guidelines, with the existing urban development south of Bluewater Drive Excluded under Clause 2.2.3.2 (e) of AS3959-2009;
- Post development, the majority of the site will be cleared and will be classified as Excluded under Clause 2.2.3.2 (e) and (f) of AS3959-2009;
- Post development, the entire site will be within Moderate or Low bushfire hazard level areas.

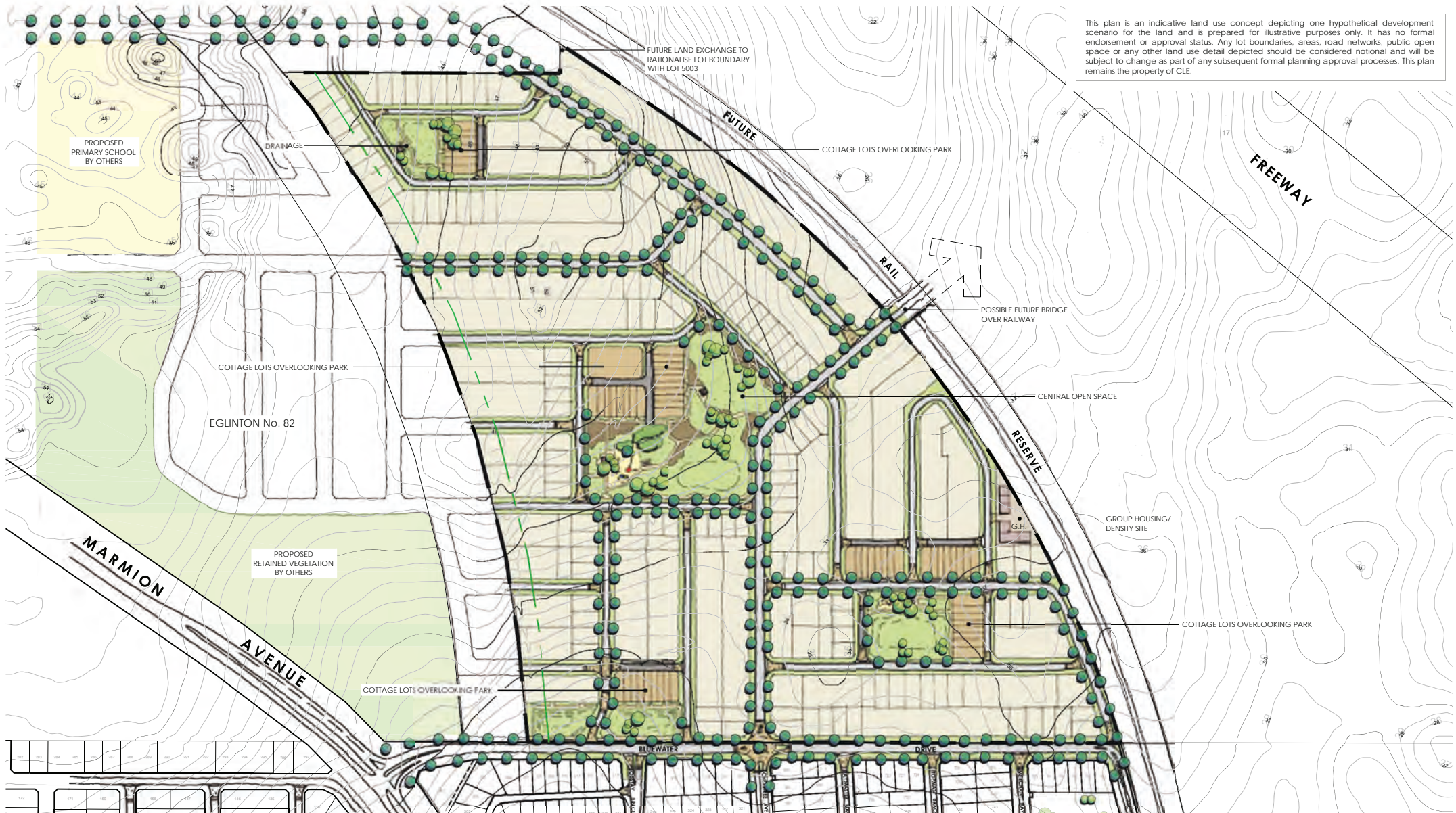
2.5 Cultural Heritage

The Department of Aboriginal Affairs Enquiry System lists no registered sites within or adjacent to the WPLSP. There are also no listed European sites of heritage significance located with the WPLSP area.

2.6 Noise Considerations

A Transportation Noise Assessment assessing the impacts of the future extension of the Joondalup passenger rail line along the eastern boundary of the site has been undertaken and is provided in Appendix 7. This has been prepared in accordance with State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Consideration in Land Use Planning ('SPP 5.4'). Given that the rail line being assessed is not yet constructed, the report utilises a computer programme (SoundPLAN 7.4) to model anticipated noise.

The report presents two options for addressing the requirements of SPP 5.4 via the construction of a masonry wall along the rail reserve boundary as well as the application of Quiet Design Packages where required. The two options for dealing with rail noise are discussed in Section 3.7 Noise Management of this report.



3.0 LAND USE AND SUBDIVISION REQUIREMENTS

3.1 Land Use

The WPLSP provides the framework for a robust, standalone urban development within the broader context of the Alkimos - Eglinton District Structure Plan (AEDSP) area. The plan provides a level of detail that builds upon and refines the principles of the AEDSP whilst also remaining flexible in recognition of more detailed stages of planning still to come.

