

STRUCTURE PLAN

PORTION OF LOT 16
MCDONALD ROAD,
BALDIVIS

SEPTEMBER 2016

ROCK/2016/01

Document Control

PG 2016/716-059 Baldivis, 16 McDonald Road, Planning Tender/7 Final Documents/1 Lodged/716-059 Structure Plan 12.02.2016.indd						
Issue	Date	Status	Prepared by		Approved by	
			Name	Initials	Name	Initials
1	08.02.16	Draft	Alison Healey		Gary McCullough	
2	12.02.16	Final	Alison Healey		Gary McCullough	
3	16.09.16	Final for WAPC	Alison Healey		Matt Raymond	
4	28.11.16	Amd Final for WAPC	Alison Healey		Matt Raymond	

This report has been prepared for the exclusive use of the Client, in accordance with the agreement between the Client and TPG ('Agreement').

TPG accepts no liability or responsibility whatsoever in respect of any use of or reliance upon this report by any person who is not a party to the Agreement or an intended recipient.

In particular, it should be noted that this report is a qualitative assessment only, based on the scope and timing of services defined by the Client and is based on information supplied by the Client and its agents.

TPG cannot be held accountable for information supplied by others and relied upon by TPG.

Copyright and any other Intellectual Property arising from the report and the provision of the services in accordance with the Agreement belongs exclusively to TPG unless otherwise agreed and may not be reproduced or disclosed to any person other than the Client without the express written authority of TPG.

Our reports are printed on:



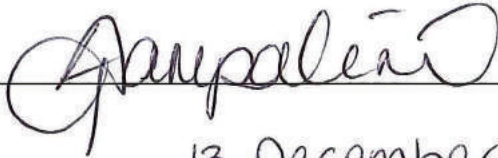
This structure plan is prepared under the provisions of the City of Rockingham Town Planning Scheme No.2

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: 13 December 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

13 December 2016

Date

Date of Expiry: 13 December 2026

Table of Amendments

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

Executive Summary

Purpose

This Structure Plan has been prepared under the provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the City of Rockingham Town Planning Scheme No. 2 (TPS 2), to guide the zoning and development of a portion of Lot 16 McDonald Road, Baldivis within the City of Rockingham municipality.

The Structure Plan has been prepared on behalf of Defence Housing Australia by the following specialist consulting team:

- TPG Town Planning, Urban Design and Heritage – town planning, urban design
- Emerge Associates – environmental, local water management, bushfire management
- Pritchard Francis – infrastructure servicing
- Shawmac – traffic assessment
- Galt – geotechnical
- Fyfe - survey

Project Overview

This Structure Plan provides a guiding planning framework to facilitate the zoning and development of approximately 1.8 hectares of land in the north Baldivis area for residential purposes. The Structure Plan ensures that development will be undertaken in an integrated and orderly manner and is anticipated to provide 29 residential lots.

Item	Data	Structure Plan Ref (Section No.)
Total area covered by the structure plan	1.5803 hectares	Part Two – Section 1.2
Area of each land use proposed:		Part Two – Section 3
Zones	1.1841 hectares	
• Residential		
Reserves	0.3962 hectares	
• Road Reserves		
Total estimated lot yield	29 lots	Part Two – Section 3.3
Estimated number of dwellings	29 dwellings	
Estimated population	70 people @ 2.4 people/household	
Estimated dwellings per gross hectare of Urban zoned land	18 dwellings per gross hectare of Urban zoned land	
Estimated residential site density	24 dwellings per residential site hectare	
Public Open Space	0 hectares	Part Two – Section 3.5

List of Plans, Figures and Appendices

Plans

Plan 1 – Portion of Lot 16 McDonald Road, Baldivis Structure Plan

Figures

Figure 1 – Location Plan

Figure 2 – Aerial Photograph

Figure 3 – Extract of Metropolitan Region Scheme

Figure 4 – Extract of City of Rockingham Town Planning Scheme No. 2

Figure 5 – Baldivis (North) District Structure Plan

Figure 6 – Indicative Bushfire Attack Levels

Figure 7 – Subdivision Concept Plan

Figure 8 – Internal Road Hierarchy

Figure 9 – Road Cross Sections

Appendices

Appendix 1 – Certificate of Title

Appendix 2 – Ministerial Statement No. 580

Appendix 3 – Geotechnical and Preliminary Environmental Study

Appendix 4 – Environmental Assessment and Management Strategy

Appendix 5 – Bushfire Management Plan

Appendix 6 – Infrastructure Servicing Report

Appendix 7 – Transport Assessment

Appendix 8 – Local Water Management Strategy

Contents

Implementation	1	Technical Studies Appendices	31
1. Structure Plan Area	1	Abbreviations	31
2. Operation	1	Appendix 1	33
3. Staging	1	Certificate of Title	33
4. Subdivision and Development Requirements	1	Appendix 2	35
5. Local Development Plans	1	Ministerial Statement No. 580	35
6. Other Requirements	1	Appendix 3	37
7. Additional Information	2	Geotechnical and Preliminary Environmental Study	37
1. Planning Background	7	Appendix 4	39
1.1 Introduction and Purpose	7	Environmental Assessment and Management Strategy	39
1.2 Land Description	7	Appendix 5	41
1.3 Planning Framework	7	Bushfire Management Plan	41
2. Site Conditions and Constraints	19	Appendix 6	43
2.1 Landform and Soils	19	Infrastructure Servicing Report	43
2.2 Biodiversity and Natural Assets	19	Appendix 7	45
2.3 Hydrology	20	Traffic Assessment	45
2.4 Historical Land Uses and Potential Contamination	20	Appendix 8	47
2.5 Surrounding Land Uses	20	Local Water Management Strategy	47
2.6 Bushfire Hazard	21		
2.7 Infrastructure Servicing and Utilities	21		
3. Structure Plan	25		
3.1 Context	25		
3.2 Interface with Surrounding Land	25		
3.3 Residential Densities and Dwelling Forecasts	25		
3.4 Movement Network	25		
3.5 Public Open Space	26		
3.6 Local Water Management Strategy	30		
3.7 Basic Liveable Neighbourhoods Assessment	30		

This page has been left blank intentionally.



PART ONE - IMPLEMENTATION

This page has been left blank intentionally.

Implementation

1. Structure Plan Area

This Structure Plan applies to a portion of Lot 16 McDonald Road, Baldivis, being the land contained within the inner edge of the line denoting the structure plan boundary on the Structure Plan (Plan 1). This Structure Plan is identified as 'Portion of Lot 16 McDonald Road, Baldivis Structure Plan'.

2. Operation

The date this Structure Plan comes into effect is the date this Structure Plan is approved by the Western Australian Planning Commission (WAPC).

3. Staging

Staging does not apply to this Structure Plan.

4. Subdivision and Development Requirements

Element	Requirement
4.1 Land Use Zones and Reserves	(a) The Zones and Reserves of the Structure Plan area are shown on Plan 1. (b) Land use permissibility within the Structure Plan area shall be in accordance with the corresponding Zone under TPS 2..
4.2 Residential Densities	(a) Subdivision and development within the Structure Plan area is to be in accordance with the nominated R25 density code shown on Plan 1.
4.3 Bushfire Protection	(a) This Structure Plan is supported by a Bushfire Hazard Assessment and Bushfire Management Plan (BMP) contained within Appendix 5.
4.4 Movement Network	(a) The movement network within the Structure Plan area is to be provided generally in accordance with Plan 1. (b) The McDonald Road closure is to be progressed generally in accordance with Plan 1.

Element	Requirement
4.5 Notifications of Title	(a) In respect of subdivision of the land, the City of Rockingham shall recommend to the WAPC that a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate(s) of Title to advise the following: i). That a BMP exists for lots deemed to be affected by a recognised bushfire hazard, as identified within the BMP contained within Appendix 5.
4.6 Public Open Space	Subject to the agreement of the WAPC and the City of Rockingham, a minimum of 10 percent public open space is to be provided by way of a payment of money-in-lieu of land in accordance with the relevant provision of the <i>Planning and Development Act 2005</i> .

