

STRUCTURE PLAN

Lot 34 (No. 65) Ocean Road, Coogee

Prepared for

Realzone Holdings Pty Ltd

February 2022

City of Cockburn
Lot 34 Ocean Road, Coogee

CERTIFICATION OF APPROVED STRUCTURE PLAN

This structure plan is prepared under the provisions of the City of Cockburn Town Planning Scheme No. 3.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: **08-Jul-2022**

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:

M. Wieclaw

Witness

12-Jul-2022

Date

12-Jul-2032

Date of Expiry

Table of Structure Plan Amendments

Amendment No.	Description	Date adopted by City of Cockburn	Date endorsed by WAPC

Executive Summary

This Structure Plan has been prepared on behalf Realzone Holdings Pty Ltd, the registered proprietor of Lot 34 (No.65) Ocean Road, Coogee ('Subject Site'). The Subject Site is located approximately 20km south west of the Perth CBD.

This Structure Plan provides the necessary planning framework to facilitate the subdivision of the Subject Site and has been prepared in accordance with the relevant requirements of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Item	Data	Structure Plan Reference (section No.)
Gross Structure Plan area	7,609m ²	
Area of each land use proposed		
<u>Zoned land</u> Residential	5,205m ² (68.4% of land area)	
<u>Reserved land</u> Public Open Space	761m ² (10.00% of land area)	
Estimated total lot yield	12 lots	5.1
Estimated Dwelling yield	12 dwellings	5.1
Estimated residential site density	25 dwellings per hectare	5.1
Estimated Residential Population	34 people @ 2.8 persons per dwelling	5.1

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PART ONE - IMPLEMENTATION

1.0 STRUCTURE PLAN AREA

The Structure Plan covers Lot 34 (No. 65) Ocean Road, Coogee only.

2.0 OPERATION

The date in which the Structure Plan comes into effect is the date the Structure Plan is approved by the Western Australian Planning Commission as set in the Structure Plan Certification page in accordance with Schedule 2, Part 4, Clause 28 of the *Planning & Development (Local planning Schemes) Regulations 2015*.

3.0 SUBDIVISION & DEVELOPMENT REQUIREMENTS

Table 1 – Subdivision & Development Requirements

3.1	Land Use & Permissibility	<p>The Structure Plan Map applies the Zones and Reserves within the SP area which will guide the future subdivision and development of the land.</p> <p>Land Use permissibility within the Structure Plan Area shall be in accordance with the corresponding Zone (Residential) under the City of Cockburn Town Planning Scheme No.3.</p>
3.2	Residential Density	<ul style="list-style-type: none"> • Residential densities applicable to the Structure Plan Area will be those residential densities as shown on the Structure Plan Map. • The Structure Plan shall provide for a minimum 20 dwellings per site hectare at the subdivision determination stage.
3.3	Local Development Plan	<p>A Local Development Plan (LDP) is required to be prepared and implemented pursuant to the provisions of the City of Cockburn Town Planning Scheme No. 3 and the Planning & Development (Local Planning Schemes) Regulations 2015 for any lot that:</p> <ul style="list-style-type: none"> • Has a direct boundary frontage to an area of Public Open Space; or • Requires an elevated construction standard for bushfire hazard mitigation purposes.
3.4	Fire Management Plan	<p>The subject site is subject to a Fire Management Plan. A condition of subdivision approval will be imposed requiring BAL assessments for each of the proposed lots.</p> <p>A further condition of subdivision approval will be imposed requiring the ceding of a 0.5m wide strip of land, in accordance with the structure plan map and located along the western boundary, to be included in the 7.5m wide firebreak in the adjoining Rotary Park Reserve. The condition will read as follows:</p>

		<p><i>The proposed reserve(s) shown on the approved plan of subdivision being shown on the diagram or plan of survey (Deposited Plan) as reserve(s) for Bushfire Mitigation Purposes and vested in the Crown under Section 152 of the Planning and Development Act 2005, such land to be ceded free of cost and without any payment of compensation by the Crown. (Local Government).</i></p> <p>It is noted that the creation of Lots 52 and 60 is contingent upon the construction of the 8 metre-wide limestone firebreak, which is largely located within the abutting Crown reserve and can only be constructed by the applicant if the Crown is party to the subdivision application. As such, the Crown should be party to any future subdivision application which seeks to create these lots, in order to facilitate construction of the proposed firebreak.</p> <p>The remaining land in the LSP area that adjoins the reserve will also require firebreaks between 3m and 6m wide to be constructed. The landowner/developer will be required to construct the firebreaks for the entire length of the LPS area where it adjoins the reserve, in accordance with the BMP.</p> <p>The Fire Management Plan also requires that a Notification, pursuant to Section 70A of the Transfer of Land Act 1893 is to be placed on the Certificate(s) of Title of the lots within the Bushfire Prone Area. Notice of this Notification is to be included on the diagram or plan of survey (Deposited Plan). The Notification is to state:</p> <p><i>"The lot(s) is/are subject to a Bushfire Management Plan (Local Government)".</i></p>
3.5	Midge Infested Areas	<p>A condition of subdivision approval will be imposed requiring a Notification, pursuant to Section 165 of the <i>Planning and Development Act 2005</i> on the title of each new residential lot advising prospective purchaser(s) that the land may be affected by midge infestation. Notice of this Notification is to be included on the Deposited Plan and shall state the following:</p> <p><i>"This land may be affected by midge from nearby lakes and/or wetlands. Enquiries can be made with the City of Cockburn Environmental Services."</i></p> <p>This requirement should be included in Part 1 section 3.0 (Subdivision and Development Requirements), and discussed in Part 2.</p>
3.6	Dust Management Plan	<p>A condition of subdivision will be imposed requiring a Dust Management Plan to be prepared in accordance with the Department of Water and Environmental Regulations Guidelines.</p>

4.0 DEVELOPER CONTRIBUTIONS

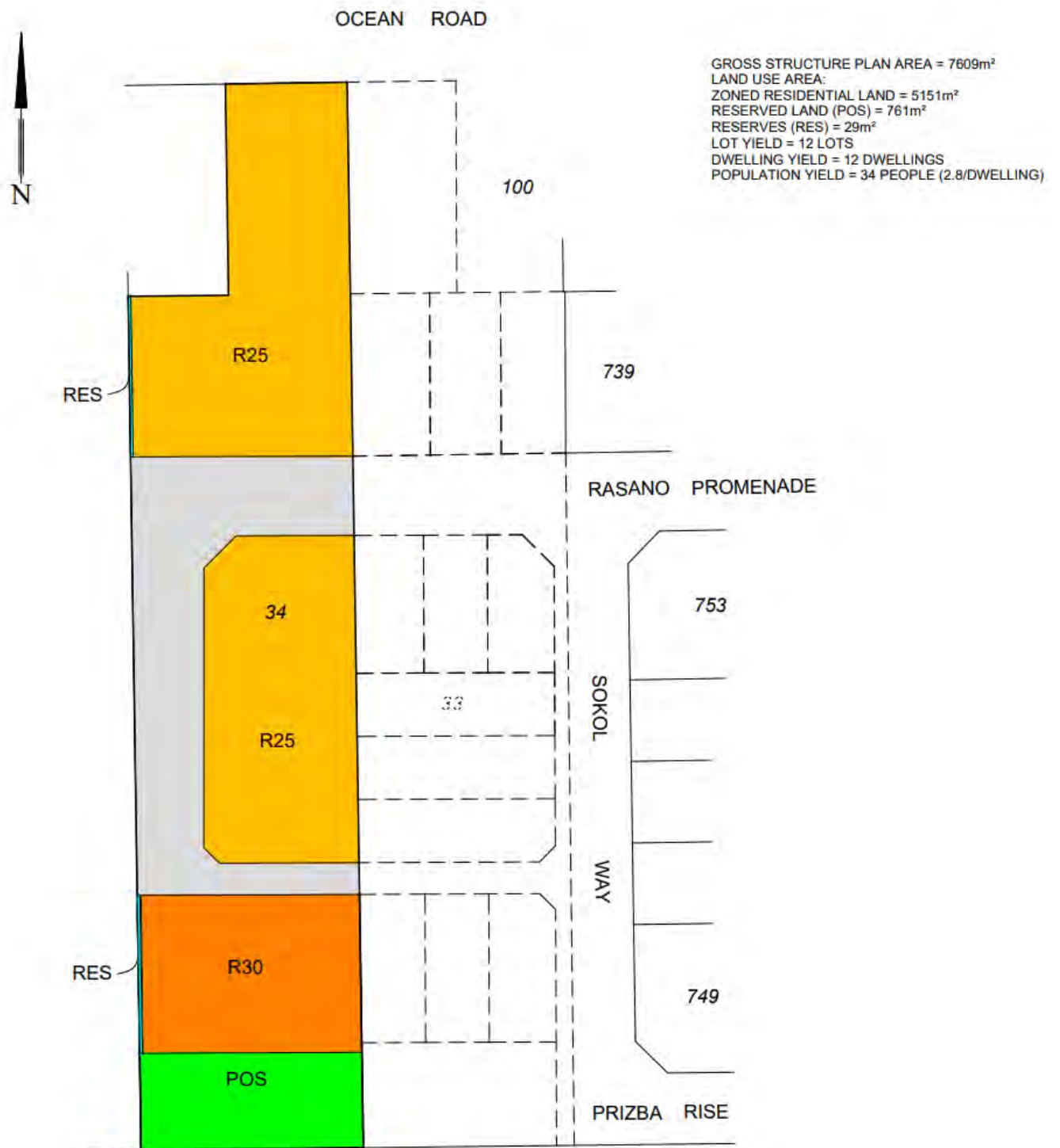
4.1 Development Contribution Area 12

The developer is to make satisfactory arrangements with the City of Cockburn to provide developer contributions in accordance with Development Contribution Area 12 (DCA 12).


4.2 Development Contribution Area 13

The subject site is also located within Development Contribution Area 13 (DCA 13) under the City of Cockburn Town Planning Scheme No. 3 that requires a developer contribution for regional infrastructure.

Structure Plan



LEGEND

 SUBJECT SITE	 PUBLIC OPEN SPACE
 RESIDENTIAL (R25)	 ROADS
 RESIDENTIAL (R30)	 RESERVE

PART TWO – EXPLANATORY SECTION

1.0 INTRODUCTION & PURPOSE

The purpose of this Report is to facilitate the approval of a Structure Plan over Lot 34 (No. 65) Ocean Road, Coogee. The Structure Plan is prepared as a precondition for subdivision of land which is zoned 'Development' under the City of Cockburn's Town Planning Scheme No. 3.

2.0 LAND DESCRIPTION

2.1 Location

The land the subject of this Structure Plan is limited to Lot 34 (No. 65) Ocean Road, Coogee and is situated approximately 20km south-west of the Perth CBD.

2.2 Area & Land Use

The subject site is of a land area measuring 7,609m² and is rectangular in configuration. The subject site is currently improved with an existing dwelling fronting Ocean Road and with an outbuilding located south of the dwelling. The balance of the site is vacant and cleared of all vegetation. Under the Packham North District Structure Plan the subject site was previously identified as a market garden.

The subject site is currently utilised for residential purposes. The proposed Structure Plan provides an opportunity for the existing dwelling to either be retained or demolished when further subdivision occurs.

2.3 Legal Description and Land Ownership

The subject site contains one land parcel held in private ownership with an approximate area of 7,609m². The subject site can be legally referred to as follows:

Lot 34 on Plan 5190 held in Volume 1623 and Folio No 989.

A copy of the Certificate Title is within Appendix 1.

2.4 Surrounding Context

The subject site is bound by low to medium density residential housing to the east, a local parkland reserve to the south and west and medium density residential housing north of Ocean Road.

3.0 PLANNING FRAMEWORK

3.1 Directions 2031

In August 2010 the Western Australian Planning Commission released Directions 2031 and Beyond (Directions 2031). Directions 2031 is a strategic plan which recognises the benefits of a more consolidated city whilst working from historic patterns of urban growth. Directions 2031 deals with urban growth needs and also takes into consideration the need to protect our natural ecosystems.

The framework provides for different lifestyle choices, vibrant nodes for economic and social activity and a more sustainable urban transport network.

Directions 2031 seeks a 50% increase to the existing current average residential density of 10 dwellings per gross urban zoned hectare to a target 15 dwellings per gross urban zoned hectare of land in newly developed areas. The proposed Structure Plan over the subject site meets the targets set by Directions 2031.

3.2 South Metropolitan Peel sub-regional framework

The *South Metropolitan Peel Sub-Regional Planning Framework* is a strategic plan that provides a broad-brush guide for the future settlement of the Perth & Peel regions based on a 35 – 40 year time period. The *South Metropolitan Peel Sub-Regional Planning Framework* is based on a forecasted population of 3.5 Million people. The *South Metropolitan Peel Sub-Regional Planning Framework* is one of four sub-regional planning frameworks which support the objectives of Directions 2031.

3.3 Perth and Peel @ 3.5 Million

In March 2018 the Western Australian Planning Commission issued the Perth and Peel @ 3.5 Million land use planning and infrastructure framework. The framework defines the type of urban development over the next 30 years and seeks to limit unsustainable urban sprawl, instead encouraging consolidated urban growth and greater housing diversity to meet the changing needs of the community.

3.4 Metropolitan Region Scheme

The subject site is zoned 'Urban' under the provisions of the Metropolitan Region Scheme ('MRS'). The Urban zone under the MRS is defined as:

"Areas in which a range of activities are undertaken, including residential, commercial, recreational and light industrial."