The WPLSP Concept Plan has been prepared to demonstrate how development could occur based on the principles and requirements of the LSP (Figure 10: Concept Plan).

It is important to note that the Concept Plan represents only one way development could occur and that the design will be refined at the time of subdivision.

The key principles of the Concept Plan are as follows –

- Allow for the creation of a diverse range of high quality housing choices that appeal to a wide market segment.
- Deliver high quality open space areas and streetscapes.
- Deliver a permeable, interconnected road and path network.
- Provide direct and legible entry into the development via Marmion Avenue and Bluewater Drive.
- Provide an urban form that response to the local context.

- Create accessible and integrated multi-functional public open spaces that offer a range of active and passive recreational opportunities.
- Recognise existing natural features within public open space areas throughout the WPLSP area and balance these features with competing demands.
- Ensure an appropriate interface with the Railways Corridor is established, protecting the amenity of future residents.



LEGEND

LOCAL RESERVES

Public Open Space

ZONES

Residential (R30 - R60)

OTHER

Structure Plan Boundary

Railway

Neighbourhood Connector

* Conservation of vegetation within POS

Notes:

1. A road crossing (bridge) over the Railway corridor is not currently within the Public Transport Authority scope of works. Construction of the rail crossing (bridge) by the landowner should be undertaken in consultation with the Public Transport Authority. Widening of the Railway reserve to 45 metres is required to accommodate the rail crossing (bridge).
2. The area is identified as a habitat for the Carnaby's black cockatoo which is listed as an endangered species under the Environment Protection and Biodiversity Conservation Act 1999. Referral to the Federal Department of the Environment and Energy, in accordance with this Act may be required."
3. Public open space is indicative only and subject to change and refinement at subdivision stage.



Based on these key principles, the WPLSP provides a framework for the creation of:

- A total of approximately 460 lots with residential densities of R30, R40 and R60. Higher residential densities are focused around key areas of open space, while the balance of the WPLSP area shall comprise of more traditional medium density housing.
- Approximately 2.9 hectares of public open space ensuring opportunities for passive recreation, delivering key drainage objectives, as well as meeting the minimum 10% public open space requirement of Liveable Neighbourhoods.
- A permeable movement network that connects into existing road networks and provides for pedestrian and cycling infrastructure, and future public transport services.
- A managed interface with the Railways Corridor on the eastern periphery of the LSP via the construction of a noise wall to minimise impacts of rail noise on future residential development.

A Land Use Summary is included as Table 1, and should be read in conjunction with the Landscape Master Plan (Appendix 6), and the Public Open Space Schedule shown as Table 2.

Table 1 – Land Use Summary

Item	Data	Section number referenced within the Structure Plan Report
Total area covered by the structure plan	28 hectares	1.2.2
Area of each land use proposed		
- Residential	17.6 hectares	
- Road Reserve	7.5 hectares	
- Public Open Space Reserve	2.9 hectares	
Estimated Lot Yield	460 lots	
Estimated Number of Dwellings	460 dwellings	
Estimated Residential Density		
- dwellings per gross urban zoned hectare (as per Perth & Peel@3.5 million)	16.4 dwellings per gross hectare	
- dwellings per site hectare (as per Liveable Neighbourhoods)	27 dwellings per site hectare	3.2
Estimated Population	1288 people @ 2.8 people/household	
Amount of Public Open Space	2.7 hectares (total creditable POS) 2.36 hectares (unrestricted POS) 0.36 hectares (restricted POS)	3.3

3.2 Residential

The WPLSP provides for the delivery of a range of lot types, housing products and lifestyle options in a manner that satisfies state density targets.

The delivery of quality housing is a key objective of the WPLSP. Key to this is the delivery of housing that addresses and surveys public spaces, incorporation of solar passive design principles for private outdoor living areas and ensuing garages / carports are appropriately located. This will be implemented through the RMD provisions, as set out in Planning Bulletin 112/2015.

3.2.1 Dwelling Yields and Density Targets

- The WPLSP provides the framework to deliver a range of housing types and tenures to facilitate residential yields commensurate with the strategic and statutory planning framework, as well as the site's location within the broader district context.
- The WPLSP has the potential to yield 460 residential lots accommodating approximately 1288 people (at 2.8 people per household). Densities range from R30 to R60, based on the following principles –
- A base coding of R30 applies, providing opportunities to deliver a range of front loaded lots ranging in size from 300m² to 450m².
- Medium density R40 areas are typically located fronting areas of public open space and along neighbourhood connectors (where a higher level of amenity exists). This density coding provides the opportunity to deliver cottage

style housing (single or double storey, front or rear loaded) or for contemporary 'compact' lots that typically book end street blocks. Single lot sizes will range from 180m² to 300m².

- The R60 will be applied to areas adjacent to public open space. This coding provides opportunities for small cottage lots that can accommodate contemporary double storey residential development.
- The allocation of a density range from R30 to R60 applied to the Structure Plan provides flexibility for density allocation at subdivision with a clear set of criteria to ensure densities are sited appropriately. Given the site is only 28ha, allocating specific densities across the plan could result in unnecessary and time consuming structure plan modifications to simply make minor modifications to a R Code boundary.