5. Local Development Plans

Local Development Plan(s) (LDP) are required to be prepared prior to development approval for lots comprising one or more of the following attributes:

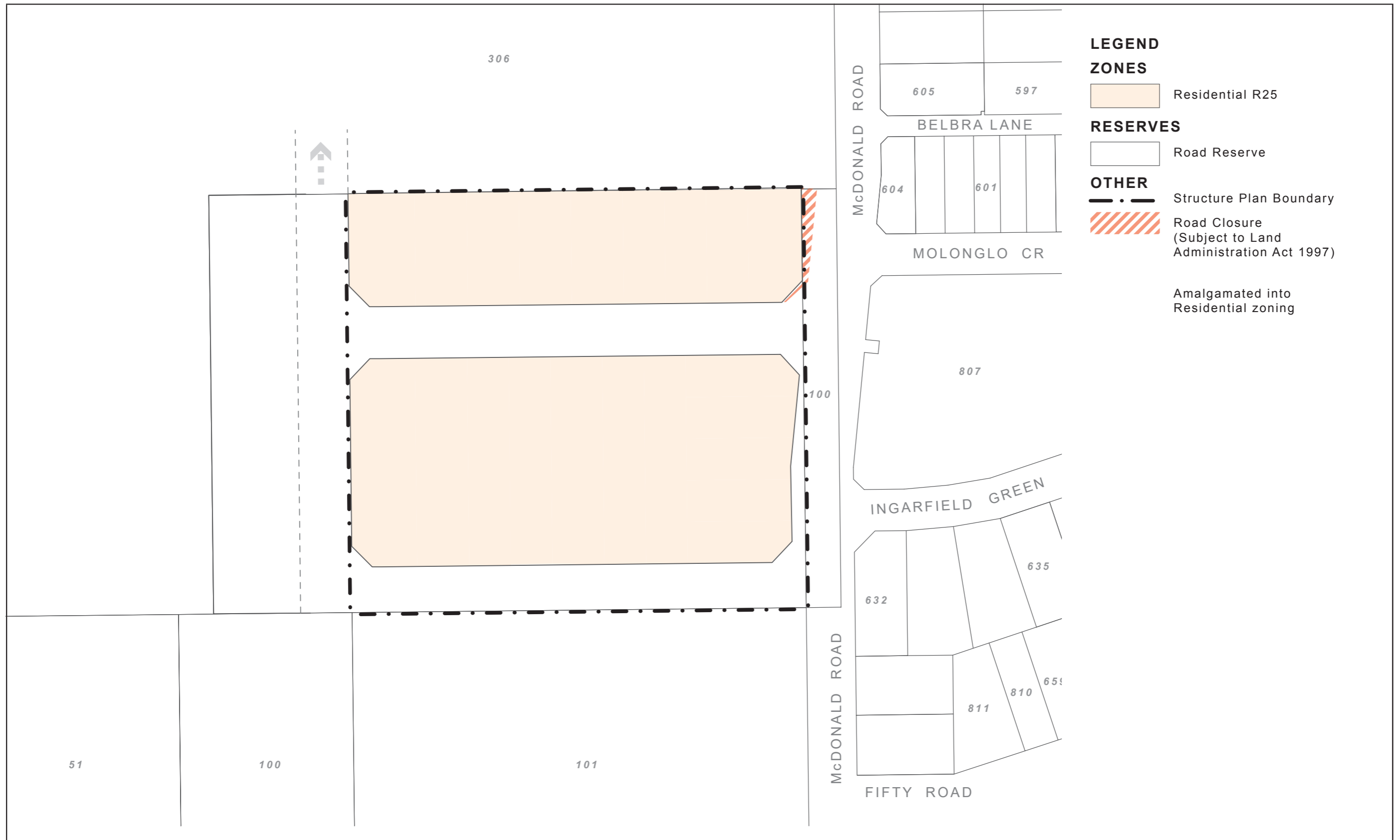
- Lots with a side boundary abutting McDonald Road. LDP(s) should prohibit vehicular access onto McDonald Road; and/or
- Lots deemed to be affected by a recognised bushfire hazard, as identified spatially in Figure 13 of the accompanying BMP, contained within Appendix 5. LDP(s) should prescribe an appropriate Asset Protection Zone and associated dwelling setbacks to street frontages and/or lot boundaries, and any other matters considered necessary to mitigate bushfire risk in accordance with the BMP contained within Appendix 5.

6. Other Requirements

The Structure Plan is subject to the City of Rockingham Development Contribution Area No. 2. The developer is to make satisfactory arrangements with the City of Rockingham to provide proportional contributions towards those items of development infrastructure defined in Schedule No. 12 of the TPS 2.

7. Additional Information

Additional Information	Approval Stage	Consultation Required
Urban Water Management Plan	Subdivision	City of Rockingham
Bushfire Attack Level Assessment	Development	City of Rockingham



This page has been left blank intentionally.



PART TWO – EXPLANATORY SECTION AND TECHNICAL APPENDICES

This page has been left blank intentionally.

1. Planning Background

1.1 Introduction and Purpose

This Structure Plan provides the basis for zoning (including residential density) and development of a portion of Lot 16 McDonald Road, Baldivis zoned 'Urban' under the Metropolitan Region Scheme (MRS) and 'Development' under the City of Rockingham Town Planning Scheme No.2 (TPS 2) (the subject site). The Structure Plan identifies the general pattern of development by identifying movement networks and residential densities.

Part Two has been prepared in accordance with the Western Australian Planning Commission's (WAPC's) Structure Plan Framework (August 2015).

1.2 Land Description

1.2.1 Location

The Structure Plan area is located approximately 38 kilometres south of Perth City and 3 kilometres north of the Baldivis Town Centre. The subject site is positioned generally to the east of a ridgeline that separates it from Mandurah Road and Lake Cooloongup.

The subject site is bound by McDonald Road to the east, privately owned allotments to the south and west and the draft Portion of Lot 306 McDonald Road, Baldivis Structure Plan to the north.

Refer to Figure 1 – Location Plan

1.2.2 Area and Land Use

Lot 16 has an area of approximately 2 hectares and a frontage to McDonald Road in the order of 120m, however the Structure Plan covers approximately 1.58 hectares being the portion of Lot 16 zoned 'Urban' under the Metropolitan Region Scheme (refer to Section 1.3.1.1 of this report). The subject site currently comprises two dwellings and numerous outbuildings. Historical aerial photographs indicate that the site may have previously

been used as orchards, developed with the existing southern dwelling in the 1960s. The existing northern single dwelling was established on the subject site in 2007.

Refer to Figure 2 – Aerial Photograph

1.2.3 Legal Description and Ownership

The land subject of this application is described as a portion of Lot 16 on Diagram 37055. The particulars of the Certificate of Title are summarised in Table 1:

Table 1 – Particulars of Certificate of Title

Lot	Diagram	Volume/ Folio	Area	Registered Owner
Pt 16	37055	2827/169	2.0639ha	Defence Housing Australia

Refer to Appendix 1 – Certificate of Title

1.3 Planning Framework

1.3.1 Zonings and Reservations

1.3.1.1 Metropolitan Region Scheme

Under the provisions of the MRS, the Structure Plan area is currently zoned 'Urban'. A 'Rural' zone adjoins the Structure Plan area to the west, and forms the remainder of Lot 16. There are no regional reservations that affect the Structure Plan area.