This Structure Plan facilitates development consistent with the MRS Urban zoning.

3.5 Packham North District Structure Plan

The Packham North District Structure Plan has been adopted which includes the subject site. The Structure Plan has been prepared to be generally in accordance with the Packham North District Structure Plan with the exception of the location of the public open space. The location of the public open space is addressed under the relevant section of this report.

3.6 Liveable Neighbourhoods

Liveable Neighbourhoods (LN) is the Western Australian Planning Commissions operational policy for the design and assessment of structure plans and subdivision applications for Greenfield and urban infill sites.

The Structure Plan has been designed with due regard to LN with each of the relevant elements addressed below.

Element 1 – Community Design

The Structure Plan facilitates interconnected streets with road connectivity to the existing roads including Rasona Prom and Prizba Rise. The Structure Plan also facilitates housing diversity. The proposed Structure Plan meets the objectives of Element 1 of LN.

Element 2 – Movement Network

The Structure Plan facilitates a permeable street network that prioritises pedestrian and cyclist movements. Whilst no cycle lanes are proposed the traffic volumes are anticipated to be sufficient for safe on-street cycling. The proposed Structure Plan meets the objectives of Element 2 of LN.

Element 3 – Lot layout

The Structure Plan proposes a density coding and location of local roads which will facilitate a lot layout consistent with the pattern of subdivision which has occurred east of the subject site.

Element 4 – Public Parkland

10% of the Structure Plan area is dedicated as public open space.

Element 5 – Urban Water Management

The proposed urban water management strategy will be consistent with the local water management plan lodged with the OFELSP.

Element 6 – Utilities

The subject site is capable of being serviced by power, water, sewer and telecommunications in accordance with the requirements of the service providers.

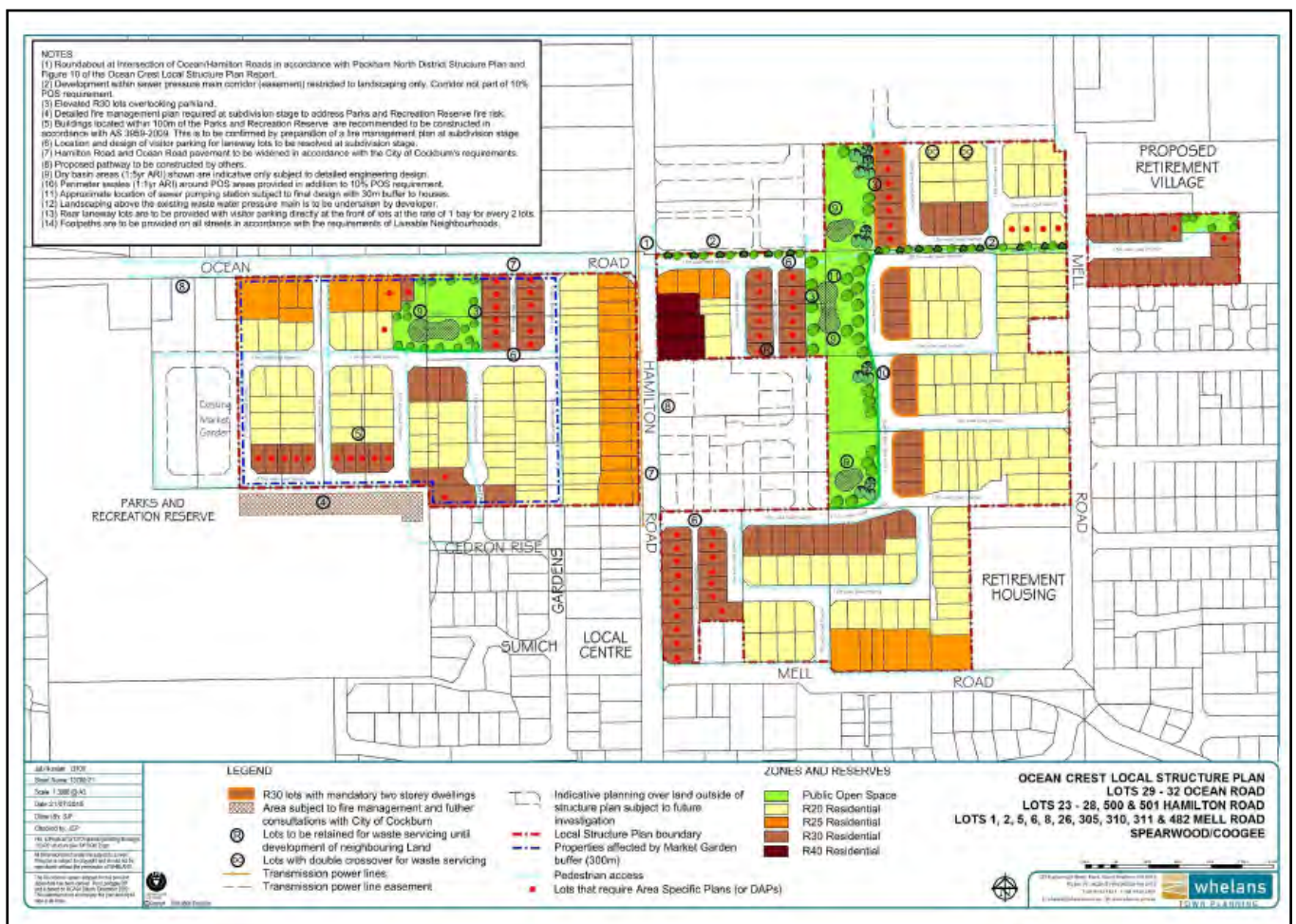
3.7 City of Cockburn Town Planning Scheme No. 3

The subject site is zoned Development under the provisions of the City of Cockburn Town Planning Scheme No. 3. The Development zone requires the preparation and determination of a Structure Plan prior to any subdivision occurring.

The subject site is located within Development Control Area 12 Packham North, Development Control Area 13 and Development Area 31 under the City of Cockburn Town Planning Scheme No. 3.

3.8 Ocean Crest Structure Plan

The Ocean Crest Structure Plan which covers lots 29 -32 Ocean Road, lots 23-28 Hamilton Road, Coogee, lots 500 & 501 Hamilton Road and lots 1, 2, 5, 6, 8, 26, 305, 310, 311 & 482 Mell Road, Spearwood has been endorsed by the WAPC. The Structure Plan has been prepared having regard to the Ocean Crest Structure Plan which contains land east of the subject site.



Extract from Ocean Crest Local Structure Plan prepared by Whelans

4.0 SITE CONDITIONS

4.1 Topography

The natural topography of the subject site falls from the southern boundary towards the northern boundary (Ocean Road). The topography of the lots which have been created immediately east of the subject site are subject to similar changes in topography and have been stepped via limestone retaining walls. The same design engineering principles can be applied to the proposed Structure Plan area.

4.2 Potential Site Contamination

Galt Environmental has carried out a desktop assessment (reference J1702031 002 R Rev0) of the subject site in terms of potential contamination. The desktop assessment provided the following findings:

- the site has not been identified as being potentially contaminated;
- no heritage sites exist within the site's boundary.
- the Department of Water & Environmental Regulation acid sulfate mapping indicated the subject site is located in an area having no known ASS;
- the Department of Biodiversity, Conservation & Attraction database indicates the subject site as not being mapped as having environmentally sensitive areas;
- Groundwater is within about 11m to 24m of the subject site's current ground surfaces and would therefore not be affected.

A Copy of the Report is contained within Appendix 2.

4.3 Vegetation

The subject site is currently vacant and free of any vegetation and suitable for urban development.

4.4 Bushfire Management

The subject site is currently mapped as Bushfire Prone. In accordance with State Planning Policy 3.7 *Planning in Bushfire Prone Areas* a Bushfire Management Plan has been prepared. The Bushfire Management Plan sets out a number of strategies and requirements to manage and minimise the impacts of a bushfire event on the subject site.

BAL Contour Plan Mapping

All lots contained within the subject site have been mapped with an indicative Bushfire Attack Level between 12.5 and 29 under a Method 1 BAL Assessment demonstrating that the entire subdivision area is appropriate for residential land use development.

Bushfire Management Requirements

Section 6 of the Bushfire Management Plan prescribes the following responsibility and implementation measures:

Developer / Landowner responsibilities	
1	At subdivision stage ensure water supply, vehicular access standards and internal APZs are established and maintained.
2	At subdivision stage, 0.5m of land is to be ceded from Lots 52 and 60 as POS for the purposes of a limestone firebreak. This land will form part of the limestone firebreak on the adjoining reserve to a total of 8 metres. The limestone trail is established to standards acceptable by the City of Cockburn on the western interface. The developer will maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost.
3	At subdivision stage, assess and confirm the BAL ratings for individual lots prior to the creation of titles.
4	Install the public roads to standards outlined in Appendix 2.
5	Ensure the POS reserve is established and maintained to manage fuel loads and low threat managed conditions.
6	Update the Bushfire Management Plan as requested by the City of Cockburn if it has reasonable reason to believe site conditions have substantially changed or new methodologies or practices are adopted as identified in future revisions of the "Guidelines".
City of Cockburn– Ongoing Management	
7	Maintain public roads to appropriate standards and ensure compliance with the City of Cockburn's Fire Control Order.
8	Provide fire prevention and preparedness advice to landowners upon request and the City of Cockburn's Fire Control Order.
9	Maintain the fire trail batter and grassland areas as grassland in the adjacent reserve, by slashing any revegetation of shrubs, etc.

The above provisions can be implemented which will provide acceptable solutions and responses in order to satisfy the bushfire management issues identified within the Guidelines for Planning in Bushfire Prone Areas (WAPC 2017 Version 1.3).

A Copy of the Bushfire Management Plan Report is contained within Appendix 3.

5.0 STRUCTURE PLAN

5.1 Residential Density & Structure Plan Performance

The Structure Plan facilitates the development of 11 additional lots which will be developed with single house dwellings. In addition to these 11 additional dwellings, the existing dwelling located adjacent to Ocean Road will be capable of future subdivision into 2 lots. The total proposed development would provide accommodation for up to 34 people based on an average of 2.8 persons per dwelling.

The R25 density under the Structure Plan will facilitate medium density lot sizes which is consistent with the intent under the Packham North District Structure Plan.

Table 2 – Residential dwelling yield estimate

Residential lot typology	Density	Yield	Housing Typology
Medium density residential	R25	8	Single Dwellings
Medium density residential	R25	2	Subdivision of existing dwelling lot into 2 Grouped Dwellings or 2 Freehold Lots
Medium density residential	R30	3	
Structure Plan Estimated Dwelling Yield		13	

Table 3 – Development Statistics

	Outcomes	Density Targets
Structure Plan Area	7,609m ²	
Land set aside for roads, drainage and public open space	2,403m ²	
Balance of land for residential development	5,206m ²	
Estimated total number of dwellings	13 dwellings	
Estimated Dwelling Yield	26 dwellings per ha	<u>Liveable Neighbourhoods</u> 12 – 20 dwellings per site ha
Structure Plan Target Density	20 dwellings per ha	<u>Directions 2031</u> 15 dwellings per gross urban ha

The Structure Plan facilitates a yield of 26 dwellings per site hectare, noting that the subdividable area is below one hectare.

5.2 Land Use

The proposed land uses are identified in the Structure Plan under the 'Zones' and 'Reserves'. The Zoning is 'Residential' with future development to be guided by the 'Residential' zoning requirements as prescribed under the City of Cockburn Town Planning Scheme No. 3.

Town Planning Scheme No. 3 will also control the use and development of the land reserved for Parks and Recreation under the Structure Plan.

6.0 MOVEMENT NETWORK

6.1 Transport Impact Statement

A Transport Impact Statement has been prepared in accordance with the WAPC's '*Transport Impact Assessment Guidelines 2016*'.

A Copy of the Transport Impact Statement is contained within Appendix 4.

6.2 Existing Road Network

The northern boundary of the subject site has frontage to Ocean Road with a portion of Ocean Road westwards of the subject site being classified as a Primary Regional Road under the MRS. Ocean Road connects to Cockburn Road which is located approximately 300m west of the subject site. Cockburn Road is also a Primary Regional Road under the MRS and runs in a north-south direction.

6.2 Proposed Road Network

The proposed road network connects into the existing Rasano Promenade and the laneway intersecting with Sokol Way. All lots within the structure plan area will have direct access to adjacent roads.

6.3 Proposed Pedestrian/ Cyclist Network

Pedestrian access to the structure plan area is available via the existing external footpath network extending along the northern side of Ocean Road, eastern side of Sokol Way, southern side of Rasano Promenade and southern side of Prizba Rise.