The LSP has the potential to achieve 16.4 dwellings per gross urban hectare, meeting the 15 dwellings per gross urban zoned hectare density target set out in Perth & Peel@3.5 million. Similarly, the LSP achieves a target of approximately 27 dwellings per site hectare (being the pure residential area, excluding open space and roads) exceeding the density requirement of 22 dwellings per site hectare required by Liveable Neighbourhoods.

3.2.2 Lot / Dwelling Types

A diverse mix of lot and housing typologies will be achieved. There may be opportunities for the proponent to build out pockets of medium density housing to deliver a range of housing types and amenity.

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3.2.3 R-Code Variations

The City of Wanneroo's 'Medium Density Housing Standards (R-MD) 'Local Planning Policy (R-MD Codes LPP) sets out acceptable variations to the deemed-to-comply provisions of the R-Codes for the lots coded R30 to R60. The variations set out in the R-MD Codes LPP apply to the WPLSP and thereby constitute Acceptable Development within the WPLSP area.

This will avoid the need for LDP's over the majority of lots, improving efficiencies and minimising costs to the end user and to the local government.

LDP's will only be confined to following site specific considerations that may require detailed design responses:

- Lots abutting areas of public open space; and
- Lots affected by rail noise.

Lots abutting areas of Public Open Space

Liveable Neighbourhoods supports residential lots directly abutting open space under particular circumstances and where the functionality of the POS is not compromised, and where dwellings address the open space providing adequate visual surveillance.

Typically the interface to public open space will be via roads, however, in some instances direct lot frontage is an appropriate design response to provide greater product diversity, address amenity and increase surveillance of the public spaces.

To ensure these public open spaces are not compromised by such a design initiative subsequent subdivision design and engineering detail will ensure that visitor parking is provided along adjacent streets, and the adjacent residential lots are elevated where possible above the POS ground level to create a visible separation between the private and public realm.

Where lots interface with open space, LDP's will need to be prepared to control built form. These LDP's will address:

- Built form orientation;
- Minimum setbacks to the public open space;
- Major openings (other than bedrooms) to address open space; and,
- Permeable fencing to ensure constant surveillance.

Lots affected by Rail Noise

LDP's will be prepared for lots deemed to be affected by noise from the future extension of the passenger rail line along the eastern boundary of the WPLSP area.

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3.3 Public Open Space

The WPLSP establishes a framework for the delivery of public open space that can serve a variety of functions throughout the LSP area balancing active and passive recreational pursuits and delivering key drainage objectives.

A Landscape Master Plan including cross-sections has been prepared by landscape consultants Plan E to describe the intended function and design principles of each open space area (refer Appendix 6).

3.3.1 Description of Public Open Space

The WPLSP identifies four distinct areas of open space. The following provides a brief overview of each open space parcel within the WPLSP area.

POS 1 – Pocket Park

- Located on either side of one of the key north-south entry road into the WPLSP;
- Approximately 4000m² in area;
- To accommodate an entry statement / feature as well as terraced garden beds and formal pavement;
- Supports passive recreation;
- Supports 1:1, 1:5 and 1:100 events above ground.

POS 2 – Local Park

- Located in the south-east corner of the WPLSP;
- Approximately 5000m² in area;

- To accommodate a viewing area with play space;
- Supports both active and passive recreation;
- Supports 1:1, 1:5 and 1:100 events above ground.

POS 3 – Neighbourhood Park

- Centrally located and representing an important focal point for the WPLSP;
- Approximately 1.75ha in area;
- To accommodate a series of meandering footpaths connecting areas of active and passive recreation;
- Viewing nodes also to be provided at key locations;
- Active recreation and provision of significant play equipment an important feature;
- Retention of existing vegetation where possible and appropriate;
- Supports 1:1, 1:5 and 1:100 events above ground.

POS 4 – Pocket Park

- Located in north western corner of WPLSP;
- Approximately 2500m² in area;
- To accommodate terraced garden beds and turf area for passive and active recreation;
- Supports 1:1, 1:5 and 1:100 events above ground.

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Cross-sections for each of area of open space have also been prepared to demonstrate indicatively the way in which drainage, topography and landscaping can be accommodated within the open space areas. The cross-section applicable to POS 3 is provided at Figure 13.

3.3.2 Streetscapes

While not usually acknowledged as traditional public open space pursuant to Liveable Neighbourhoods, streetscapes make up an important component of the public realm, and the quality of landscaping within the key streets assists to deliver a true sense of place within new urban areas. Delivering quality streetscape is a key objective of the WPLSP.

The WPLSP the opportunity for a higher standard of landscaping along the central north-south neighbourhood connector where a wider boulevard style access street with landscaped verges will promote a sense of place on arrival as well as forming a key view corridor from the entry road at Bluewater Drive to the large central open space to the north.

A number of key local roads will also provide opportunities for a high level of streetscape design, and the detailed engineering and landscaping schedule of these keys streets will be determined in consultation with the City at subdivision stage.