Refer to Figure 3 – Extract of Metropolitan Region Scheme

Figure 1. Location Plan

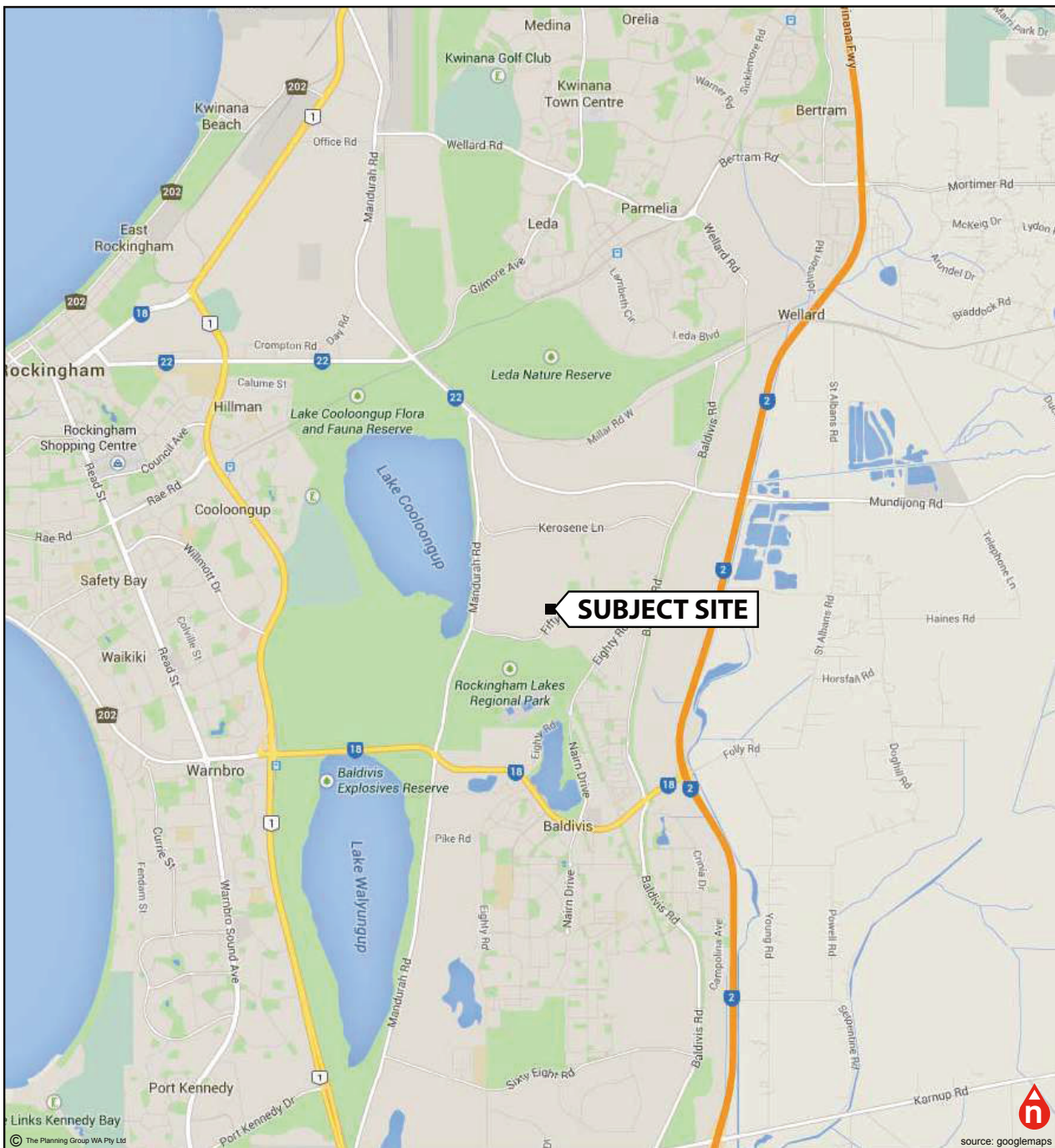
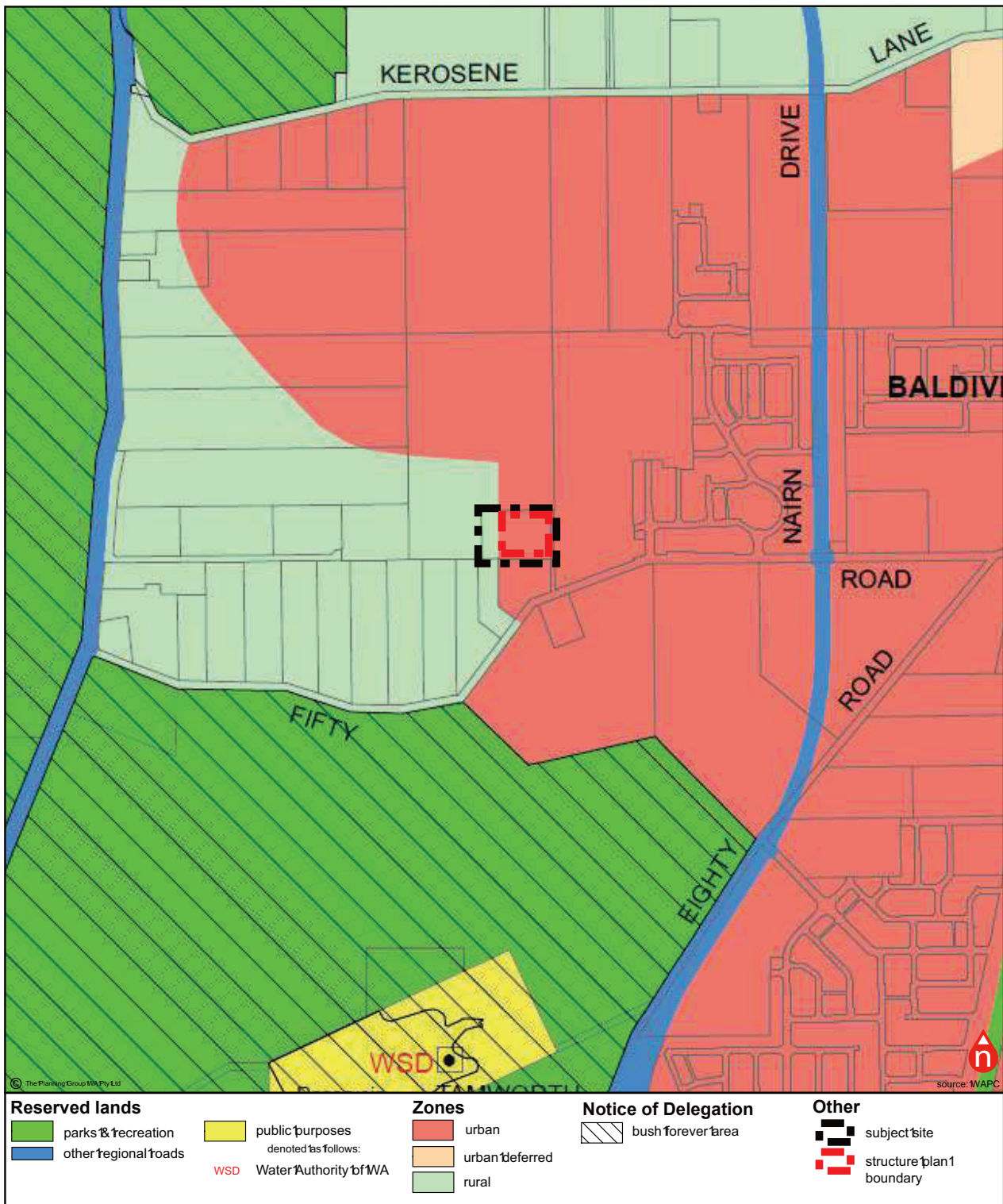


Figure 2. Aerial Photograph



Figure 3. Extract of Metropolitan Region Scheme



1.3.1.2 City of Rockingham Town Planning Scheme No. 2

Under the provisions of the City of Rockingham's TPS 2, the Structure Plan area is currently zoned 'Development' and identified within 'Development Area No. 9'. According to TPS 2, the purpose of the 'Development' zone is to:

- (a) identify areas requiring comprehensive planning prior to subdivision and development.
- (b) coordinate subdivision, land use and development in areas requiring comprehensive planning.

Pursuant to clause 4.2.4 of TPS 2 and the *Planning and Development (Local Planning Schemes) Regulations 2015*, Schedule 2, Part 4, subdivision and development of land that is zoned 'Development' under TPS 2 is to be generally in accordance with an approved Structure Plan.

The Structure Plan area is also located within 'Environmental Conditions (Area) No. 2'. Schedule 8 of TPS 2 contains the environmental conditions set by the Minister for the Environment as conditions of Amendment 300 to the City's then TPS 1. The conditions require a number of environmental management plans to be prepared (these matters are addressed in Section 1.3.5 and Section 2 of this report).

The subject site is also located within the catchment area of Development Contribution Area No. 2 (DCA2). DCA2 seeks to provide for the equitable sharing of the costs of community infrastructure and administrative costs between landowners. Cost contributions are required as a result of subdivision or development of land within the DCA2 area. The calculation of the cost contribution is provided within Schedule 12 of TPS 2 and is based on dwelling yields.

The Structure Plan proposes the subject site be zoned 'Residential' under TPS 2. All subdivision, development and land use is to be in accordance with the provisions of the Residential zone under TPS 2. A scheme amendment to TPS 2 will eventually be required to 'normalise' this Structure Plan (i.e. transfer the relevant zonings and R-Codes of the Structure Plan into TPS 2).

Refer to Figure 4 – Extract of City of Rockingham Town Planning Scheme No. 2

1.3.2 Regional and Sub-regional Structure Plans

1.3.2.1 Baldivis (North) District Structure Plan

The Baldivis (North) District Structure Plan (DSP) was endorsed by the WAPC in August 2000 and was last modified in September 2006. The DSP guides the preparation of future, more detailed (local) structure plans by setting out broad land uses, open space and road networks. The Structure Plan area is located within 'Precinct 2' of the DSP. The DSP has been given due regard in the preparation of this Structure Plan.

Refer to Figure 5 - Baldivis (North) District Structure Plan (as amended)

1.3.3 Planning Strategies

1.3.3.1 Directions 2031 and Beyond

Directions 2031 and Beyond (Directions 2031) is a spatial planning framework; a high level strategic plan that establishes a vision for the future growth of the Perth and Peel region. It provides a framework to guide the detailed planning and delivery of housing, infrastructure and services necessary to accommodate that growth.

The subject site is located within the 'South Metropolitan Peel Sub-region' which by 2031, is anticipated to reach a total population of 278,000 – a growth of 70,000 people and requiring an additional 41,000 dwellings. The Structure Plan assists in delivering new dwellings to reach this target.

1.3.3.2 Outer Metropolitan Perth and Peel Sub-regional Strategy

The Sub-regional strategies provide a framework for delivering the objectives of Directions 2031. The Structure Plan area is identified as 'Urban Zoned Undeveloped' under the Outer Metropolitan Perth and Peel Sub-regional Strategy as depicted on the South-west Sub-regional Spatial Framework Map. The wider north Baldivis area is projected to yield 3,900+ dwellings by 2031 based on 15 dwellings per gross urban zoned hectare. This Structure Plan aims to achieve approximately 18 dwellings per gross hectare and therefore meets the target set under Directions 2031 and the Sub-regional Strategy.