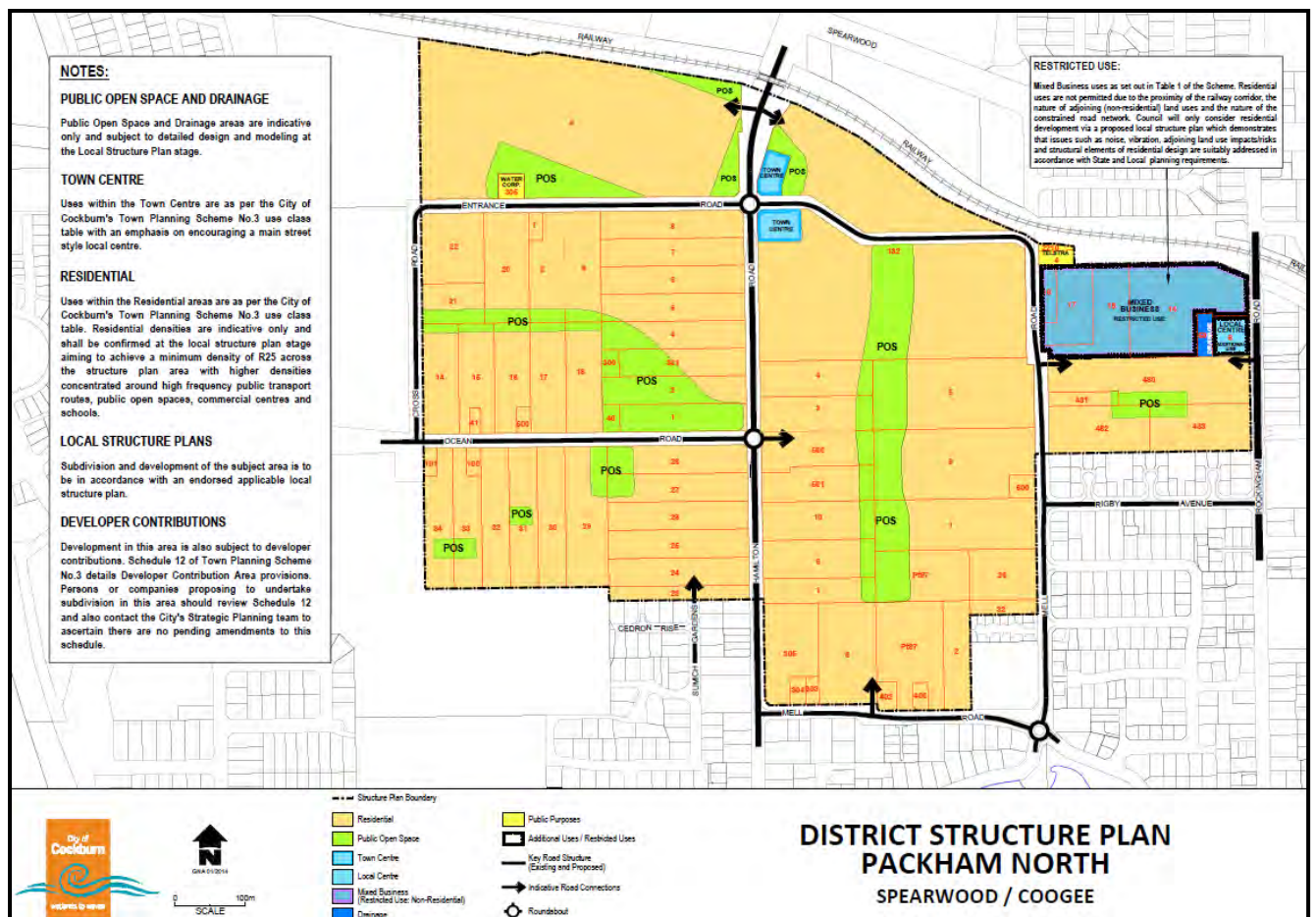
The Department of Transport's Perth Bicycle Network identifies existing cyclist connectivity to the structure plan area.

7.0 PUBLIC OPEN SPACE

7.1 Location and Area of POS

The Structure Plan provides 761m² of public open space in accordance with the 10% public open space requirements prescribed under the WAPC LN Policy and the corresponding Development Control Policy 2.3 *Public Open Space in Residential Areas*.

Under the Packham North District Structure Plan the public open space is located as per the below plan. The public open space has been located further south adjacent to Prizba Rise to adhere with R12 for Element 4 – Public Parkland within LN. The proposed location of the public open space will also provide an additional buffer to the Parks and Recreation MRS reserve to the south which is mapped as a bushfire prone area.



7.2 Public Open Space Schedule

Structure Plan Site Area Less			0.7609 ha
Deductions (LN Element 4)			
Primary School	Nil		
Town Centre/ Commercial	Nil		
Dedicated drainage reserves	Nil		
Transmission corridor	Nil		
Other approved contingencies	Nil		
			0.00 ha
Gross subdividable Area (GSA)			0.7609 ha
10% Public Open Space requirement			0.07609 ha
Public open space contribution			
May compromise <ul style="list-style-type: none"> • Minimum 80% unrestricted POS • Maximum 20% restricted POS 	0.06087 ha 0.01521 ha		0.07609 ha
Unrestricted POS area (Non- Drainage > 5 year AR1)		0.00 ha	0.0761 ha
Linear Parkway		0.06087 ha	
Restricted Use POS area (1:5 yr AR1)		0.01521 ha	
Public Open Space provided			0.076ha (10.00%)

7.3 Function of the POS

As per the POS schedule and technical memo contained within Appendix 5, the area restricted for drainage purposes will not exceed 20% of the total POS area. The balance of the POS will be set aside for recreational purposes. The local development plan will guide the built form adjacent to the POS ensuring there is adequate interface and surveillance.

A model standard condition will be imposed for the landowner/applicant to develop the POS to a minimum standard. This may include the preparation and approval of a landscape plan (in conjunction with future requirements for the City of Cockburn).

8.0 WATER MANAGEMENT

8.1 LWMS & UWMP

A combined District and Local Water Management Strategy (LWMS) was completed by Cardno Consulting in December 2011 for the Packham North District Structure Plan area which incorporates the subject site. McDowall Affleck consulting engineers have reviewed the proposed subdivision concept and location of the POS which form part of the Structure Plan the subject of this application and confirm the Structure Plan is capable of accommodating the drainage requirements of the previous District and LWMS (refer to technical memo under Appendix 5).

Given that the consulting engineers have identified that there are no drainage constraints over the proposed development site, the previous UWMP will be sufficient to facilitate an appropriate level of urban water management.

9.0 CONCLUSION

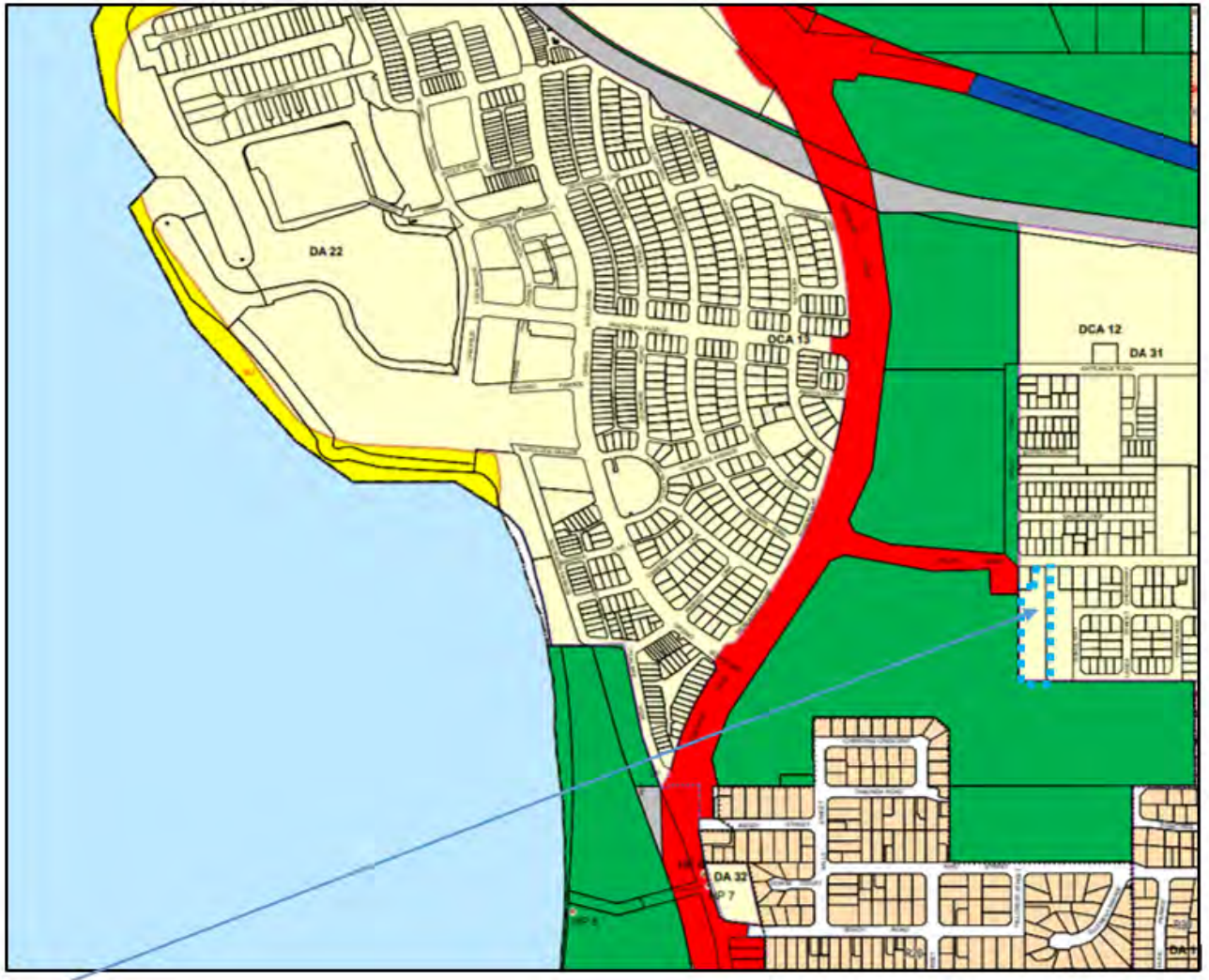
The Structure Plan has been prepared in order to guide the future subdivision of Lot 34 (No.65) Ocean Road, Coogee for residential purposes.

The proposed Structure Plan is considered to have due regard for the existing planning framework and is compatible with the areas planned and developed under the Ocean Crest Local Structure Plan. The Local Structure Plan has been prepared in accordance with the provisions under Schedule 2 Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