Table 2: Public Open Space Schedule*(all areas are in hectares)*

Site Area			28.02
Less			
Bluewater Drive Widening	0.22		
Total		0.22	
Net Site Area			27.8
Deductions			
Total drainage area up to the 1:1 year event	0.20		
Total		0.20	
Gross Subdivisible Area			27.6
POS @ 10%		2.7	
Public Open Space Contribution			
Min 80% unrestricted POS	2.16		
Max 20% restricted POS	0.54		
Unrestricted Open Space ²			
POS 1	0.32 (86%)		
POS 2	0.32 (85%)		
POS 3	1.51 (91%)		
POS 4	0.20 (72%)		
Total Unrestricted POS		2.36	
Restricted Open Space ²			
POS 1	0.06 (14%)		
POS 2	0.13 (15%)		
POS 3	0.14 (9%)		
POS 4	0.03 (28%)		
Drainage area between 1:1 and 1:5 year events not exceeding 20% of total open space area		0.36	
Summary of POS			
Unrestricted POS Provided	2.36	86.8%	
Restricted POS Provided	0.36	13.2%	
Total Unrestricted & Restricted POS Provision			2.7
Total POS Provision as a % of Gross Subdivisible Area			10%

Notes:

1. The site area is based on the Lot 6 WPLSP (Plan 3109-52B-01)

2. In accordance with Liveable Neighbourhoods: the area subject to inundation more frequently than a one year average recurrence interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the net site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrence interval up to the five year recurrence interval is restricted open space up to 20%, the area greater than 20% is a deduction (not applicable in this case) (LN R26 & Table 11); areas for the detention of stormwater for a greater than five year average recurrence interval is within unrestricted open space (LN R30).

3.3.2 Public Open Space Provision and Schedule

Based on a gross subdivisible area of 27.8ha (WPLSP area minus widening of Bluewater Drive), the 10% open space requirement for the WPLSP area is 2.7ha. The WPLSP allows for the provision of approximately 2.9ha of gross public open space.

A public open space (POS) schedule calculated in accordance with the WAPC Liveable Neighbourhoods has been prepared for the WPLSP, refer Table 2. Once Liveable Neighbourhoods credits are applied, the open space provision is consistent with the requirements of WAPC policy and Liveable Neighbourhoods to provide 10% creditable public open space, refer Table 2, Liveable Neighbourhoods POS Schedule and Appendix 6. There will be a minimum 10% public open space provision over the entire WPLSP. Importantly the open space area within WPLSP meets active and passive recreation needs, as well as drainage requirements.

The following outlines the key aspects of public open space provision based on Liveable Neighbourhoods requirements –

- The WPLSP provides 2.9ha of gross open space, with all open space areas serving a shared drainage function, while not compromising the informal active and passive recreation uses.
- Liveable Neighbourhoods allows up to 2% of the 10% open space requirement to comprise of restricted use open space. The balance of restricted use open space becomes a deduction;
- Based on the requirements of Liveable Neighbourhoods, a maximum of 0.54ha can be creditable restricted use open space and a minimum of 2.16ha unrestricted open space;
- Approximately 0.20ha of open space will receive drainage from the 1 in 1 to 1 in 5 year drainage event in landscape infiltration basins and swales in accordance with water sensitive urban design principles. The 1 in 1 to 1 in 5 year event is treated as restricted use open space in accordance with Liveable Neighbourhoods.
- All other POS areas are unrestricted open space, providing a range of passive and active functions, as well as local amenity for future residents. The total unrestricted use open space is 2.36ha, while total creditable open space is 2.7ha (10%).

3.4 Water Management

A Local Water Management Strategy (LWMS) has been prepared for the site by Cossill and Webley Consulting Engineers to support the WPLSP. The Strategy has been prepared in accordance with Department of Water guidelines and is provided in Appendix 4.

In summary, the LWMS:

- Defines the principles and objectives for total water cycle management on the site;
- Describes the existing site characteristics, opportunities and constraints, and identifies the critical management issues;
- Discusses potential water sources to support development of the LSP area;
- Provides a recommended monitoring framework;
- Identifies issues to be addressed at subdivision stage via an Urban Water Management Plan (UWMP); and
- Outlines an Implementation Framework.

The LWMS provides the framework and parameters to guide detailed water planning (via an Urban Water Management Plan) to enable implementation of the development envisaged by the WPLSP in a sustainable manner in line with state and local government objectives and policies. The analysis contained within it has also informed the WPLSP design and POS allocation and layout to achieve integrated outcomes.

3.4.1 Stormwater Management

Section 6 of the LWMS outlines the Stormwater Management Strategy proposed for the WPLSP based on Better Urban Water Management principles and practices. This accords with the Department of Environment's Stormwater Management Manual and the City of Wanneroo's Water Management Strategy. The strategy seeks to maximise infiltration at source through the use of on-site soakwells, road side swales, tree wells, porous paving and open based drainage pits. The portion of the 1:1 year event not retained at source will be directed to POS. 1:5 year storm events will be transported to infiltration areas within POS via an appropriately sized pipe system whilst larger events up to and including 1:100 year events will be channelled overland. The sizing of basins to accommodate these events within each catchment has been calculated and incorporated into the POS planning with more detailed design to occur through the UWMP process. Building levels will be required to maintain appropriate freeboard (300-500mm) above the maximum storm event levels.