Figure 4. Extract of City of Rockingham Town Planning Scheme No. 2

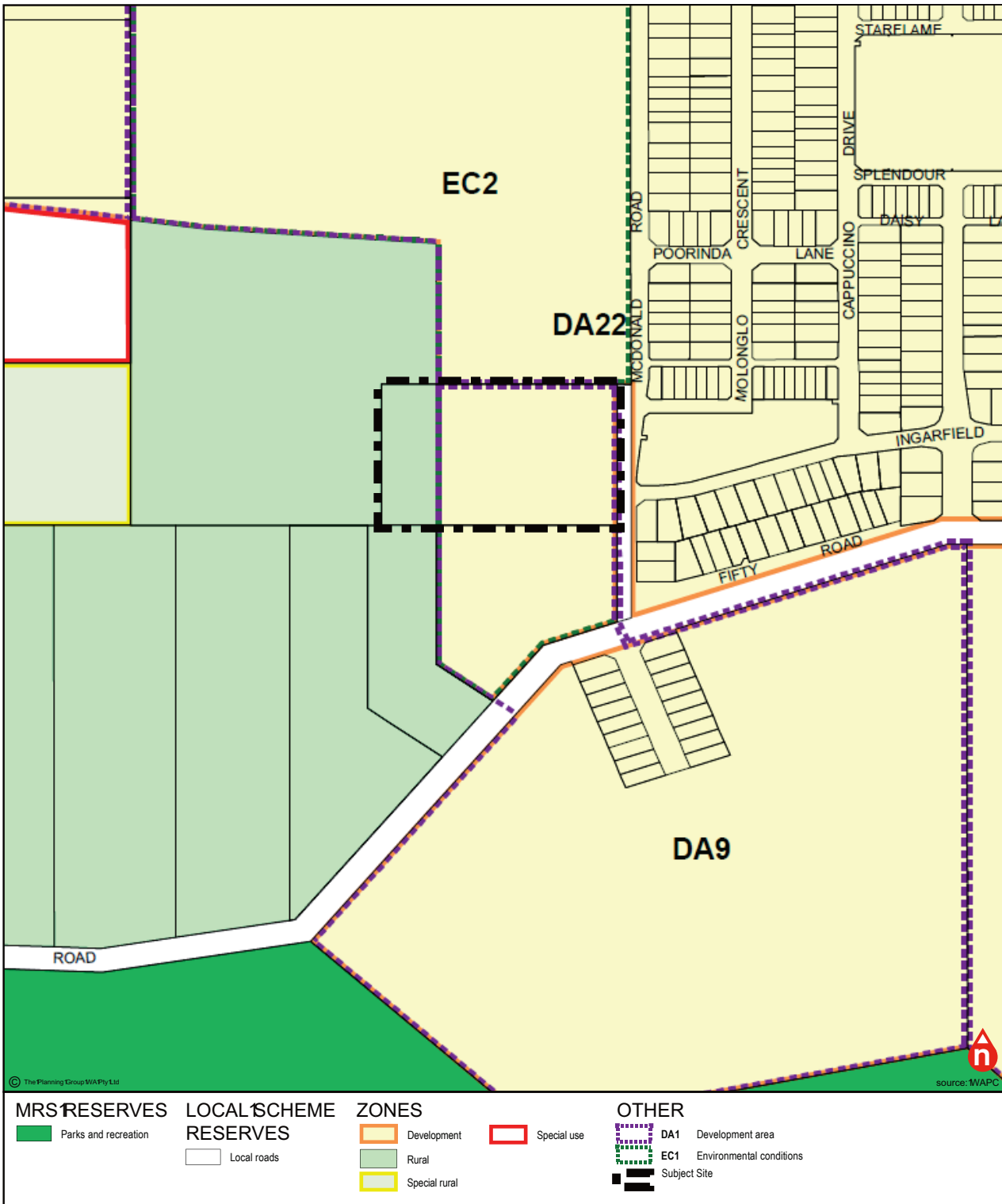
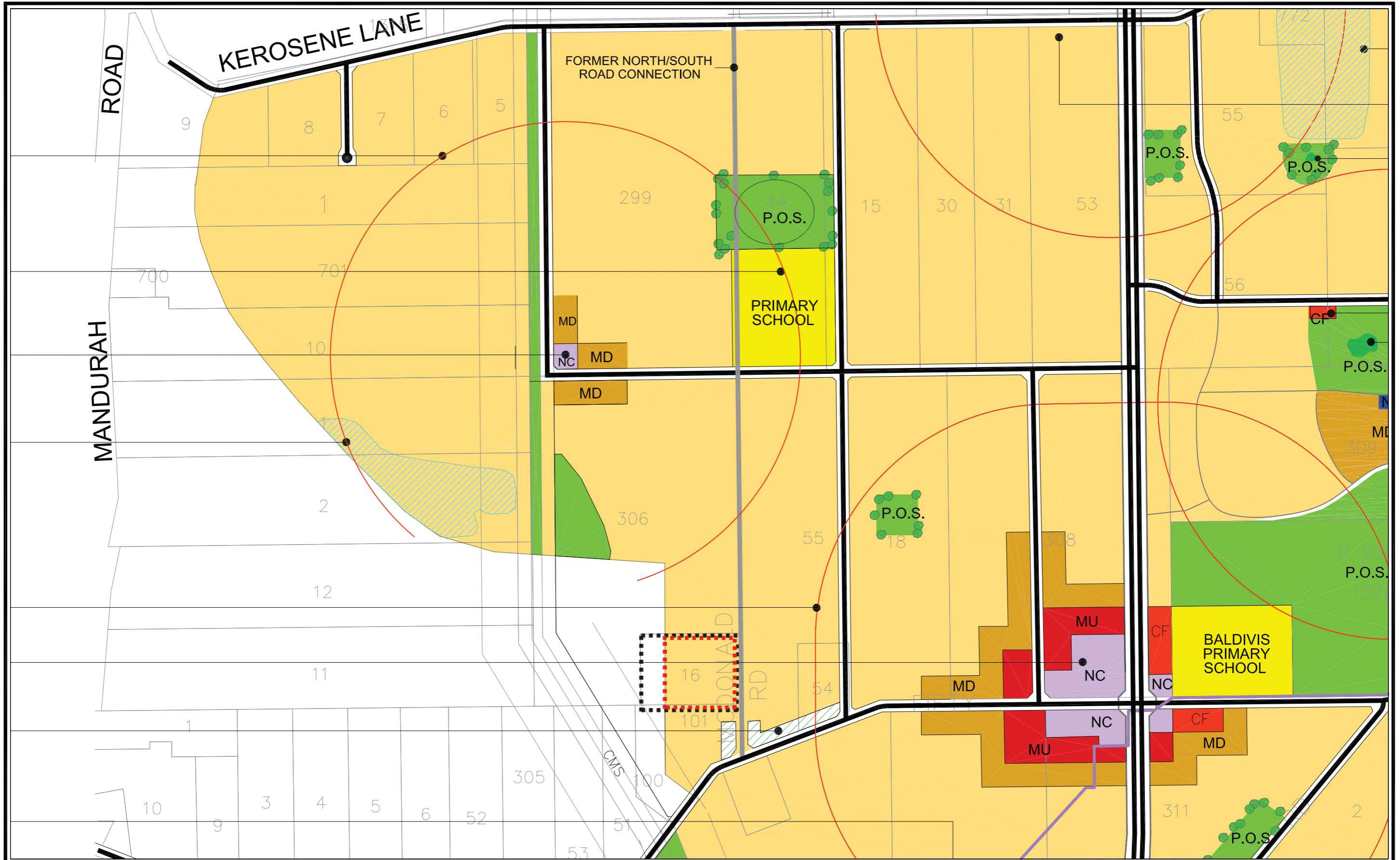
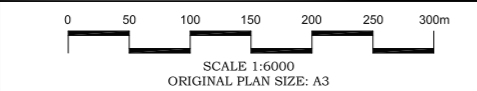


Figure 5. Baldivis (North) District Structure Plan (as amended)

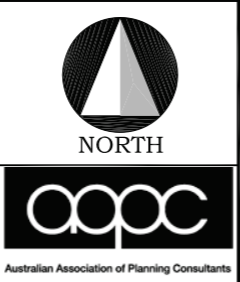


Allerding
Associates



DRAWING NUMBER: NLV ROC SP
DATE: 26.09.2006

310A Newcastle Street, Perth W.A. 6000
PH: (08) 9328 5555 FAX: (08) 9328 5559
www.planningwa.com



 subject site  structure plan boundary

**PROPOSED MODIFICATIONS TO
BALDIVIS (North) DISTRICT
STRUCTURE PLAN - Option 2**

LOTS 1, 3, 700 & 703 MANDURAH ROAD
BALDIVIS
for National Lifestyle Villages

This page has been left blank intentionally.

1.3.3.3 Draft Perth and Peel @ 3.5 Million

The Draft Perth and Peel @ 3.5 Million framework (the Framework) is an overarching document building on the vision laid down by Directions 2031. It aims to achieve a more consolidated urban form to meet long-term housing needs and strengthen key activity centres and employment nodes as the Perth and Peel population grows to 3.5 million. The Framework guides infill development to increase residential housing choice and to reduce the need for people to commute long distances for work. The Structure Plan area is identified as 'Urban' under the South Metropolitan Peel Sub-regional Planning Framework.

The Framework sets a residential site density target of 26 dwellings per residential site hectare. This Structure Plan aims to achieve approximately 24 dwellings per residential site hectare and therefore generally satisfies the intent of the Draft Perth and Peel @ 3.5 Million framework.

1.3.3.4 City of Rockingham Urban Growth Programme (2009)

The City of Rockingham's Urban Growth Programme assists in understanding the likely pattern of urban growth to 2031. The Growth Mapping identifies the Structure Plan area as being developed for future urban purposes. This Structure Plan provides the guiding framework to facilitate future urban development.