10.0 FIGURES

Figure 1

Town of Cockburn Town Planning Scheme No. 3 Map 5



subject site

Figure 2

Metropolitan Region Scheme Map

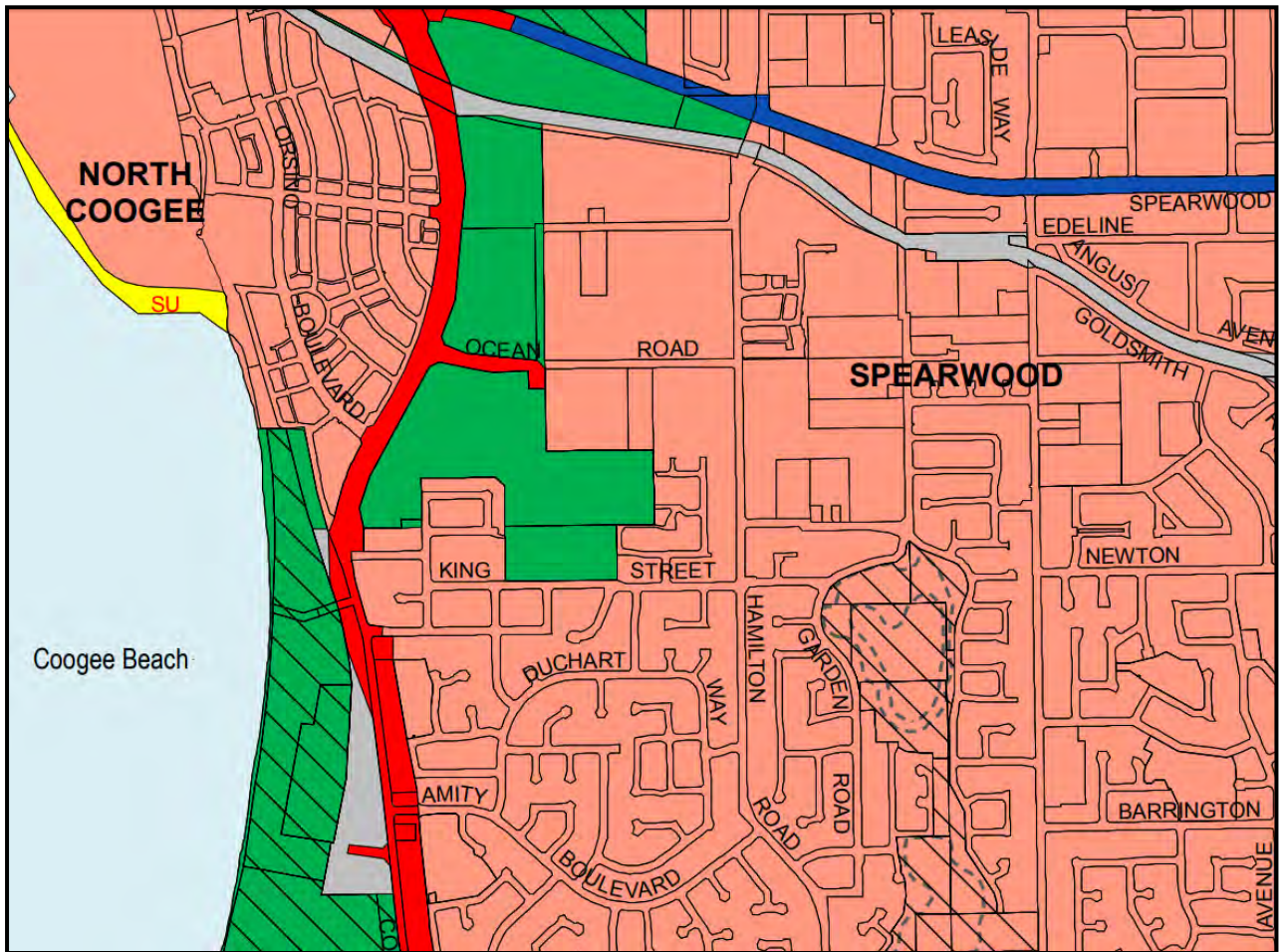


Figure 3

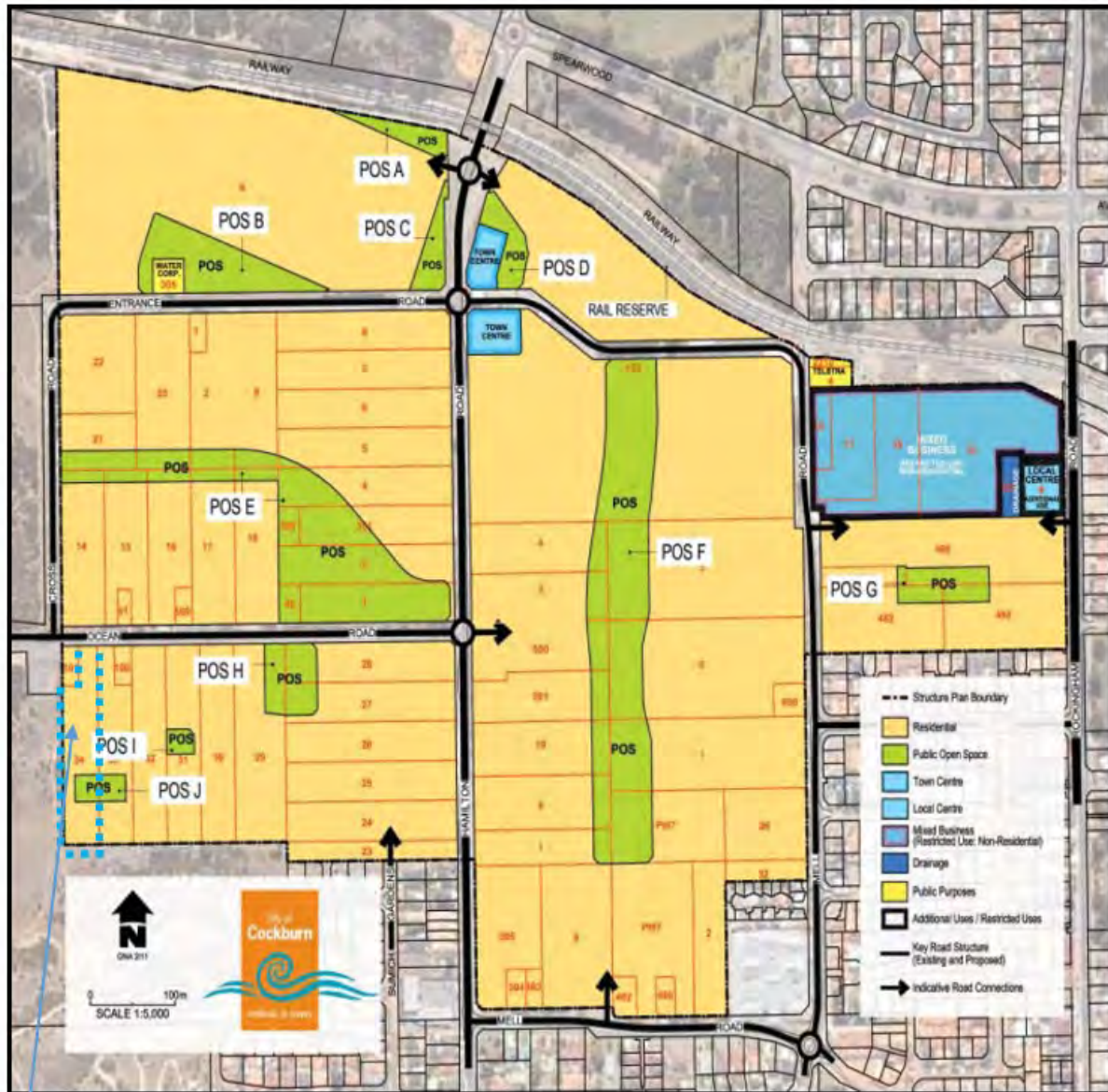
Aerial Photography of subject site



Subject site

Figure 4

Local Public Open Space Plan



Subject site

Figure 5

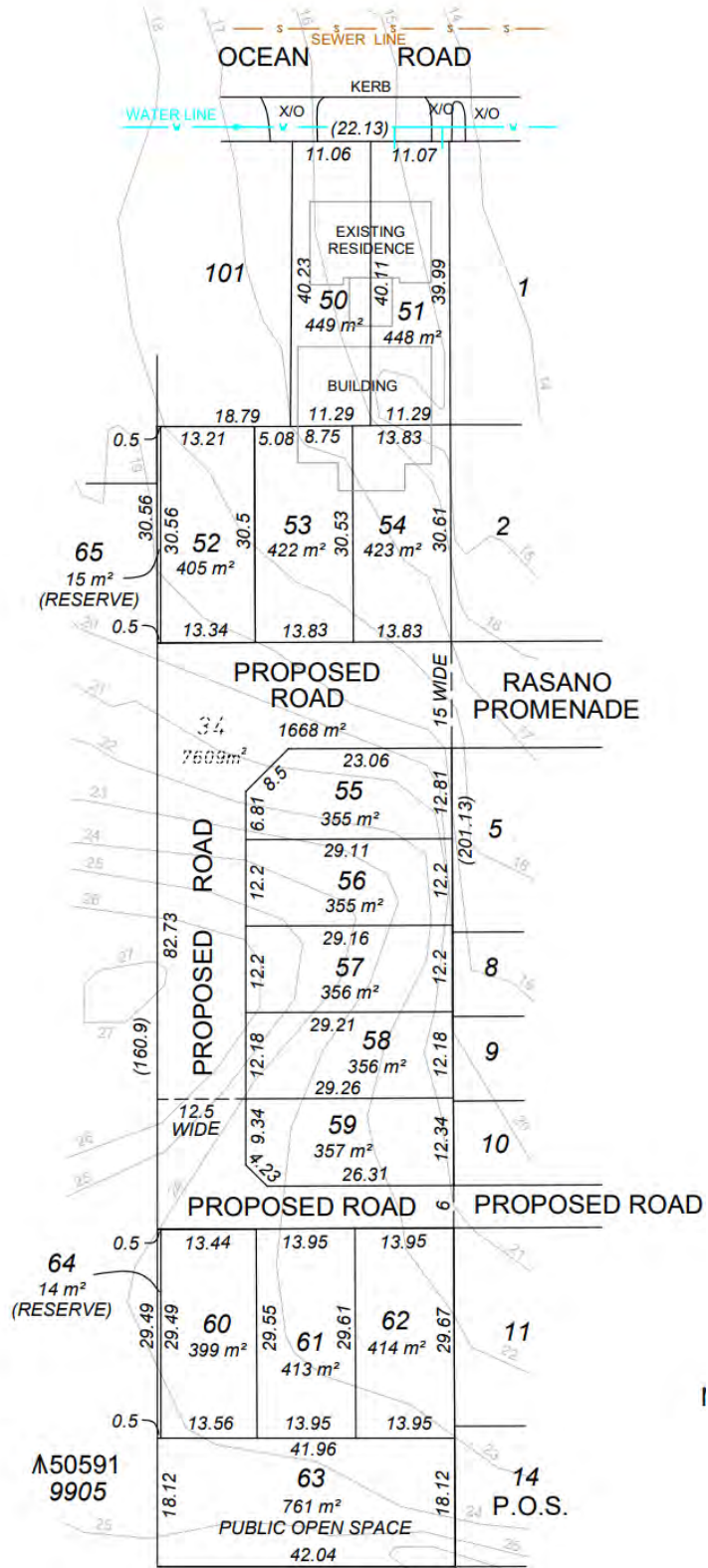
Topography Plan



subject site

Figure 6

Indicative lot layout plan



11.0 TECHNICAL APPENDICES

Appendix 1 – Certificate of Title

WESTERN



AUSTRALIA

REGISTER NUMBER 34/P5190	
DUPLICATE EDITION 2	DATE DUPLICATE ISSUED 29/8/2017

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME **1623** FOLIO **989**

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 34 ON PLAN 5190

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

REALZONE HOLDINGS PTY LTD OF 47A WEST COAST DRIVE WATERMANS BAY WA 6020
(T O318909) REGISTERED 8/1/2020

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. THE LAND THE SUBJECT OF THIS CERTIFICATE OF TITLE EXCLUDES ALL PORTIONS OF THE LOT DESCRIBED ABOVE EXCEPT THAT PORTION SHOWN IN THE SKETCH OF THE SUPERSEDED PAPER VERSION OF THIS TITLE. VOL 1623 FOL 989.
2. *O318910 MORTGAGE TO R.A.C. FINANCE LIMITED OF 832 WELLINGTON STREET WEST PERTH WA 6005 REGISTERED 8/1/2020.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1623-989 (34/P5190)
 PREVIOUS TITLE: 1289-111
 PROPERTY STREET ADDRESS: 65 OCEAN RD, COOGEE.
 LOCAL GOVERNMENT AUTHORITY: CITY OF COCKBURN

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING O318910

Appendix 2 – Environmental Report



Report on

**DESKTOP ENVIRONMENTAL
DUE DILIGENCE ASSESSMENT**

**65 OCEAN ROAD,
COOGEE**

Submitted to:
Realstar Enterprises Pty Ltd
c/- Derrick D'Souza

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50 Edward Street
OSBORNE PARK WA 6017
T: +61 (8) 6272-0200

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APPENDICES

APPENDIX A:	SITE PHOTOGRAPHS
APPENDIX B:	UNDERSTANDING YOUR REPORT

1. INTRODUCTION

This report presents the outcomes of Galt Environmental Pty Ltd's (Galt's) desktop environmental due diligence assessment for a site located at 65 Ocean Road, Coogee ("the site"). The location of the site relative to the surrounding area is shown on Figure 1. Site photographs are presented in Appendix A.

The study was requested by Jordan Ennis via an email dated 1 May 2019

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

Based on the supplied information, L-shape in plan and approximately 7,609 m² in size. The site is bounded by Ocean Road to the north, residential properties to the east, and vacant land to the west and south.

Publicly available topographic data indicates that the site slopes steeply from about RL 25 m AHD along the southern boundary to about RL 18 m AHD along the northern boundary. There is a mound in the middle of the site (associated with outcropping limestone in this area). The northern portion of the site contains a double-storey residential house and a large workshop/shed. The central and southern portions of the site are vacant.

We have not been provided with a subdivision plan for the site, however we assume that it will include residential lots of approximately 300 m² in size, including access roads is proposed for the site.

3. PROJECT OBJECTIVES

We understand the objectives of the study are to:

- ✦ undertake a desktop review of relevant environmental factors at the site that may impact on the proposed development; and
- ✦ make recommendations for additional investigations and/or remedial works (if required).

4. ENVIRONMENTAL DESKTOP ASSESSMENT

4.1 Geology

The Fremantle sheet of the 1:50,000 scale Environmental Geology series map indicates that the majority of the site is mapped as being underlain by limestone.

Our experience in the vicinity of the site indicates that subsurface conditions are likely to consist of a layer of sand overlying limestone beneath the existing building with outcropping limestone across the remainder of the site. This appeared to be borne out during our site walkover in May 2019. Aerial photography and our own walkover indicate outcropping limestone present over much of the central area of the site.

Geological mapping is shown on Figure 2.

4.2 Groundwater

The Perth Groundwater Atlas (1997) shows the maximum groundwater level to be around RL 1 m AHD. This is within about 11 m to 24 m of the current ground surface.

Groundwater contours are shown on Figure 3A.

4.3 Acid Sulfate Soils

The Department of Water and Environmental Regulation (DWER) acid sulfate soil (ASS) mapping indicates that the site is located in an area having no known ASS occurrence within 3 m of the natural surface.

ASS risk mapping is shown on Figure 3A.

4.4 Environmentally Sensitive Areas

The Department of Biodiversity, Conservation and Attractions (DBCA) database indicates that the site is not mapped as having environmentally sensitive areas (ESAs) within the boundary. The nearest ESA is located approximately 200 m to the southwest of the site.

The location of ESAs is shown on Figure 3A.

4.5 Geomorphic Wetlands

The DBCA database indicates that there are no geomorphic wetlands located on or within a 250 m radius of the site.

The location of geomorphic wetlands is shown on Figure 3A.

4.6 Contaminated Sites

The site is not classified under the *Contaminated Sites Act 2003*. There are no registered contaminated sites located within a 250 m radius of the site.

Contaminated sites mapping is shown on Figure 3B.

4.7 Heritage Sites

Aboriginal Heritage sites in Western Australia are managed by the Department of Aboriginal Affairs (DAA). Based on search results and mapping provided by DAA, no heritage sites exist within the site's boundary.

The location of heritage sites is shown on Figure 3B.

4.8 Bushfire Prone Areas

The site is located in a bushfire prone area as mapped by the Department of Fire and Emergency Services (DFES). As such, any development at the site will require a Bushfire Attack Level (BAL) assessment undertaken by a qualified bushfire risk consultant.

Bushfire prone areas are shown on Figure 3B.

4.9 Historical Aerial Imagery

Historical aerial photographs were reviewed to develop an understanding of previous land uses at the site and adjacent sites. A review of available historical aerial photographs indicates that the majority of the site was vacant until between 1985 and 1995. At this time, the house and sheds were constructed. The site has remained largely unchanged since 1995.