Water quality is proposed to be managed by application of a treatment train incorporating structural and non-structural controls including:

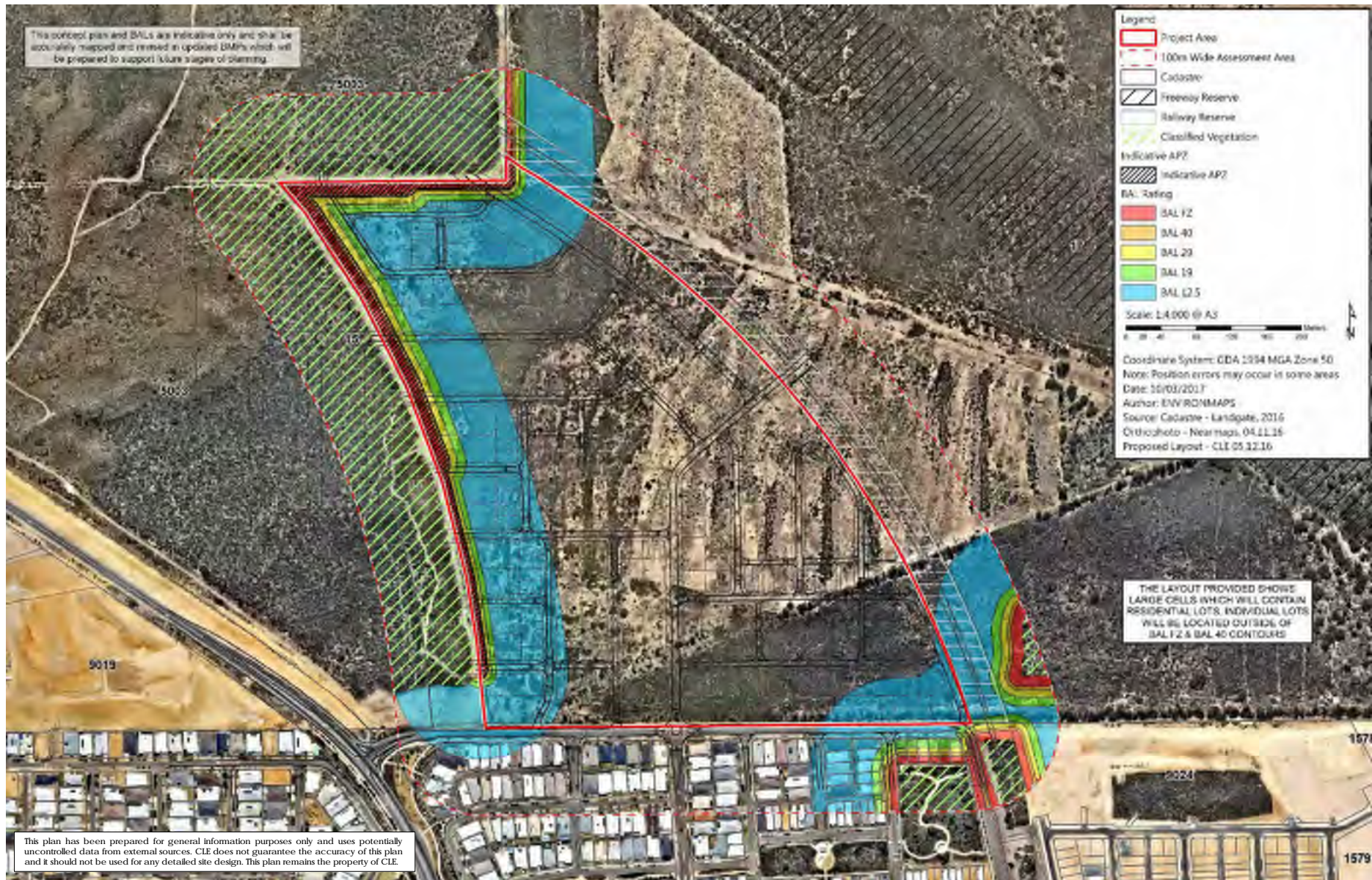
- At source controls;
- Transit measures including use of bio-retention swales at appropriate locations; and
- End of pipe measures including but not limited to soil amendment to reduce nutrient load.

3.4.2 Groundwater Management

Groundwater separation on the site is substantial in the order of 20m across the WPLSP area. In discussing groundwater management in the LWMS, Cossill & Webley note that “due to the depth to the groundwater, the proximity to the coast and the highly permeable in-situ soils, it is unlikely that the existing groundwater levels or quality will be affected by the proposed development” (Section 7, LWMS). Subsoil drainage is not required but a number of strategies are proposed to satisfy groundwater quality objectives including use of bio-retention swales, minimisation of turfed areas and promotion of use of soil amendment to improve the efficiency of fertilisers and retain phosphorous.

3.4.3 Post Development Monitoring and Implementation

The implementation of the LWMS will largely occur through the preparation and implementation of the more detailed Urban Water Management Plan to be prepared at subdivision stage. This will guide detailed design and subsequent construction of drainage infrastructure and implementation of management programs and initiatives. A monitoring program is also proposed within Section 9 of the LWMS to quantify post-development outcomes and impacts in line with the LWMS.