1.3.4 Planning Policies

1.3.4.1 State Planning Policy 2.1 – Peel Harvey Coastal Plain Catchment

The Structure Plan area is located within the catchment of the Peel-Harvey estuarine system. State Planning Policy 2.1 (SPP2.1) provides guidance regarding planning requirements for land use changes within this catchment. The relevant objectives of State Planning Policy 2.1 are to:

- Improve the social, economic, ecological, aesthetic, and recreational potential of the Peel - Harvey coastal plain catchment;
- Ensure that changes to land use within the catchment to the Peel – Harvey estuarine system are controlled so as to avoid and minimise environmental damage; and
- Balance environmental protection with the economic viability of the primary sector.

This Structure Plan incorporates principles of Water Sensitive Urban Design and Best Management Practice as demonstrated in the accompanied Local Water Management Strategy (LWMS) (Refer to Section 3.6 of this report).

1.3.4.2 State Planning Policy 3 – Urban Growth and Settlement

SPP3 provides high-level objectives relating to the desired pattern of urban development in the State. SPP 3 provides the following objectives being of relevance to the future development of the Structure Plan area:

- To build on existing communities having established local and regional economies, concentrating investment in the improvement of services and infrastructure and enhancing the quality of life in those communities;
- To manage the growth and development of urban areas in response to the social and economic needs of the community in recognition of relevant climatic, environmental, heritage and community values and constraints; and
- To promote the development of a sustainable and liveable neighbourhood form which reduces energy, water and travel demand whilst ensuring safe and convenient access to employment and services by all modes, provides choice and affordability of housing and creates an identifiable sense of place for each community.

The Structure Plan area would present an opportunity to provide family housing options where future residents would benefit greatly from the range of employment, services, shopping, entertainment and sustainable transport opportunities in the locality, with new dwellings optimising the use of established infrastructure networks.

1.3.4.3 State Planning Policy 3.1 Residential Design Codes

The Residential Design Codes (R-Codes) provide the comprehensive basis for the control of residential development through the State. The future subdivision and development of the Structure Plan area will be required to satisfy the relevant provisions of the R-Codes. In this regard, the Structure Plan proposes a residential density of, as described by the R-Codes, of R25.

1.3.4.4 State Planning Policy 3.7 Planning for Bushfire Risk Management and Planning for Bushfire Risk Management Guidelines

SPP3.7 intends to assist in reducing the risk of bushfire to people, property and infrastructure by taking a risk-minimisation approach to development proposed in bushfire prone areas.

A designated Bushfire prone area is an area that has been identified and designated by the *Fire and Emergency Services Act 1998* (as amended). Such areas are identified on the *Map of Bush Fire Prone Areas*.

The Structure Plan area is designated as being Bushfire Prone. In accordance with SPP3.7 and the associated Guidelines, the Structure Plan road and lot layout has been influenced by the outcomes of an indicative Bushfire Attack Level (BAL) contour plan and associated Bushfire Management Plan (BMP) (refer to Section 2.7 of this report).

Part One of the Structure Plan report lists the situations where Local Development Plans are required to be prepared at subdivision stage to ensure bushfire risk is addressed.

1.3.4.5 Development Control Policy 2.3 Public Open Space in Residential Areas

The main component of Development Control Policy 2.3 (DC2.3) is the requirement for 10 percent of the gross subdivisional area of a residential subdivision to be provided as public open space (guided by Liveable Neighbourhoods, see below). Clause 4.3 of DC2.3 allows for a cash payment to be made by the subdivider in lieu of providing land for open space, particularly if the land area is such that a 10 percent land contribution would be too small to be of practical use or open space is planned in a nearby location. Refer to Section 3.5 of this report.

1.3.4.6 Liveable Neighbourhoods 2009

Liveable Neighbourhoods is an operational policy, adopted by the WAPC, for the design and assessment of structure plans and subdivisions for residential development. The elements of Liveable Neighbourhoods primarily relate to large-scale, greenfield structure planning and subdivision and accordingly a detailed assessment of the structure plan is not provided. Rather, a simple assessment against the relevant elements and objectives of Liveable Neighbourhoods is provided in Section 3.7 of this report.

1.3.4.7 Planning Bulletin No. 87 – High Pressure Gas Transmission Pipelines in the Perth Metropolitan Region

WAPC Planning Bulletin No. 87 provides guidance for planning and development proposals that are located within the vicinity of regional gas pipelines, including the Parmelia Gas Pipeline. Table 1 of the Bulletin provides

for a 65m setback between residential development and the gas pipeline easement 'as of right'. The Structure Plan area is in excess of this setback distance however is located within the 'notification area' to ensure consultation occurs with the pipeline owners for any planning proposal.

1.3.4.8 Planning Bulletin No.112 - Medium-Density Single House Development Standards - Structure Plan Areas

In May 2015, the WAPC released Planning Bulletin No. 112 to introduce new standard residential-medium density deemed-to-comply R-Code provisions within Structure Plans. Whilst this approach is now inconsistent with the requirements of the WAPC's Structure Plan Framework (August 2015), and cannot be included in this structure plan, future development may be guided by applicable local planning policies and/or local development plans adapted by the City that incorporate the objectives of the Planning Bulletin.

1.3.5 Other Planning Approvals and Decisions

The Structure Plan area comprised part of Amendment No. 300 to the City of Rockingham's previous Town Planning Scheme No. 1, which was initiated to rezone the Structure Plan area and surrounding land from 'Rural' to 'Development' in line with the underlying MRS 'Urban' zoning. The rezoning application was assessed by the Environmental Protection Authority (EPA) in 2001 and it was determined that the proposal could be implemented subject to conditions. The approval and associated conditions are outlined in Ministerial Statement No. 580 (dated 19th December 2001) which has been attached as Appendix 2. The conditions require preparation of various management plans. A brief outline of the conditions and how they have been addressed by this Structure Plan has been provided below:

- Condition 1 - Drainage and Nutrient Management Plan has been addressed through the Local Water Management Strategy prepared in accordance with the Department of Water's (DoW) Better Urban Water Management Guidelines (refer to Section 2.3.6 of this report).

- Condition 2 - Soil and Groundwater Investigation and Remediation Plan has been addressed through the Preliminary Site Investigation undertaken as part of the Geotechnical and Preliminary Environmental Study (refer to Section 2 of this report).
- Condition 3 - Pipeline Protection Plan is not relevant to this site as the Structure Plan area is located outside the pipeline buffer.
- Condition 4 - Spray Drift Investigation and Management Plan is not relevant to this site as no active market garden operations occur in the vicinity of the Structure Plan area.
- Condition 5 - Vegetation Management Plan is not relevant to this site as no regionally significant vegetation (i.e. Bush Forever Site 356) occurs in the vicinity of the Structure Plan area.

1.3.6 Pre-lodgement Consultation

Pre-lodgement consultation is summarised in the table below. It should be noted that the project team has also had various discussions with the City of Rockingham via telephone that have not been documented.

Table 2 – Pre-lodgement Consultation

Agency	Date of Consultation	Method of Consultation	Comments/ Outcome
CoR	1 September 2015	Meeting	TPG - initial meeting to discuss expectations and format of the Structure Plan. Applicant made aware of recent draft Structure Plan over Portion of Lot 306 to the north. Key technical studies advised to be water and drainage, bushfire, traffic and contamination. Acknowledged Environmental Conditions under TPS 2 Schedule 8. Density suitable at R25.
CoR	20-30 November 2015	Email correspondence	Emerge - query regarding water management approach, potential to discharge offsite and/or store subsurface beneath road reserves. Response from CoR indicating acceptance of subsurface beneath road reserves and suggesting investigating roadside bio retention areas.
CoR	25 November 2015	Meeting	TPG - progress meeting to discuss outcomes of BAL assessment, design elements of revised subdivision concept plan and technical studies underway.
CoR	21 December 2015	Email correspondence	TPG - CoR provided in-principle support for the proposed road closure of a portion of McDonald Road considered surplus to needs.
CoR	5 January 2016	Email correspondence	Emerge – obtaining existing information regarding adjacent areas.
CoR	12-15 January 2016	Email correspondence	Shawmac - obtaining traffic data for report.
CoP	8 February 2016	Email correspondence	Review of draft Part One - Implementation
DoP	15 December 2015	Email correspondence	TPG - query regarding the rural balance lot to the east of the Structure Plan area and the proposed subdivision concept/road location. DoP (Paul Sewell) superficially confirmed that the response to the Rural/Urban demarcation appears logical and appropriate.
DoP	15 December 2015	Email correspondence	Emerge - to DoP.
DoP	9-10 February 2015	Email correspondence	Review of draft Part One - Implementation
WC	6 March 2015	Email correspondence/ telephone	Pritchard Francis - confirmation within existing network planning.
DoW	11 December 2015	Telephone discussion	Emerge – discussions with Brett Dun regarding approval process and groundwater levels.
DoW	11-14 December 2015	Email correspondence	Emerge – query to and subsequent response from Brett Dun confirming that groundwater level monitoring at the site is not required.

This page has been left blank intentionally.