Historical aerial photographs are shown on Figures 4A-4F.

5. SUMMARY

Based on the findings of desktop environmental due diligence report, we consider that there unlikely to be any significant environmental constraints that may impact on the proposed development.

We note the presence of shallow and outcropping limestone across the central and southern portions of the site. These areas will require appropriate geotechnical site preparation to facilitate the proposed development. We recommend that a geotechnical study be conducted once subdivision approval has been received.

6. CLOSURE

We draw your attention to Appendix B of this report, "Understanding your Report". The information provided within is intended to inform you as to what your realistic expectations of this report should be. This information is provided not to reduce the level of responsibility accepted by Galt, but to ensure that all parties who rely on this report are aware of the responsibilities each assumes in so doing.

GALT ENVIRONMENTAL PTY LTD

A handwritten signature in black ink, appearing to read "Brad Palmer", written in a cursive style.

Brad Palmer

Environmental Scientist

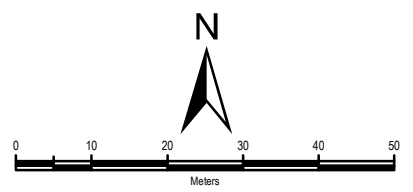
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Figures



Legend
 Site Boundary



NOTES
 Aerial Imagery and Cadastre sourced from Landgate/SLIP



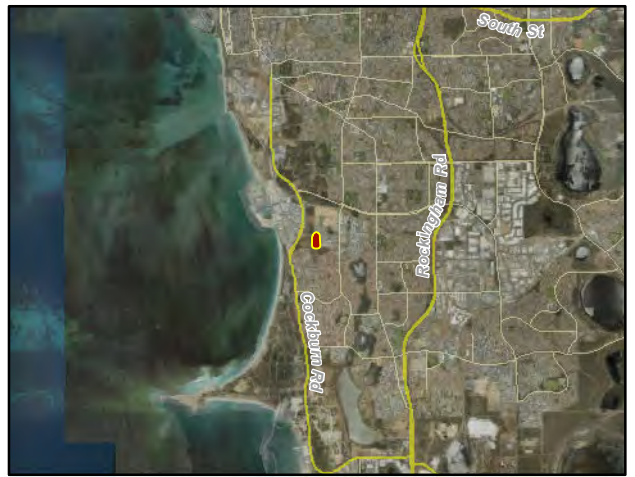
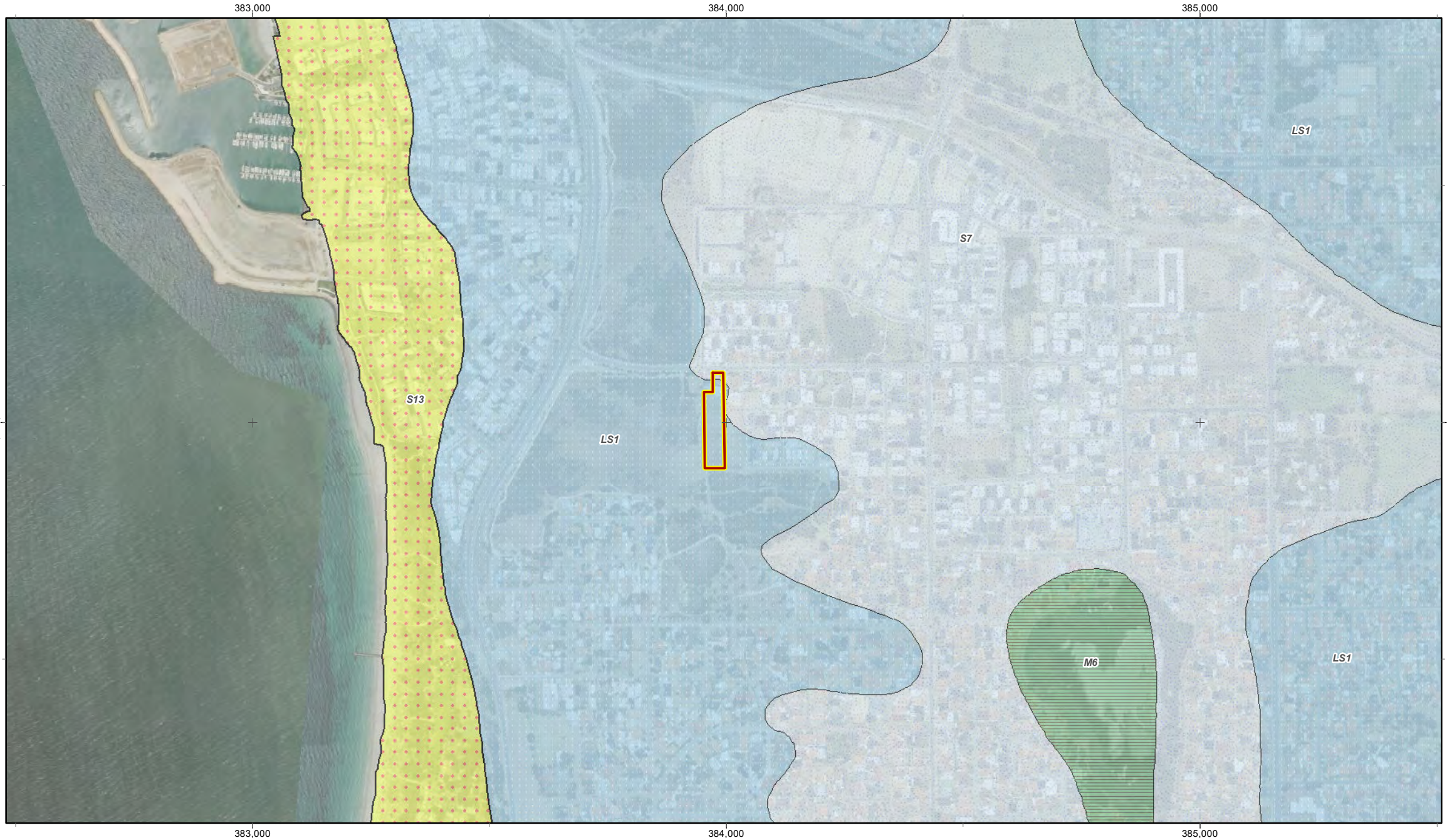
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PROJECTION	GDA 1994 MGA Zone 50	



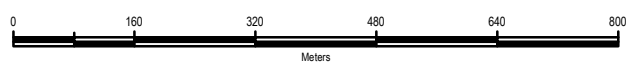
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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	SITE & LOCATION PLAN		
Job No	J1702031	Fig No	FIGURE 1
		Rev	A



Legend
 Site Boundary



GEOLOGY MAP

FREMANTLE:20334 CODE, NARRATIVE	
LS1	LS1: LIMESTONE - pale yellowish brown, fine to coarse-grained, sub-angular to well rounded, quartz, trace of feldspar, shell debris, variably lithified, surface kankar, of eolian origin
M6	M6: SILT - brownish grey, calcareous in part, soft, some fine sand content in places, of lacustrine origin
S13	S13: CALCAREOUS SAND - white, medium-grained, rounded quartz and shell debris, well sorted, of eolian origin
S7	S7: SAND - pale yellowish brown, medium to coarse-grained sub-angular quartz, trace of feldspar, moderately sorted, of residual origin

GEOLOGY MAP LEGEND *Geology sourced from the GSWA 1:50 000 mapsheet FREMANTLE (ENVIRONMENTAL GEOLOGY)*

NOTES
 Aerial Imagery and Cadastre sourced from Landgate/SLIP



SCALE	1:10,000	(A3)
DRAWN	CED	
DATE DRAWN	14/05/2019	
CHECKED	-	
DATE CHECKED	-	
PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	GEOLOGY		
Job No	J1702031	Fig No	FIGURE 2
		Rev	A



ACID SULFATE SOIL RISK MAPPING

- High to moderate risk
- High Risk of ASS (CSIRO NatASS_1902103)
- Moderate to low risk
- Low Risk of ASS (CSIRO NatASS_1902103)

ACID SULFATE SOIL RISK MAPPING information sourced from DER datasets DER-003, DER-004, DER-008, DER-009, DER-010, DER-011. The information shows the risk of Acid Sulfate Soil (ASS) materials being disturbed by land development activities based on the likelihood of ASS materials occurring within soil profiles. This data was developed to assist planners in assessing whether development applications require additional conditions for sites where there is a risk disturbing ASS. The NatASS_1902103 was sourced from the CSIRO and covers the areas not subject to mapping by DER.



CONTAMINATED SITES

- Contaminated - remediation required
- Contaminated - restricted use
- Remediated for restricted use

CONTAMINATED SITES information sourced from Contaminated - Reported Sites (DER-015) dataset. The Contaminated Sites Database holds information on confirmed contaminated sites (those classified 'contaminated-remediation required', 'contaminated-restricted use' and remediated for restricted use). Information on all other reported sites is recorded on the Reported Sites Register



RAMSAR SITES

- RAMSAR site

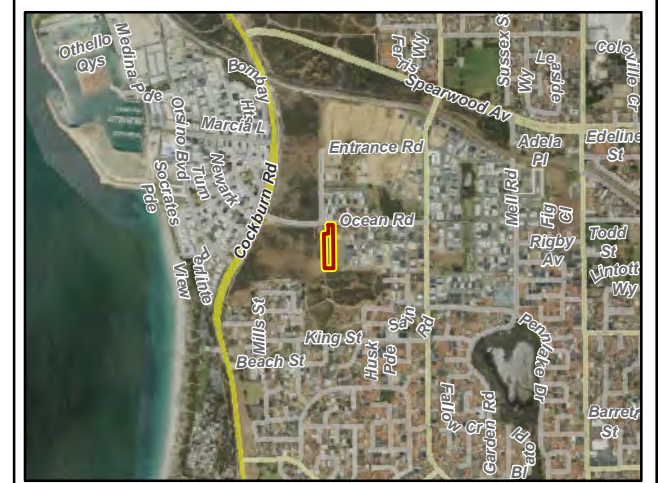
RAMSAR SITES information sourced from datasets Refer to <https://catalogue.data.wa.gov.au/organization/department-of-biodiversity-conservation-and-attractions> for additional information.



GEOMORPHIC WETLANDS

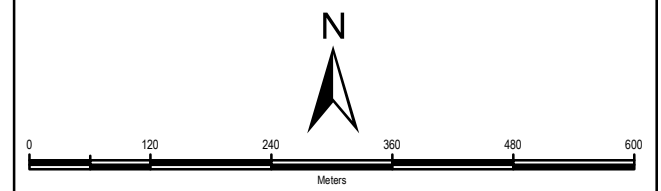
- Multiple Use
- Resource Enhancement
- Conservation
- Not Assessed
- Not Applicable

GEOMORPHIC WETLANDS information sourced from datasets DPAW-017, DPAW-021, DPAW-022, DPAW-037, DPAW-048, DPAW-047, DPAW-049 & DPAW-050. Refer to <https://catalogue.data.wa.gov.au/organization/department-of-biodiversity-conservation-and-attractions> for additional information.



Legend

- Site Boundary



NOTES
Aerial Imagery sourced from Landgate / SLIP

	SCALE	1:7,500 (A3)
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	DATE DRAWN	14/05/2019
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	DATE CHECKED	-
	PROJECTION	GDA 1994 MGA Zone 50

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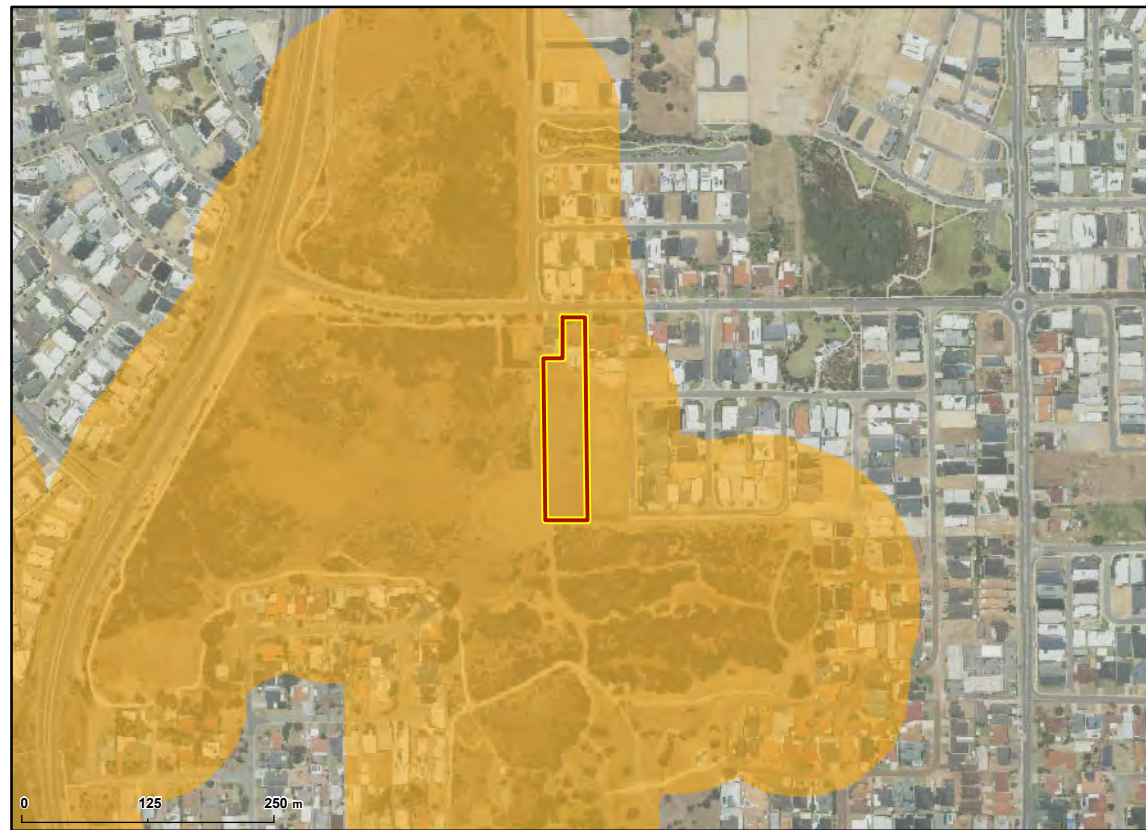
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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	INDICATIVE ENVIRONMENTAL ASPECTS (1 OF 4)		
Job No	J1702031	Fig No	FIGURE 3A
		Rev	A