3.5 Bushfire Management

An assessment of the site's conditions and the ability for the WPLSP to comply with State Planning Policy 3.7 (SPP3.7) is provided in a Bushfire Management Plan prepared by Strategen (refer Appendix 3). The Bushfire Management Plan responds to existing and post-development site conditions and demonstrates how compliance with State Planning Policy 3.7 is achieved. It concludes that:

- The post development vegetation extent will be significantly less than exists currently and will result in the entire site being located within Moderate or Low bushfire hazard level areas;
- The method 1 procedure for calculating the Bushfire Attack Level (BAL) for the site has been applied with the BAL Contour Map reproduced at Figure 14. This illustrates that a BAL 12.5 will apply over of portion of the site abutting remnant vegetation outside of the site pending its potential removal as a result of subsequent development. This is flanked by very narrow bands of higher BAL rated area, the highest of which will need to be held back pending progression of planning and development on adjoining lots and / or modification to site condition. Adequate separation to remnant vegetation can be achieved within the WPLSP boundaries to avoid any development within the small areas classified above BAL 29 if this classification remains at the time of subdivision. Asset Protection Zones (APZs) in accordance with Acceptable Solution

2.1 of the Guidelines for Planning in Bushfire Prone Areas (version 1.1) can be accommodated between future lots and classified vegetation (exact location of APZs will be determined when the BMP is updated to support future planning approvals);

- Staged clearing of the site will be necessary to advance ahead of development in order to maintain appropriate hazard separation and APZs;
- Watersupply and a network of fire hydrants will be extended throughout the WPLSP area as part of development works;
- POS areas within the LSP will be maintained such that they are classified as Excluded vegetation under Clause 2.2.3.2 of AS3959-2009 by virtue of their size and/or management and fuel load;
- An update to the Bushfire Management Plan will be required to accompany subdivision applications for the site to refine the recommendations and BAL assessment reflective of detailed lot layout and current site conditions;
- Notifications on title of lots subject to BAL construction standards would be appropriate at the time of subdivision.

In summary, the BMP demonstrates compliance with the State Planning Policy for bushfire planning through application of routine requirements, management and design detail.

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3.6 Movement Network

A Transport Assessment has been prepared by GTA Consultants, refer Appendix 4. The Transport Assessment comprehensively addresses traffic and transport considerations for the WPLSP and demonstrates the proposed road hierarchy depicted on Local Structure Plan as well as the street layout shown on the development concept plan, can sufficiently accommodate the forecast traffic volumes.

This section provides a summary of the key elements of the Transport Assessment including details of the existing and proposed road networks, the road hierarchy and traffic generation. The following section also provides an overview of public transport, cyclist and pedestrian network provision.

3.6.1 Existing Movement Network

The characteristics of the movement network surrounding the WPLSP is as follows:

Marmion Avenue is a District Distributor 'A' two lane, two-way undivided road running in a north-south direction to the west of the WPLSP area. The road plays a strategic role in the movement of traffic in the northwest development corridor and is planned to become a future four-lane divided Integrator 'A' road. Marmion Avenue intersects Bluewater Drive which provides the current primary access to the WPLSP area.

Bluewater Drive is an east-west Neighbourhood Connector extending along the southern boundary of the WPLSP area. It is a two lane, two-way undivided road that intersects with Marmion Avenue and is proposed to be widened from a 16m to 20m reserve as part of the WPLSP.

Chesstree Avenue is a Neighbourhood Connector running north-south within the Shorehaven Estate, south of the WPLSP area, and provides a link to Alkimos Drive. It is proposed to continue Chesstree Avenue within the WPLSP as a key north-south road of Neighbourhood Connector standard. Chesstree Avenue intersects Bluewater Drive which provides the current primary access to the WPLSP area.

Maroon Avenue is a Neighbourhood Connector running north-south road within the Shorehaven Estate and will provide a secondary link between the WPLSP area and Alkimos Drive.

Mitchell Freeway is planned to form the major north-south distributor in the north west corridor, with the freeway located to the east of the WPLSP area. The proposed freeway interchange will be located approximately 1km south at Alkimos Drive, with access to Alkimos Drive provided via Chesstree Avenue, Maroon Avenue and Marmion Avenue.

3.6.2 Proposed Movement Network

Road Network

The road network follows a logical and orderly hierarchy which has been defined by predicted traffic volumes, road function and design characteristics, the District Structure Plan and adjacent local structure plans. The WPLSP area is bound to the east by the rail reserve; therefore movement is generally focussed to the north, south and west. The provision of infrastructure within the WPLSP has been provided as a connected road network to ensure legible district wide connections are maintained to complement the wider DSP network planning. There will be a limited number of 'through' trips in the WPLSP area with the majority of trips being generated or terminating within the site.

The WPLSP has frontage to Bluewater Drive, a Neighbourhood Connector which provides direct access to the site. An extension of the intersection at Bluewater Drive and Chestree Avenue is proposed to form a four way roundabout, consistent with previous planning undertaken for the Shorehaven Estate. The remainder of intersections within WPLSP are planned as priority controlled intersections adequate to accommodate the expected traffic demands. All street and intersection spacing will be provided in accordance with the minimum spacing's set out in Liveable Neighbourhoods.

Road reserves and street cross sections are provided in accordance with the standards set out in Liveable Neighbourhoods as follows:

- Neighbourhood Connector = 19.4m – 24.4m.

- Access Street D = 14.2m – 15m
- Laneway = 6m – 6.4m

A total of thirteen access points are provided for connectivity to surrounding existing and proposed development to ensure that adjoining road networks are not compromised and remain legible. Of the thirteen access points, seven are considered to be key points to the external network that provide access to Marmion Avenue, Alkimos Drive and other key external road links through neighbouring Structure Plans.

Pedestrian and Cycle Networks

The WPLSP facilitates safe and convenient pedestrian and cycle movement through a combination of permeable in-direct through vehicle routes, short street lengths and a detailed network of footpaths and shared use paths as detailed in the Transport Assessment.