2. Site Conditions and Constraints

The following section provides a summary of the key findings from the various consultant reports, including:

- Geotechnical and Preliminary Environmental Study (Appendix 3);
- Environmental Assessment and Management Strategy (Appendix 4)
- Bushfire Management Plan (Appendix 5); and
- Infrastructure Servicing Report (Appendix 6).

2.1 Landform and Soils

The site ranges in height from 4.2m Australian Height Datum (AHD) to 7.2m AHD. The highest levels are located in the west of the site, providing an easterly aspect. The lowest parts of the site are located along McDonald Road.

A geotechnical assessment was undertaken for the site by Galt Geotechnics which found ground conditions to be generally as expected based on the regional mapping, with the following observations noted specific to the site:

- Sand, medium to coarse grained, sub-angular to sub-rounded, brown becoming yellow with depth, trace limestone cobbles and gravel, typically loose to dense, present from surface to depth of between 1m extending to the maximum depth investigation (2.5m).
- Limestone, present below the sand layer, rockhead varying from depths between about 1m and more than the maximum depth of investigation (2.5m). Imported fill was found to occur in the north-west of the site, associated with the existing residence in this portion of the site.

Refer to Appendix 3 - Geotechnical and Preliminary Environmental Study

2.1.1 Acid Sulfate Soils

Mapping from the geotechnical report shows the site having no known risk of Acid Sulfate Soils occurring at depths less than 3m from the surface. The nearest high risk area is located approximately 50-100m to the south west of the site, likely associated with wetlands in this area (discussed below).

2.2 Biodiversity and Natural Assets

2.2.1 Flora and Vegetation

The site has been historically cleared of remnant vegetation to support agricultural land uses and now supports areas of grassland dominated by weeds, with a small number of planted non-native trees in the western extent of the site. Due to the complete removal of remnant vegetation from the site, based on a site inspection by Emerge botanists, vegetation is considered to be in 'Completely Degraded' condition.

Given the extent of historic disturbance within the site, there is unlikely to be any significant flora species present within the site. It is also highly unlikely that any areas of Threatened or Priority Ecological Communities should occur within the site. There are no declared Environmentally Sensitive Areas within the site.

2.2.2 Fauna

Given the extent of historic disturbance within the site, any fauna species present would be generally common and widespread species with non-specific requirements that allow them to persist in highly disturbed habitats. There are no known black cockatoo roosting or breeding sites located within or in the vicinity of the site, and while areas of remnant vegetation west of the site are mapped as potential foraging habitat, there is none within the site.

Refer to Appendix 4 - Environmental Assessment and Management Strategy

2.3 Hydrology

2.3.1 Groundwater

Recent groundwater monitoring data from the residential subdivision to the east ('The Chimes') indicate that a maximum groundwater level of 1.38m AHD was recorded in a bore located approximately 30m from the south eastern corner of the site in July 2012. Depth to the maximum groundwater level (MGL) therefore ranges between 2.82m below ground level (BGL) and 5.82m BGL. Recent groundwater monitoring data from the draft Part Lot 306 McDonald Road, Baldivis Structure Plan to the north of the site indicate that a MGL of 1.82m AHD was recorded in a bore located approximately 20m from the north-western corner of the site in September 2014. Refer to Section 3.6 of this report.

2.3.2 Surface Water

No surface water features have been observed within the site, and no external surface water catchments direct surface water flows into the Structure Plan area. Rainfall would infiltrate freely across the site due to the high permeability of the underlying sands.

2.3.3 Wetlands

Based on a desktop search of the Department of Parks and Wildlife's Geomorphic Wetlands series mapping within Landgate's Shared Land Information Portal, there are no wetlands located within the Structure Plan area. A Dampland Conservation Category Wetland is located approximately 75m southwest of the site. The Structure Plan area is located outside of any buffer distance requirement.

Refer to Appendix 4 - Environmental Assessment and Management Strategy

2.4 Historical Land Uses and Potential Contamination

Based on a review of historic aerial photography the site was cleared of native vegetation prior to 1953 (earliest available aerial image) for agricultural purposes and to allow for subsequent market garden land uses. Market garden land uses are generally considered to have a low risk of contamination but are listed in the DER's Potentially Contaminating Activities, Industries and Landuses guideline.

As part of the geotechnical investigation undertaken for the site, limited contamination investigations were also undertaken, involving a desktop assessment and review of historic aerial photography, excavation of test pits and bore holes, and the laboratory testing of soil samples for heavy metals and pesticides. These investigations indicated that there was no evidence of soil contamination within the site as a result of historic market garden land uses and therefore it is unlikely that soils within the site have been impacted to an extent that would restrict development for urban purposes.

A search of the Department of Environment Regulation's (DER) Contaminated Sites Database and Register found there to be no registered contaminated sites within or immediately adjacent to the site.

2.5 Surrounding Land Uses

2.5.1 Poultry Farm

An existing poultry farm is situated approximately 850 m south-east of the site. Based on the EPA's Guidance Statement No. 3 Separation Distances between Industrial and Sensitive Land Uses there is a recommended generic separation distance of 300-1000m (depending on the size of the operation) between poultry farming facilities and sensitive land uses.

A detailed and site specific odour impact assessment was undertaken for the poultry farm, as part of local structure planning for the landholdings east of Baldivis Road. The assessment indicated an off-site odour impact of up to 100m in any direction from the poultry sheds. This recommended separation distance will not result in any consideration for the Structure Plan area.

2.5.2 Market Gardens

Landholdings to the north of the site have been subject to extensive historic market garden activities. This area is zoned 'Urban' under the MRS and is intended for future urban development under the Baldivis (North) DSP. It is understood that the landowner is currently progressing planning for the urban development of this area, therefore this historic land use is not a key consideration or constraint to urban development within the site.

2.6 Bushfire Hazard

A BMP has been prepared to provide guidance on how to plan for and manage the potential bushfire threat to the Structure Plan area and its future development. The BMP identifies the BAL and subsequently addresses requirements expected of local governments, the developer and property owners, and details the specific fire management requirements that will be implemented within the development and design.

The BMP demonstrates that mitigation of the bushfire risk to the Structure Plan area can be achieved as follows:

- Providing appropriate vehicular access options (proposed loop roads);
- Providing sufficient water supply to ensure emergency services are able to respond to a bushfire event (reticulated water supply);
- Siting development to ensure buildings are not exposed to an unacceptable level of radiant flux, without appropriate mitigation measures (implemented through subsequent LDP(s));
- The BMP concludes that the proposed design of subdivision and modified vegetation are such that with the implementation of the BMP, the fire threat to persons and property within the Structure Plan area is reduced to an acceptable level;
- Dwellings located within 100m of identified classified vegetation will have bushfire risk mitigated through the use of an appropriate asset protection zone (APZ) and construction standards via compliance with AS3959; and
- The indicative BAL assessment demonstrates that BAL-29 would not be exceeded and an APZ can be accommodated within the proposed future road reserves in the south and west of the site, in response to the adjacent bushfire hazards.

Further, the Bushfire Prone areas determined for the site (as shown within Figure 9 of the BMP) could be used by the City to update the *Map of Bush Fire Prone Areas*.

Refer to Figure 6 – Indicative Bushfire Attack Levels

Refer to Appendix 5 - Bushfire Management Plan

2.7 Infrastructure Servicing and Utilities

An Infrastructure Servicing Report (ISR) has been prepared to address various servicing requirements for the indicative subdivision concept. The ISR concludes that the future development of the Structure Plan area is not constrained by service capacities or upgrades with all services in close proximity to the site.

Note: infrastructure within the McDonald Road reserve subject to the proposed road closure will be relocated at the developer's expense.

Refer to Appendix 6 - Infrastructure Servicing Report

2.7.1 Stormwater Drainage

An underground pit and pipe network is intended for the site and will be disposed of into underground tanks, allowing for infiltration and attenuation of the critical 1:100 year ARI event (refer to Section 3.6 of this report).

2.7.2 Sewerage

A 150mm diameter sewer has been allowed for to service the expected lots. This can then gravity feed into the 150mm diameter sewer running along the west side of McDonald Road and then to the existing wastewater pump station adjacent to the lot. The sewerage catchment has been confirmed by the Water Corporation and the system has sufficient capacity for the 29 lot development (plus the rural balance lot).

2.7.3 Water Supply

The site currently has a 150mm water main on the eastern side of McDonald Road. It is likely that connections into the 150mm main will be able to supply the site with water, which has been indicated by the Water Corporation. Connection will need to be bored under McDonald Road. It is assumed internal water reticulation mains will be 100mm.

2.7.4 Power

Existing electrical infrastructure adjacent to the site includes high and low voltage cables along both sides of McDonald Road, and an existing transformer directly opposite the Structure Plan area on McDonald Road.

Regional mapping indicates the site will have 15-20MVA capacity in 2020 hence it is not anticipated capacity will be an issue.

2.7.5 Communication

There is existing Telstra network located in McDonald Road, which is the existing service currently servicing the dwellings on site. It is expected there will be capacity to service this site. Optic fibre currently exists along Fifty Road.

2.7.6 Gas

There is existing 110mm high pressure gas pipelines on the east side of McDonald Road. 40mm high pressure mains connect into this larger main to service the existing residential area to the east. It is expected this network will have capacity to service the development.