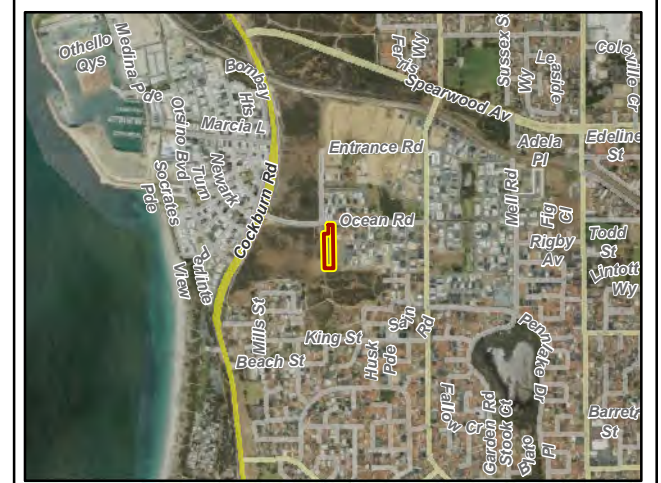
CLEARING REGULATIONS - ENVIRONMENTALLY SENSITIVE AREAS

Environmentally Sensitive Area



BUSH FIRE PRONE AREAS

Bush Fire Prone Area



Legend

Site Boundary

CLEARING REGULATIONS - ENVIRONMENTALLY SENSITIVE AREAS information sourced from *Clearing Regulations - Environmentally Sensitive Areas (DER-016)*, *Environmentally Sensitive Areas* as declared in *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, *Government Gazette No. 55*. This dataset is provided to assist landowners and managers in determining the location of environmentally sensitive areas under the *Environmental Protection Act 1986*. It is not a substitute for any requirement of the legislation.

BUSH FIRE PRONE AREAS information sourced from *The Bush Fire Prone Areas 2017 (OBRM-008)* and *(OBRM-010)* datasets and identifies bush fire prone areas of Western Australia as designated by the *Fire and Emergency Services (FES) Commissioner* on 1 June 2017. Bush fire prone areas are subject to, or likely to be subject to, bush fire attack. A bush fire prone area is identified by the presence of and proximity to bush fire prone vegetation, and includes both the area containing the bush fire prone vegetation and a 100 metre buffer zone immediately surrounding it.



EUROPEAN HERITAGE

Conservation Order (SHO_001) State Register (SHO_003) Municipal Inventory (SHO_005)
 Heritage Agreements (SHO_002) Assessment Program (SHO_004)

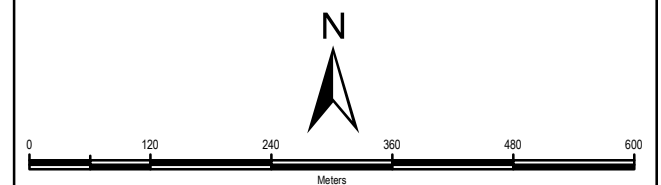
EUROPEAN HERITAGE datasets *Conservation Orders (SHO_001)* protect places of cultural heritage significance to Western Australia from damage. *Conservation Orders* are put in place by the *Minister for Heritage* on the advice of the *Heritage Council* and prohibit certain activities without *Ministerial consent*. *Heritage Agreements (SHO_002)* are entered into between a property owner and the *Heritage Council* or another public authority on behalf of the *State* in return for planning approval or other concessions granted to the owner. *The State Register of Heritage Places (SHO_003)* recognises a place's value and importance to *Western Australia*. *The State Register* is managed by the *Heritage Council* and provides a place with statutory protection to ensure that any proposed demolition, relocation, subdivision, amalgamation, alteration or new development is in harmony with its cultural heritage values. *The Heritage Council's Assessment Program (SHO_004)* contains places that the *Council* has an interest in, and which will be assessed and considered for inclusion on the *State Register of Heritage Places*. A *Municipal Inventory (SHO_005)* is a list of places within a local district which are, or may become, of cultural heritage significance. Listing in a *Municipal Inventory* does not give a place legal protection, but it may be protected by other statutory provisions such as inclusion in the *Heritage List* of a local plan, or listing in the *State Register of Heritage Places*, or by a *Heritage Agreement* or *Conservation Order*.



ABORIGINAL HERITAGE

Contact DAA Registered Site
 Lodged Stored Data / Not a Site

ABORIGINAL HERITAGE information sourced from *DAA-001*. This data set contains places within *Western Australia* that have been reported to the *Registrar of Aboriginal Sites* as possible *Aboriginal sites* within the meaning of the *Aboriginal Heritage Act 1972 (AHA)*. This includes: *Registered Sites* - being places assessed by the *Aboriginal Cultural Material Committee (ACMC)* as meeting the criteria for section 5 of the *AHA*. *Lodged Places* - being places that are yet to be formally assessed by the *ACMC* against the criteria of section 5. *Stored Data* - being places the *ACMC* has assessed to which section 5 of the *AHA* does not apply.



NOTES

Aerial Imagery sourced from Landgate / SLIP

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DATE CHECKED	-	
PROJECTION	GDA 1994 MGA Zone 50	

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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	INDICATIVE ENVIRONMENTAL ASPECTS (2 OF 4)		
Job No	J1702031	Fig No	FIGURE 3B
Rev	A		



GROUNDWATER CONTOURS & WIN SITES

Historical Maximum (1997)	End of Summer (2003)	WIN Sites
5m	5m	● Ground, Borehole or Well
1m	1m	○ Other

GROUNDWATER CONTOURS & WIN SITES information sourced from the Department of Water. The Perth Groundwater Atlas (1997) shows the historical maximum groundwater level. The Perth Groundwater Atlas (2004) shows the May 2003 (late summer) groundwater level. We note that the 2004 atlas typically reflects the seasonal minimum groundwater levels and the historical maximum groundwater level is likely to be significantly higher.



FLOODPLAIN MAPPING

Floodplain Development Control Area	1 in 10 (10%) AEP floodplain	1 in 200 (0.5%) AEP floodplain
Not a Floodplain Development Control Area	1 in 20 (5%) AEP floodplain	1 in 500 (0.2%) AEP floodplain
Flood Fringe	1 in 25 (4%) AEP floodplain	Designated flood event floodplain
Floodway	1 in 50 (2%) AEP floodplain	Maximum Channel Capacity
FPM 1 in 100 (1%) AEP Flood Fringe Line	1 in 100 (1%) AEP floodplain	Probable maximum flood

FLOODPLAIN MAPPING information sourced from Department of Water datasets (DOW-032), (DOW-041), (DOW-043), (DOW-054). The Dept of Water produces 100 year ARI floodplain mapping of rivers and major watercourses. The 100 year ARI flood level is expected to occur, on average, once every 100 years. Floods higher than this level will occur but will be less frequent. Floodplain development strategies are then developed to ensure that proposed floodplain development has adequate flood protection and does not impact on the existing flood regime of the area.



PUBLIC DRINKING WATER SOURCE AREAS

P1 AREA	P3 AREA	PRIORITY NA
P2 AREA	P3* AREA	

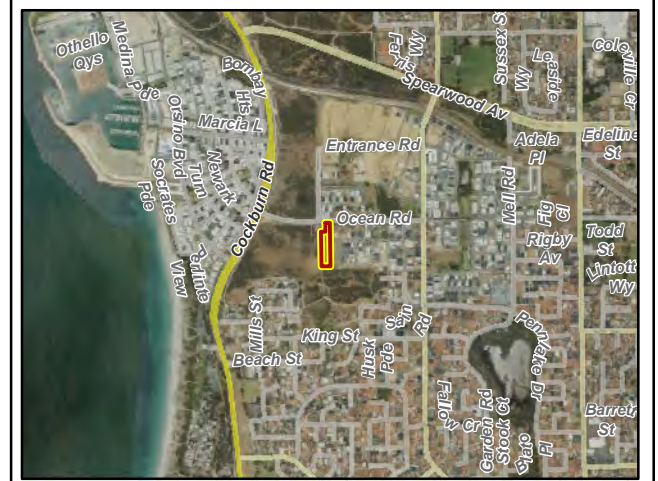
PUBLIC DRINKING WATER SOURCE AREAS information sourced from datasets Public Drinking Water Source Areas (DWER-033) Public drinking water source areas (PDWSAs) are surface water catchments and groundwater areas that provide drinking water to cities, towns and communities throughout the state. PDWSAs are proclaimed under the Metropolitan Water Supply, Sewerage, and Drainage Act 1909 or the Country Areas Water Supply Act 1947. Groundwater sources are normally referred to as underground water pollution control areas or water reserves. Surface water sources are generally referred to as catchment areas. In response to the 2010-11 dry season, the Department of Water updated the areas suitable/unsuitable for additional garden bores in the Perth region.



GARDEN BORE SUITABILITY

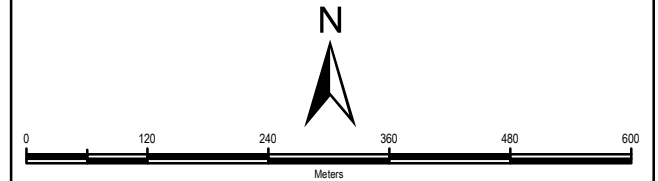
Suitable
Unsuitable

GARDEN BORE SUITABILITY information sourced from datasets Garden Bore Suitability (DWER-025). In response to the 2010-11 dry season, the Department of Water updated the areas suitable/unsuitable for additional garden bores in the Perth region. Areas designated unsuitable for additional garden bores have included the following factors: - salinity levels likely to be 1500 mg/L TDS or greater (in some instances >1000 mg/L TDS) because of proximity to river or ocean; - proximity to conservation wetlands (EPP 2004, Conservation, and Resource Enhancement); - potential for unreliable supply to clay soils (Guildford Clay); areas of thin superficial formations underlain by Rockingham Sand and/or Leederville Formation; and - potential for development of acid sulphate soils. - current Gngangara Mound groundwater abstraction risk map plus buffers around wetlands recommended for protection in the Gngangara Sustainability Strategy.



Legend

Site Boundary



NOTES

Aerial Imagery sourced from Landgate / SLIP

SCALE	1:7,500	(A3)
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DATE CHECKED	-	
PROJECTION	GDA 1994 MGA Zone 50	

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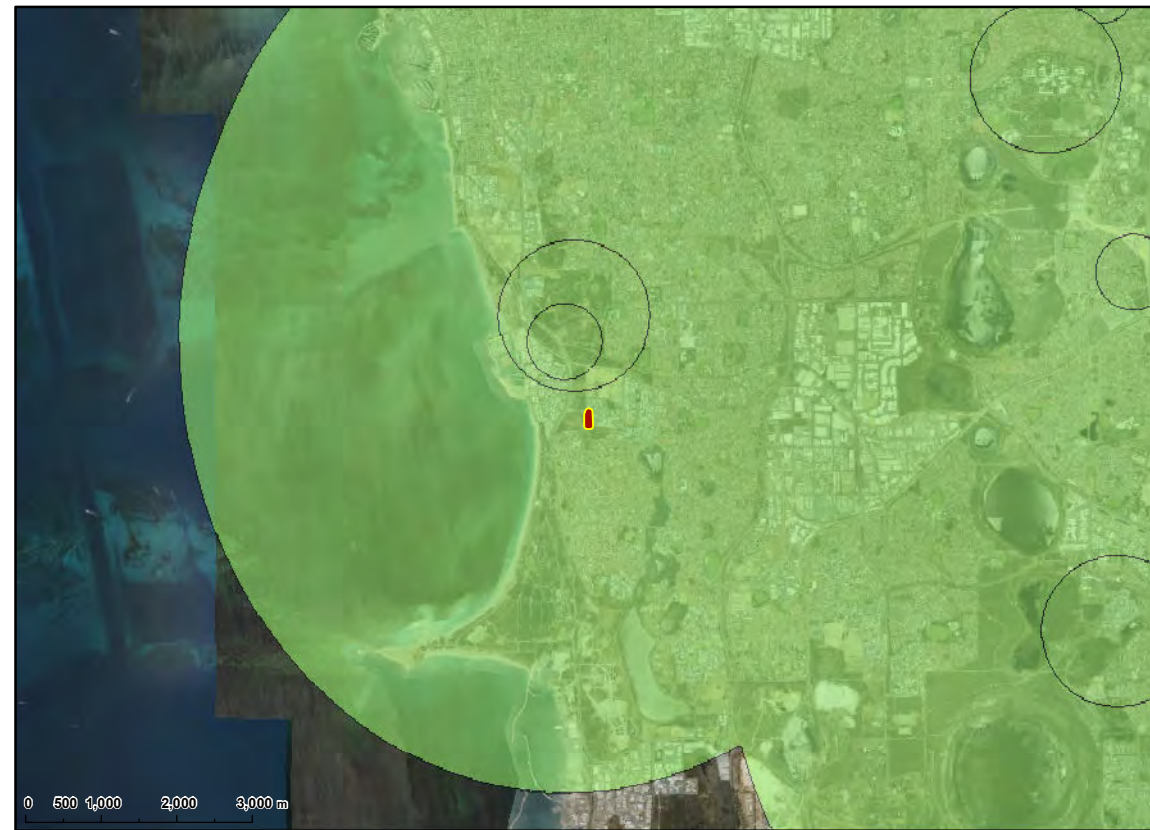
CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	INDICATIVE ENVIRONMENTAL ASPECTS (3 OF 4)		
Job No	J1702031	Fig No	FIGURE 3C
Rev	A		