The key principles for determining the hierarchy of pedestrian and cycling facilities is as follows:

- A minimum of a shared path on all Neighbourhood Connector type roads, with on road cycle lanes provide where relevant and connecting to existing on road cycle lanes; and
- A minimum of one footpath on all access roads with a path on both sides for key roads.

These principles and their application will be confirmed and refined as part of further planning at the detailed design stages.

Public Transport

The WPSLP is planned to be serviced by the future extension of the railway line through Alkimos and Eglinton to Yanchep. The DSP proposes railway stations at Eglinton, 1.5km north of the LSP and at the Alkimos City Centre, approximately 2.5km to the south. The railway currently terminates 4.5km south of the WPLSP at Butler.

Locally, operating bus services in the vicinity of the WPLSP on Marmion Avenue (route 490) will continue, with further stops added as the DSP area is developed and demand grows. The aforementioned walking network provides good access links to Marmion Avenue to access these services.

3.6.3 Assessment of Traffic Impact

The WPLSP road network has been guided by the DSP, adjoining LSP's and Liveable Neighbourhoods. The following section summarises traffic impacts for the existing and proposed network and demonstrates that the the expected traffic volumes can be accommodated within the planned road network.

Traffic modelling has been based on the following land use assumption:

- 470 residential lots including cottage, traditional and grouped housing sites.
- The additional traffic associated with the WPLSP on key roads for access are as follows:
- Bluewater Drive – 1,560 to 3,125 vpd

- Chesstree Avenue (south of WPLSP) – 3,500 vpd
- Chesstree Avenue (within WPLSP) – 1,950 to 2,925 vpd

A trip generation ratio of 8 trips per day and 0.8 trips per peak hour per dwelling has been applied, consistent with the WAPC Guidelines. The traffic generation expected from the 470 residential lots is 3,760 vehicle trips per day which will be distributed through the seven key intersections for external access and egress. The majority of vehicle movements (74%) will be through the southern portion of the site to gain access to Marmion Avenue and Alkimos Drive via Bluewater Drive. The remainder of vehicle movements are reasonably evenly distributed through local access streets into adjoining Structure Plans local road networks. Vehicle movements on the internal and external street networks do not exceed the maximum capacities set out in Liveable Neighbourhoods.

A bridge connecting the WPLSP to the land to the east area has been shown. This area will also be serviced by the planned road network established in the DSP, which will provide opportunities for direct access from this eastern land to the strategic road network (e.g. Alkimos Drive). The bridge is therefore expected to service local traffic from the development area only. Approximately 30% of the 3,600 vehicle trips per day expected from the eastern development area will travel through the WPLSP. Traffic generated by this area and other existing and planned road networks have been included in the Traffic Impact Assessment and exercise to determine the road hierarchy, and are adequately accommodated within road network proposed.

This plan has been prepared for general information purposes only and uses potentially uncontrolled data from external sources. CLE does not guarantee the accuracy of this plan and it should not be used for any detailed site design. This plan remains the property of CLE.



3.7 Noise Management

A Transportation Noise Assessment has been prepared by Lloyd George Acoustics in support of the WPLSP. This document assesses the impacts of the future extension of the Joondalup passenger rail line along the eastern boundary of the site and is provided in Appendix 7. The Transportation Noise Assessment has been prepared in accordance with State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Consideration in Land Use Planning ('SPP 5.4'). Given that the rail line being assessed is not yet constructed, the report utilises a computer programme (SoundPLAN 7.4) to model anticipated noise.

The assessment concludes that there a number of options for noise mitigation that satisfy the requirements of SPP 5.4. These are summarised as follows:

- Option 1 - Construction of a noise wall ranging in height between 2.0m and 2.4m along the majority of the rail reserve boundary with a small break in the wall along the southern portion of the rail reserve immediately adjoining a road. In this scenario single storey development achieves noise levels below the target criteria. Facade protection via Quiet House Design packages are only required for upper floors of dwellings (refer Figure 15).

- Option 2 – Construction of a noise wall ranging in height between 2.0m and 2.4m where the rail reserve immediately adjoins development only (a road does not separate the rail reserve and the lots). In this scenario Quiet House Design packages are required for some lots and applicable to both ground and upper floors. Option 2 is demonstrated in the Transportation Noise Assessment.

Whilst not a requirement of SPP 5.4 it is understood that the PTA typically use a ballast matting in constructing rail lines through residential areas to limit vibration transfer.

Indicative cross sections demonstrating the interface to the rail have been prepared by Cossill & Webley, refer Appendix 9.

3.8 Educational Facilities

The WPLSP is well serviced by existing and planned education facilities as established by the AEDSP. THE AEDSP has located each school so as to be centrally located within its surrounding catchment.

Immediately to the west of the WPLSP within the Eglinton LSP (ELSP) a 4.0ha primary school has been designated. The WPLSP provides an important catchment to this planned primary school and future subdivision plans will provide direct access to the future school, as demonstrated by the Concept Plan.

Pre-lodgement liaison has been undertaken with the Department of Education (DoE) regarding the details and timing for lodgement of the WPLSP and the DoE is supportive of the proposal.