Figure 6. Indicative Bushfire Attack Levels

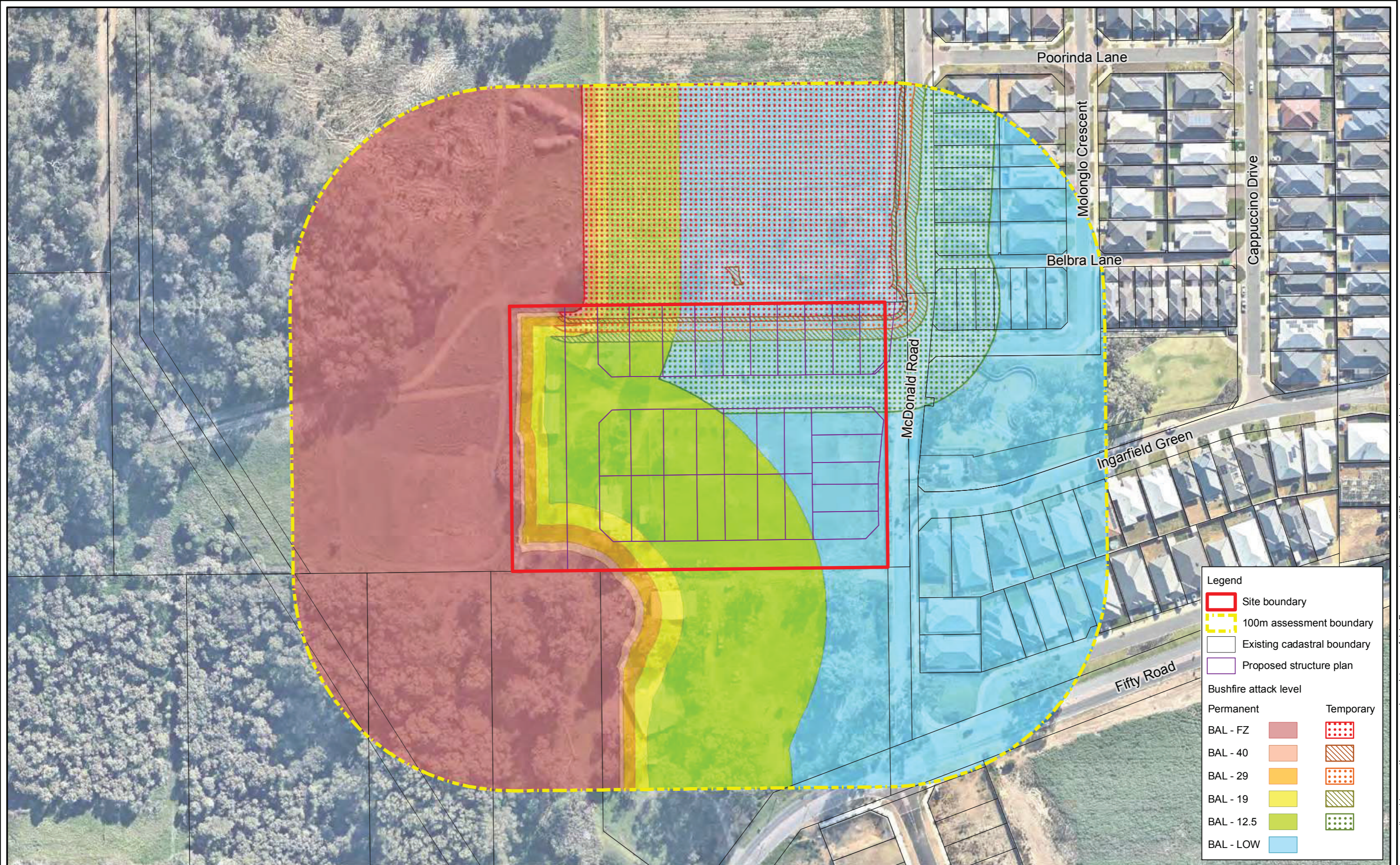
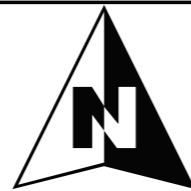


Figure 12: Indicative Bushfire Attack Levels

Project: Bushfire Management Plan
Portion of Lot 16 McDonald Road, Baldvis
Client: Defence Housing Australia



Plan Number: EP15-057(03)--F15c

Drawn: KNM Date: 05/09/2016

Approved: JDH Date: 07/09/2016

Checked: VMK Scale: 1:2,250@A4

0 20 40 80 Metres



This page has been left blank intentionally.

3. Structure Plan

The following section provides the rationale for the proposed subdivision concept plan, which forms the basis for the Structure Plan zoning.

Refer to Figure 7 – Subdivision Concept Plan

3.1 Context

The immediate area is in transition from historically rural land (market gardens and poultry farms) to new residential estates. A number of larger lots in this area have undertaken coordinated planning to provide a variety of lot sizes, including new local centres and public open space. The Peet and Co. estate of 'The Chimes' is located directly adjacent and east of the site. A National Lifestyle Village and a number of public assembly uses are located to the northwest and west of the site.

A neighbourhood centre, including primary school, is located within an 800m walkable catchment of the Structure Plan area; to the east on Fifty Road. District open space is provided throughout the Baldivis (North) DSP, including an organised recreation reserve adjacent to the neighbourhood centre and a lineal parkway following the Parmelia gas pipeline corridor to the west of the site.

3.2 Interface with Surrounding Land

At the time of writing this report, structure planning was being progressed over Lot 306 to the north of the site, which has been given due regard in the preparation of the subdivision concept plan. The subdivision concept plan includes the following interface design elements:

- Residential lots about the northern lot boundary of the Structure Plan area, consistent with the draft Portion of Lot 306 McDonald Road, Baldivis Structure Plan so as to not create dual-frontage lots;
- The proposed road layout comprises a north-south access road that generally connects into the proposed road layout of the draft Portion of Lot 306 McDonald Road, Baldivis Structure Plan;

- A road closure is proposed to the portion of McDonald Road surplus to the required 18m wide road reserve. The road closure will facilitate the orderly development of the site in accordance with the Structure Plan and the draft structure plan for portion of Lot 306 McDonald Road, Baldivis to the north by rationalising or 'neatening up' the cadastral boundary anomaly with Lot 306, which will result in a better urban design outcome for the streetscape and the future corner lot; and
- An area of local public open space is provided adjacent to the Structure Plan area on the opposite side of McDonald Road. The subdivision concept plan positions smaller lots fronting McDonald Road to take advantage of the outlook and amenity.

3.3 Residential Densities and Dwelling Forecasts

The Structure Plan provides for residential development at a density, as described by the R-Codes, of R25. The subdivision concept plan suggests the Structure Plan area can yield 29 lots, which equates to a density of 24 dwellings per residential site hectare and approximately 18 dwellings per gross hectare of urban zoned land. The Structure Plan generally provides for the achievement of the residential density targets set by the WAPC in its State strategic planning documents.

3.4 Movement Network

A Transport Assessment has been prepared to support the subdivision concept plan and the key findings are outlined below.

Refer to Appendix 7 - Transport Assessment

3.4.1 Access

Access to the Structure Plan area is proposed via two local access roads from McDonald Road. All roads within the subdivision area will be constructed as access roads, with cross section details, line marking, intersection control and local area traffic management measures to be addressed during the detailed subdivision design stages.

3.4.2 Road Hierarchy

'Road 1' comprises a 15m wide road reserve, designed for short, low volume and low parking demand access streets. 'Road 2' also comprises a 15m wide road reserve, with 13m contained within the Structure Plan area and the additional 2m contained on adjoining Lot 101. This arrangement is justified on the basis that 'Road 2' will only be serving one side of the road in the short-medium term and any future development of adjoining Lot 101 may utilise the constructed road, having regard for the need for a 15m wide road reserve.

Refer to Figure 8 – Internal Road Hierarchy

Refer to Figure 9 -Road Cross Sections

3.4.3 Pedestrian and Cycle Network

Footpaths with a minimum width of 1.5 m are recommended to be provided on at least one side of each of the internal access roads with connections to the established pedestrian and cycling network external to the area, as well as to future urban development north and east of the subject site.

Due to the expected low volumes of traffic and the low speed environment on the internal access roads, on-road cycle lanes are not required and cyclists are able to safely share the roadway with motorised vehicles. There is a 2.5m concrete path on the north side of the road, east of McDonald Road however there are no formal facilities from McDonald Road to Mandurah Road in the west for cyclists or pedestrians.

3.4.4 Public Transport

There are limited public transport services in the area. A bus route travelling along McDonald Road is identified in the Baldvis (North) DSP (refer to Figure 13 of the Transport Assessment) and it is expected that that bus routes will better service the wider Baldvis area in the future.

3.4.5 Traffic Generation

A trip generation and distribution exercise was completed as part of the Transport Assessment and determined that the proposed subdivision would generate 240 vehicular trips per day. The majority of the trips would permeate

through the local road network to McDonald Road north to Kerosene Lane and south to Fifty Road. A future road connection via the eastern access road to the northern subdivision will also permeate through the road network.

The Transport Assessment modelled traffic flows for the internal road network, as shown in Table 3 (refer to Section 5.2 of the Transport Assessment).