SIGNIFICANT VEGETATION

- Bush Forever Areas 2000 (DOP-071)
- Native Vegetation Extent (DPIRD-005)
- Forest Disease Risk Areas (DBCA-024)
- Tuart Woodlands (DBCA-048)

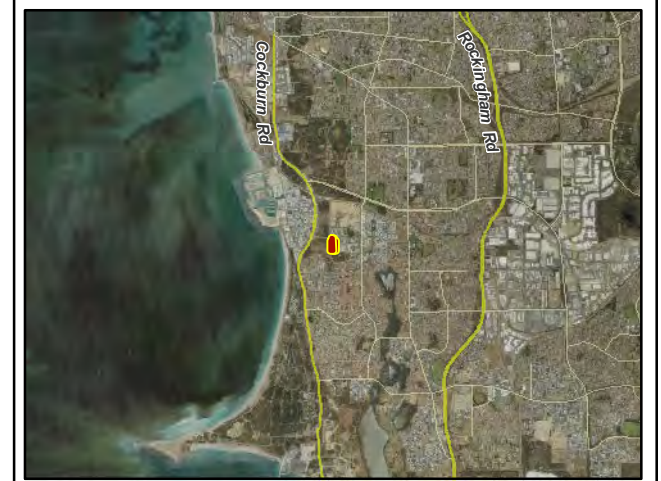
The Bush Forever layer (DOP-071) is the original Bush Forever Areas in 2000 sourced from Department of Planning. The Forest Disease Risk Areas (DBCA-024) is from the official statutory plans from the DEC GIS Branch. The Department of Biodiversity, Conservation and Attractions (DBCA) maintains this dataset. The Native Vegetation Extent (DPIRD-005) data set contains the vegetation extent from the mapping of remnant vegetation in Western Australia and is maintained by Department of Primary Industries and Regional Development. Tuart Woodlands (DBCA-048) shows the areas of conservation, management due to the serious



SIGNIFICANT FAUNA

- Carnaby's Cockatoo Confirmed Breeding Areas (DBCA-054)
- Confirmed Roost Sites Buffered 6km (DBCA-052)
- Confirmed Roost Sites (DBCA-050)
- Western Swamp Tortoise EPP 2003 Policy Boundary (DWER-062)
- Habitat (DWER-071)
- Western Ringtail Possum Habitat Suitability (DBCA-049) Very High
- High
- Medium
- Low
- Very Low
- Unsuitable

(DBCA-050) describes the currently known and confirmed night roost areas for Carnaby's Black Cockatoo in the South - West of Western Australia. A confirmed site is a site where CBC were recorded roosting as part of a formal roost survey (using the Great Cocky Count method in which birds are recorded as they settle, 30 minutes either side of sunset), as described by Berry (2008). (DBCA-052) is a 6km buffer around a confirmed site. Buffering was done to cover roost movement and recording accuracy. Roosts were buffered to 6km to indicate the likely feeding area of the roost. (DBCA-054) Shows the confirmed breeding areas of the Carnaby's Black Cockatoo (CBC) within the Swan Coastal Plain and the Jarrah Forest IBRA regions. Confirmed sites are identified where chicks or eggs of CBC have been observed.



Legend

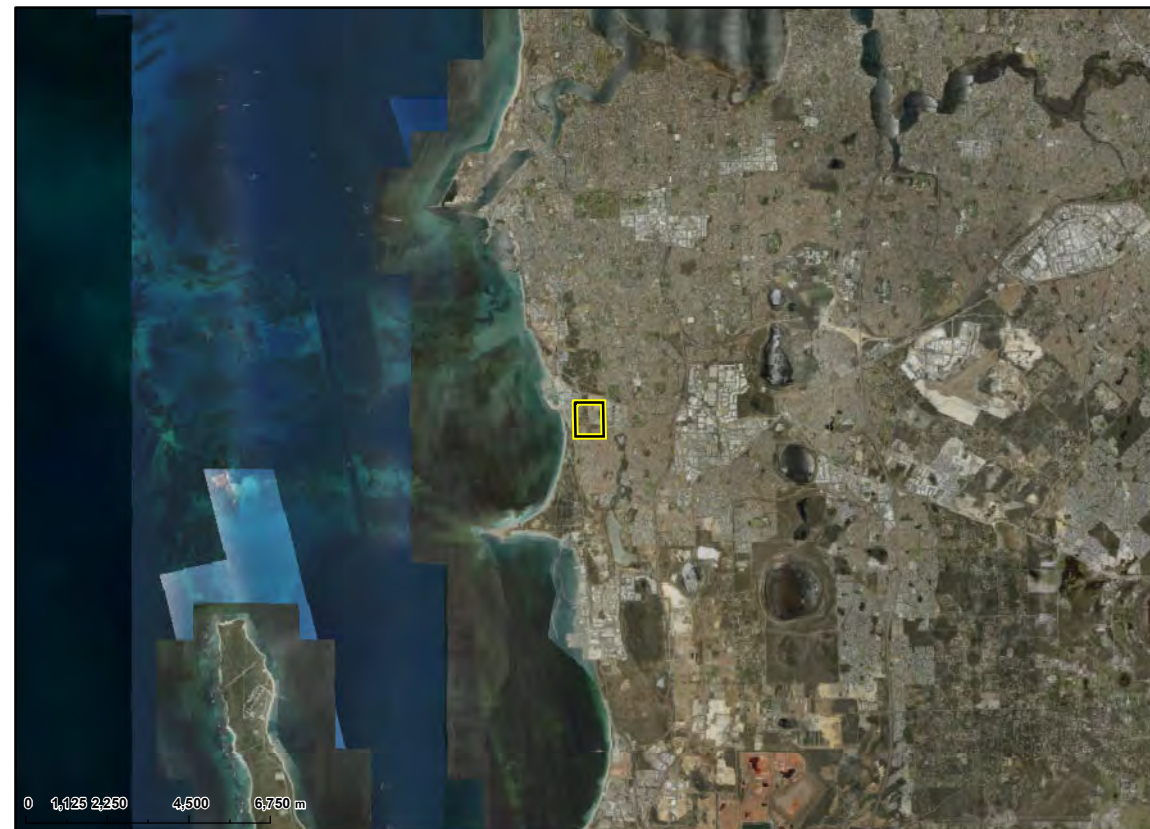
- Site Boundary



THREATENED AND PRIORITY FLORA & ECOLOGICAL COMMUNITIES

- Priority 1
- Priority 2
- Priority 3
- Priority 4
- Threatened
- Extinct
- Priority
- Threatened

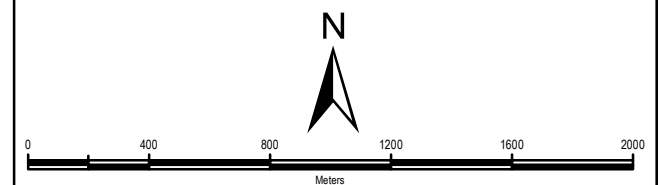
Threatened and Priority Flora (DBCA-036) describes threatened (declared rare) and priority flora populations for all land tenures, within the State of Western Australia. Threatened Ecological Communities (DBCA-038) describes Threatened Ecological Community (TEC) and Priority Ecological Community (PEC) Sites (Buffered) in WA. Threatened Ecological Communities (TEC) have been endorsed by the minister as threatened while Priority Ecological Communities (PEC) are those which have not yet been endorsed. Threatened Ecological Communities are described as either: "Presumed Totally Destroyed", "Critically Endangered", "Endangered" and "Vulnerable" while Priority Ecological Communities are described as being "Priority 1-5". Other Ecological Communities can be described as being: "Lower Risk" or "Not evaluated". Communities are based on various life-forms including plants, invertebrates and micro-organisms.



THREATENED AND PRIORITY FAUNA

- Threatened - Critically Endangered
- Threatened - Endangered
- Threatened - Vulnerable
- Presumed Extinct
- Protected Migratory Birds
- Conservation Dependent
- Other Specially Protected
- Priority

Threatened and Priority Fauna (DBCA-037) data set has been derived from the following two databases: 1. The WA Threatened and Priority Fauna Database which contains records of observations of any fauna listed as threatened under the Wildlife Conservation Act 1950 or listed on the Dept. of Biodiversity, Conservation and Attractions (DBCA) Priority Fauna List. This data is maintained by DBCA. 2. The DBCA Fauna Survey Database which contains records of Western Australian fauna from sources including historical reports, DBCA staff, survey data from major projects, consultants, and the general public that are licence holders. This data is managed by DBCA. The information is used to assist the Department with the management of fauna populations especially in relation to proposed land developments or activities likely to impact on fauna and fauna habitat. Data and/or information from the database can be accessed by written request to the Principle Zoologist, Species and Communities Branch. Detailed location information for individual species is



NOTES

Aerial Imagery sourced from Landgate / SLIP

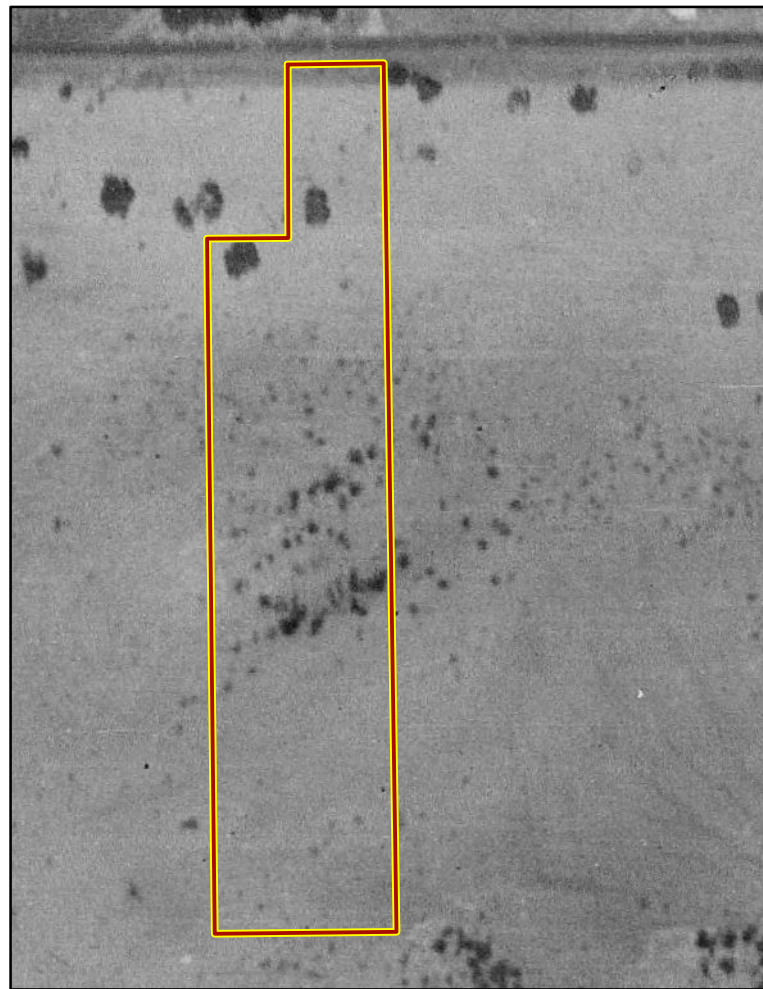


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DATE DRAWN	14/05/2019	
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DATE CHECKED	-	
PROJECTION	GDA 1994 MGA Zone 50	