3.9 Activity Centre

The AEDSP provides a network of planned activity centres to service the retail, commercial and service needs of the residential community. This includes a Neighbourhood Centre 430m south of the LSP area and a further Neighbourhood Centre on Marmion Avenue approximately 620m west of the northern boundary of the LSP area. These provide for ready access to daily goods and services. The Alkimos Secondary Activity Centre is located approximately 1.1km south of the WPLSP area whilst the Eglinton District Centre is planned 900m north of it, catering for higher order services and amenities. Collectively these centres are expected to service the majority of commercial needs of the LSP community and accommodate recreational and community facilities also. The Alkimos North Coastal Village immediately west of the LSP area will provide a focus for more leisure based activities.

3.10 Employment

Employment planning for the DSP area considered both the employment generated through the Activity Centres planned for the area, within schools, and within Service Commercial area immediately east of the LSP area. The LSP area focuses on residential development within which work-from-home opportunities will exist.

It is understood that the AEDSP is currently being reviewed by the City of Wanneroo. This review is critical given the shift in employment trends and the role of employment areas since the preparation of the DSP. Key findings of the preliminary analysis to inform local structure planning for balance of Lot 6 and in particular land shown as Service Commercial in DSP, are as follows –

- The AEDSP is delivering higher employment than envisaged at 75% (AEDSP target of 60%); and
- There is a change in composition of employment towards greater concentration within defined activity centres in response to growth of large format retailing as well as the role of technology in shaping future employment land use requirements.

3.11 Infrastructure Coordination, Servicing and Staging

Provision of physical infrastructure necessary to deliver the LSP has been a critical consideration in the planning of the project. A review of key issues and items has been undertaken by Cossill and Webley consulting engineers which concluded that the land is capable of accommodating the development proposed by the LSP with a logical extension of infrastructure. The Engineering Report is provided at Appendix 8. The following summarises key conclusions from the report:

3.11.1 Earthworks Strategy

Siteworks are expected to involve clearing of the urban portions of the site (excluding POS areas in which vegetation has been identified for retention) and earthworking ground levels to accommodate future development. This is likely to involve the terracing of lots to enable retention of the key topographic features / basic landform whilst still complying with engineering design requirements and specifications, and the lot arrangements necessary to accommodate planned urban densities and minimise site works costs for subsequent lot purchasers. This approach has been successfully utilised throughout the north-west corridor.

An investigation of Karst risk has been undertaken by CMW Geosciences to confirm the suitability of the site for development, the likelihood of karst presence, and appropriate responses to this. This has identified a strategy to mitigate risk including maintenance of minimum fill and further geotechnical investigations upon completion.

3.11.2 Sewer

The site falls within the Water Corporation's Alkimos Sewer District. Water Corporation indicate that the site will be serviced by connection to the existing reticulation network within Bluewater Drive to the south, which gravitates to the Alkimos Waste Water Pumping Station (No. 59) to the Alkimos Wastewater Treatment Plant south of the site.

3.11.3 Water Supply

A Water Corporation DN700 trunk main has been installed along Marmion Avenue to Shorehaven Boulevard providing for extension of water reticulation to the site. A DN200 stub from this extends to the southern boundary of the site, providing a logical connection for initial stages. Water Corporation is progressing long term distribution network planning for additional higher order trunk lines through the district to support the continued growth of the DSP area. The balance of the trunk main network will be progressively expanded by Water Corporation or through Developer Constructed Works under a pre-funding agreement.

The site (and majority of the area) is within a ground water source area identified by Water Corporation with a superficial aquifer bore (well head EG60) proposed on the south-west boundary. This will restrict the placement of particular land uses (such as petrol stations) within a 300m buffer of the well head. This is accommodated within the LSP whilst more detailed planning at subdivision stage will confirm the precise location, land and operational requirements for the bore.

3.11.4 Power

Power supply is available from the Yanchep Zone Subzone at the intersection of Romeo Road and Wanneroo Road. Planning is in train to supplement this supply source through the construction of the Eglinton Zone Substation however Western Power have indicated that this is unlikely to be required for the next 10 years. Additional reinforcement of the existing network may be required however this will be determined at more detailed design. HV feeds, switch stations and transformers will be required throughout Lot 6 to meet the site's internal requirements in accordance with standard requirements.

3.11.5 Gas

Existing high pressure gas infrastructure has recently been extended up Marmion Avenue to Yanchep by Atco Gas. This has been designed to service the development corridor including the Alkimos Eglinton DSP area and, hence, the LSP area. Gas reticulation through the new estate will be supplied and funded by Atco Gas for concurrent installation with other services.

3.11.6 Telecommunications

The site is within the National Broadband Network (NBN)'s fixed line footprint and hence will be serviced under that agency's roll-out scheme for optic fibre. The developer will be responsible for installing pit and pipe infrastructure with NBN providing the fibre itself. Subsequent broad band services can be provided by either NBN or an alternative service provider, enabling access for all lots to a modern telecommunications network.

3.11.7 Development Staging

The staging of the development will be strongly influenced by market forces. Whilst conceptual staging is still being refined, it is likely that initial stages of the development will commence in the southwest corner of the site abutting Bluewater Drive, where utilities are already available in the immediate vicinity. Subsequent stages are likely to extend north then towards the eastern side.

3.12 Development Contributions

Developer Contributions will be levied as a condition of subdivision under the provisions of the City of Wanneroo's District Planning Scheme No. 2 Development Contribution Area No.1 provisions. The contributions cater for the provision of range of district recreational and community facilities as outlined in Schedule 15 of the City's District Planning Scheme. The contributions are calculated based on m² rate rather than number of lots created.