Table 3 – Internal Roads Future Daily Traffic Volumes

Road Name	Predicted Traffic Volumes (vpd)
Road 1	139
Road 2	62
Road 3	15
McDonald Road	168

The predicted subdivision traffic flows were added to the estimated volumes of traffic for McDonald Road upon the ultimate development of the surrounding site, as shown in Table 4 (refer to Section 5.5 of the Transport Assessment).

Table 4 – Existing Road Network Predicted Flows

Road Name	Curent/ Predicted External Traffic Volumes (vpd)	Predicted Traffic Volumes (vpd)	Change in Traffic
McDonald Road	2,500	2,668	+ 168 vpd
Fifty Road	2,500	2,668	+ 168 vpd

The traffic generated was not large enough to warrant any intersection analysis, under the Table 6.1 of Austroads Guide to Traffic Management Part 3 - Traffic Studies and Analysis, and as such there are no safety or operational issues expected.

3.5 Public Open Space










Public open space has not been provided within the Structure Plan due to the relative size and location of the Structure Plan area in relation to surrounding local and district open space. A cash-in-lieu payment is considered acceptable in this instance.

The provision of 10 percent public open space in this instance would yield an area of approximately 1,850 sqm, which is considered impractical in terms of use and / or ongoing maintenance due to its size. Public open space has been provided directly adjacent to the Structure Plan area and other public open space is planned within the adjoining draft Portion of Lot 306 McDonald Road, Baldvis Structure Plan.

Figure 7. Subdivision Concept Plan



LEGEND

-  Subject Site
-  10m wide frontage single house lot (300m² approx.)
-  12m wide frontage single house lot (360m² approx.)
-  15m wide frontage single house lot (450m² approx.)
-  Rural / Urban zoning boundary
-  Provisional bushfire setback (17m)
-  Existing structure to be deleted
-  Portion of road to be closed
-  Road Widening

LOT SIZES

Average	Range
408sqm*	303-490sqm*

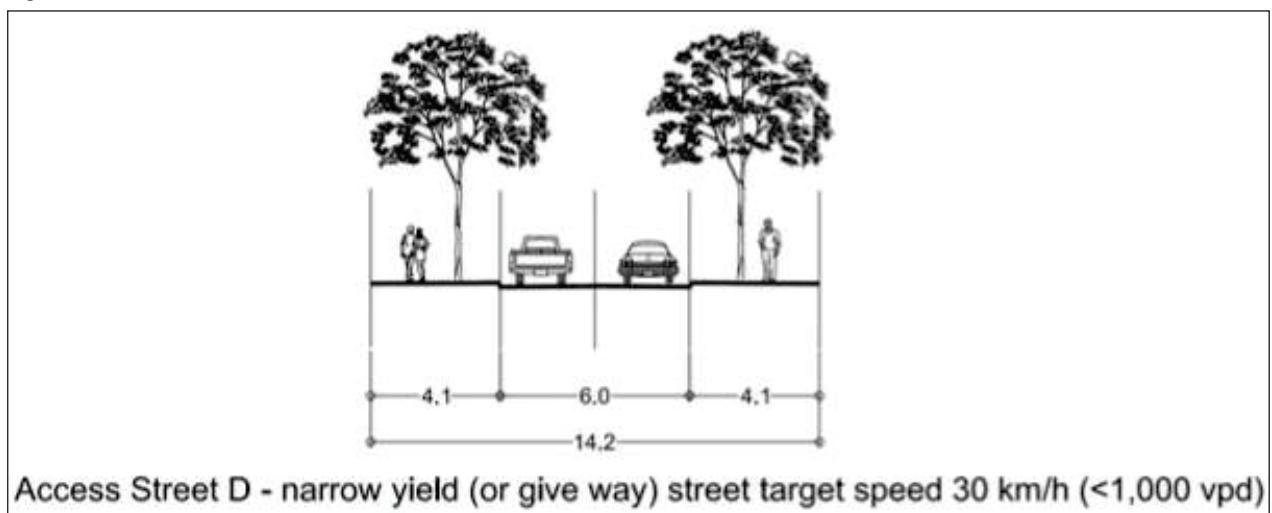
* excluding balance lot

This page has been left blank intentionally.

Figure 8. Internal Road Hierarchy



Figure 9. Road Cross Sections



3.6 Local Water Management Strategy

A LWMS has been prepared to support the future urban development of the Structure Plan. The LWMS has been prepared in accordance with the WAPC's Better Urban Water Management, State Planning Policy 2.9 Water Resources, and Planning Bulletin 92 Urban Water Management. Water will be managed using an integrated water cycle management approach, which has been development using the philosophies and best practice design described in the Department of Water's Stormwater Management Manual for Western Australia.

The LWMS addresses the following:

- Water conservation and water efficiency;
- Stormwater management; runoff quantity and quality; and
- Groundwater management.

Of note however is the stormwater management approach. The project team, in consultation with the City, determined that the drainage basin constructed within the adjacent residential estate, 'The Chimes', may not have sufficient capacity to accommodate stormwater from the Structure Plan area. The development drainage system for the Structure Plan area therefore *allows* for sub-surface storage to be utilised that is designed to treat minor event runoff and retain major event runoff (i.e. the 100 year ARI event) within the site. Water will be pre-treated before entering the subsurface storage cells via a lined pre-treatment chamber.

Subsurface storage will be used to retain up to the 100 year ARI event runoff from the road network and 10 percent of residential lots (i.e. front driveways) resulting in no offsite discharge. Indicative locations of subsurface storage are provided in Figure 6 of the LWMS. Subsurface storage cells maintain sufficient clearance from maximum groundwater levels. Stormwater within individual residential lots will be contained on-site within soak wells.

Note: The rural balance lot to the west of the Structure Plan area (and within Lot 16) will retain and infiltrate runoff up to the 100 year ARI event on-lot. This approach is consistent with the existing hydrology of the site which is characterised by the high permeability of underlying soils.

It is anticipated that a more detailed water management plan, in the form of an Urban Water Management Plan, will be required as a condition of subdivision approval.

Notwithstanding the above stormwater approach, the LWMS notes that an alternate surface retention-based approach will be investigated as part of detailed civil design. This includes investigating the initialisation of the planned drainage basin located in adjoining Lot 306 (20) McDonald Road, Baldivis.

Refer to Appendix 8 - Local Water Management Strategy

3.7 Basic Liveable Neighbourhoods Assessment

The subdivision concept plan has been assessed against the objectives of the WAPC's Liveable Neighbourhoods and its various design elements. The subdivision concept plan incorporates the following attributes in accordance with Liveable Neighbourhoods:

Element 1: Community Design

- Connects new urban areas to existing or proposed urban areas ensuring permeability and provides for a safe, convenient, permeable and legible pedestrian network. Regard has been given to the draft structure plan over adjoining Lot 306 to the north in terms of lot placement and future opportunities to connect the road network.

Element 2: Movement Network

- The internal access road network is site responsive and highly connected (bushfire considerations, connections to Lot 306);
- The access road layout provides lots with a continuous street frontage that is safe and efficient for pedestrians, cyclists and vehicles, including emergency vehicles;
- Footpaths are provided for on at least one side of the local access roads;
- Kerb radii is appropriate for the relevant road hierarchies;
- Verge design to accommodate space for utility services, street trees, paths and landscaping; and
- Stormwater management infrastructure has been designed to take into account the access road network and catchment characteristics.

Element 3: Lot Design

- The proposed street and lot layout facilitates climate responsive design and acknowledges bushfire risk;
- Lots are of a size, width and shape that provides for solar orientation, usable private outdoor space, and garaging that does not dominate the street;
- A range of residential lot sizes are provided for and are suitable for a variety of housing types;
- Connection to underground power, reticulated water and wastewater can be provided for each lot, with reticulated water being provided for emergency service use in the event of a bushfire event; and
- Stormwater is anticipated to be retained within the Structure Plan area via subsurface storage cells and on-lot retention/detention.

Technical Studies Appendices

No.	Technical Study	Nature of Document	Assessing Agency	Status
1	Certificate of Title	Information Only	N/A	N/A
2	Ministerial Statement No. 580	Information Only	N/A	N/A
3	Geotechnical and Preliminary Environmental Study	Information Only	N/A	N/A
4	Environmental Assessment and Management Strategy	Supporting document	CoR, WAPC, DPaW, DER	
5	Bushfire Management Plan	Supporting document	CoR, WAPC, DPaW, DFES	
6	Infrastructure Servicing Report	Information Only	N/A	N/A
7	Traffic Assessment	Supporting document	CoR, WAPC	
8	Local Water Management Strategy	Supporting document	CoR, WAPC, DPaW, DoW	

Abbreviations

AHD	Australian Height Datum
ASS	Acid Sulfate Soils
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
CoR	City of Rockingham
DER	Department of Environment Regulation
DoW	Department of Water
DFES	Department of Fire and Emergency Services
DPaW	Department of Parks and Wildlife
DSP	District Structure Plan
EPA	Environmental Protection Authority
LDP	Local Development Plan
LWMS	Local Water Management Strategy
MRS	Metropolitan Region Scheme
TPS	Town Planning Scheme
WAPC	Western Australian Planning Commission
WC	Water Corporation
WP	Western Power

This page has been left blank intentionally.