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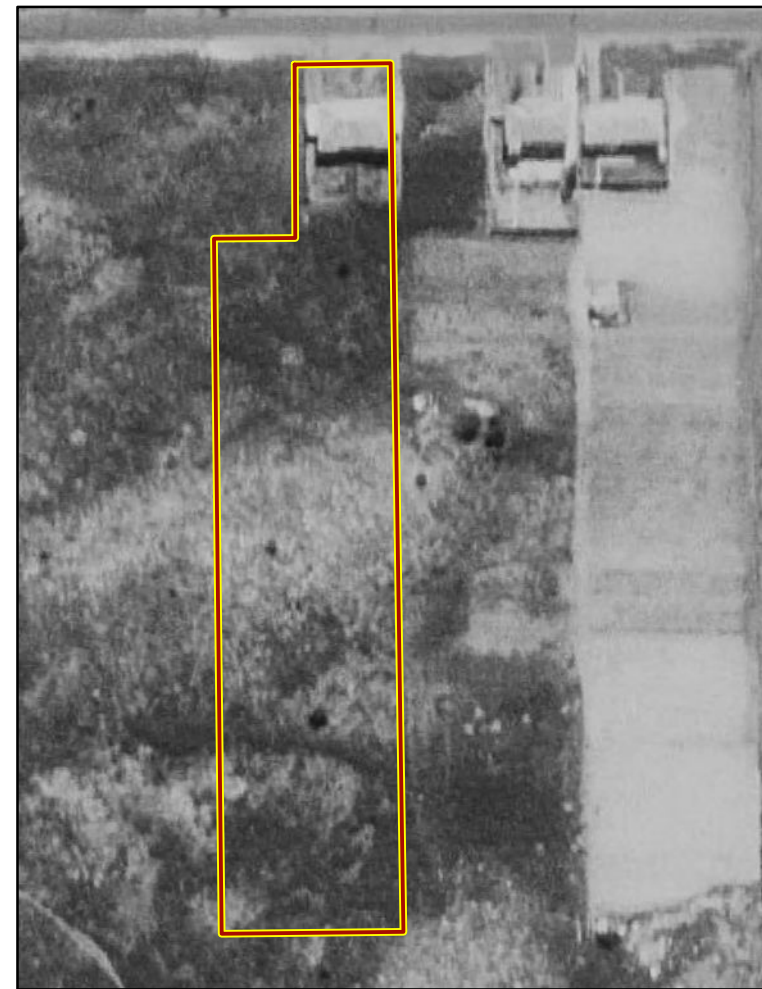
CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	INDICATIVE ENVIRONMENTAL ASPECTS (4 OF 4)		
Job No	J1702031	Fig No	FIGURE 3D
Rev	A		



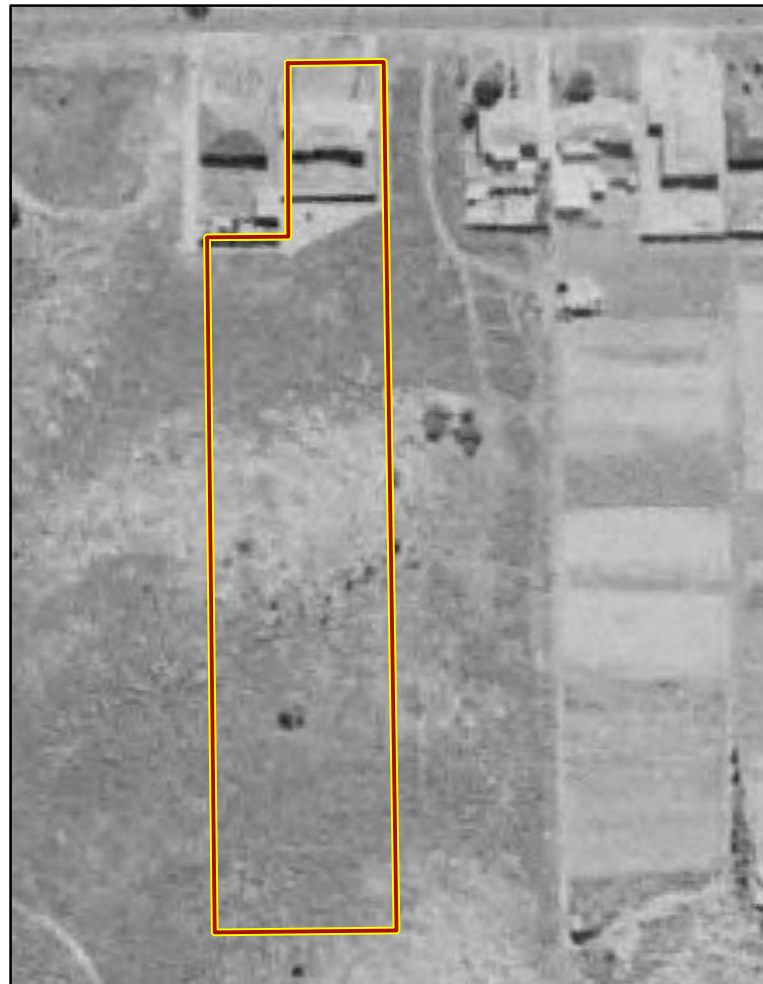
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DATE: 1965



DATE: 1974



DATE: 1979



DATE: 1981

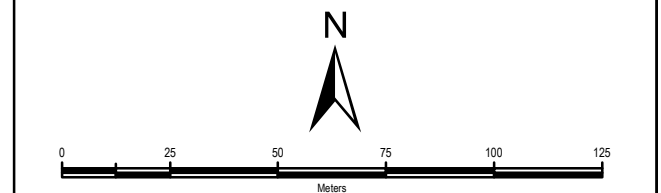


DATE: 1983




Legend

 Site Boundary



NOTES
Aerial Imagery sourced from Landgate/SLIP

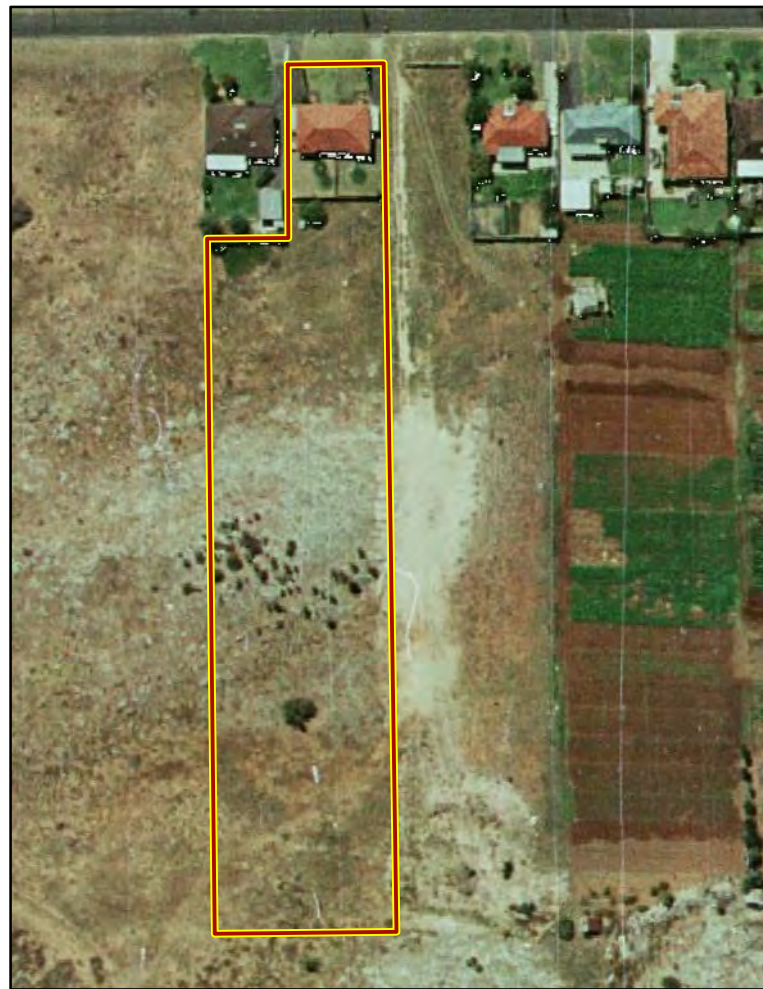
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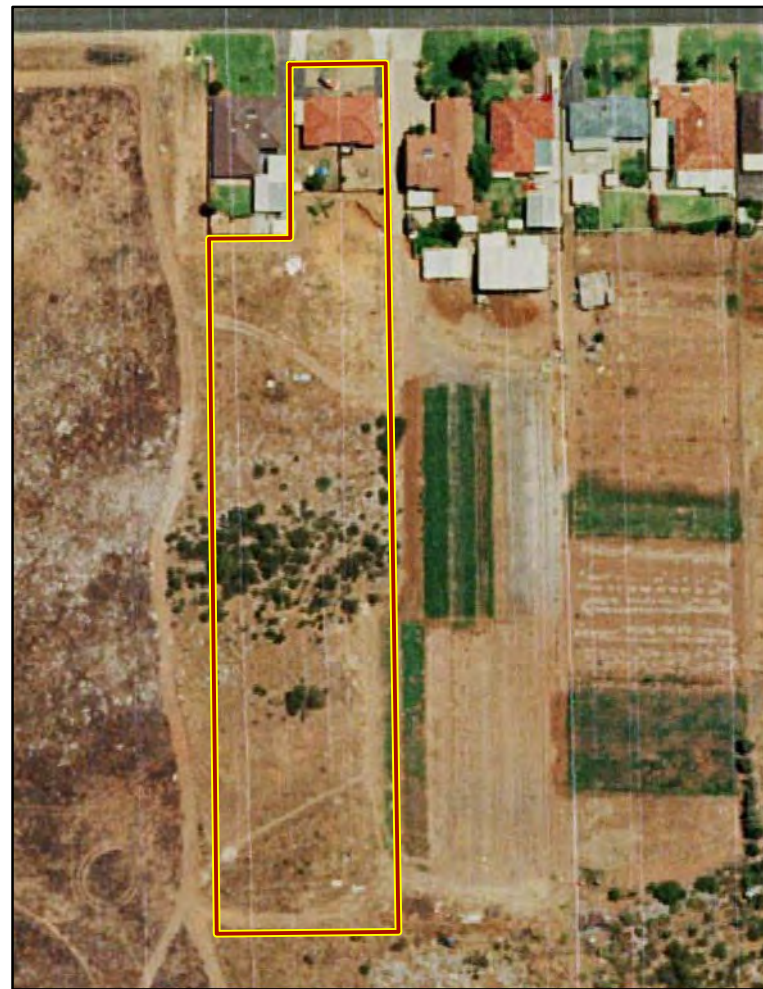
Galt Environmental Pty Ltd
 ACN : 161 708 998
 Tel : +61 (0)8 6272-0200
 Address: 50 Edward Street
 Osborne Park WA 6017

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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (1953 - 1983)		
Job No	J1702031	Fig No	FIGURE 4A
		Rev	A



DATE: 1985



DATE: 1995



DATE: 2000



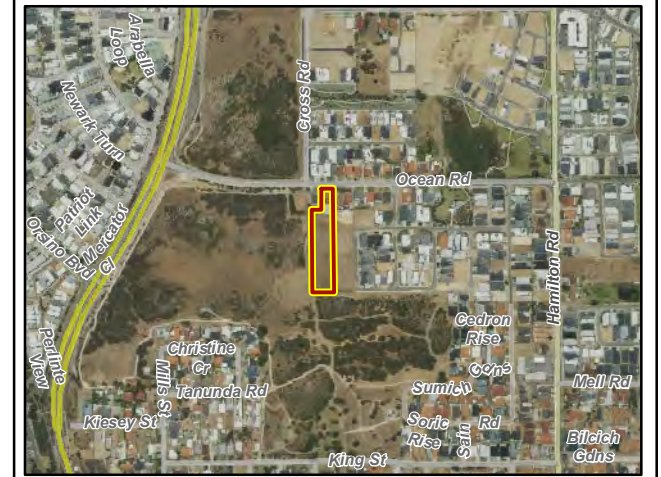
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DATE: 2002

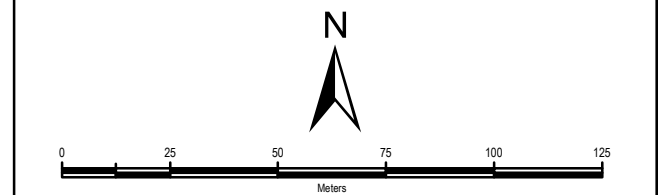


DATE: 2003




Legend

 Site Boundary



NOTES
Aerial Imagery sourced from Landgate/SLIP

	SCALE	1:1,750	(A3)
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	DATE DRAWN	14/05/2019	
	CHECKED	-	
	DATE CHECKED	-	
	PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (1985 - 2003)		
Job No	J1702031	Fig No	FIGURE 4B
		Rev	A



DATE: 2004



DATE: 2005



DATE: 2006



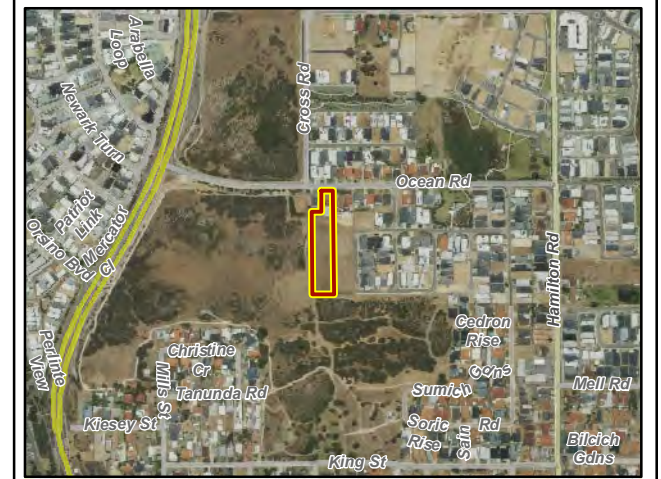
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DATE: 2008

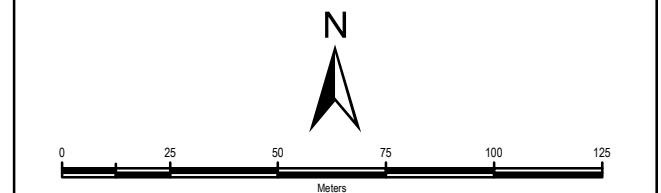


DATE: 2009




Legend

 Site Boundary



NOTES
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	DATE DRAWN	14/05/2019	
	CHECKED	-	
	DATE CHECKED	-	
	PROJECTION	GDA 1994 MGA Zone 50	


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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (2004 - 2009)		
Job No	J1702031	Fig No	FIGURE 4C
		Rev	A



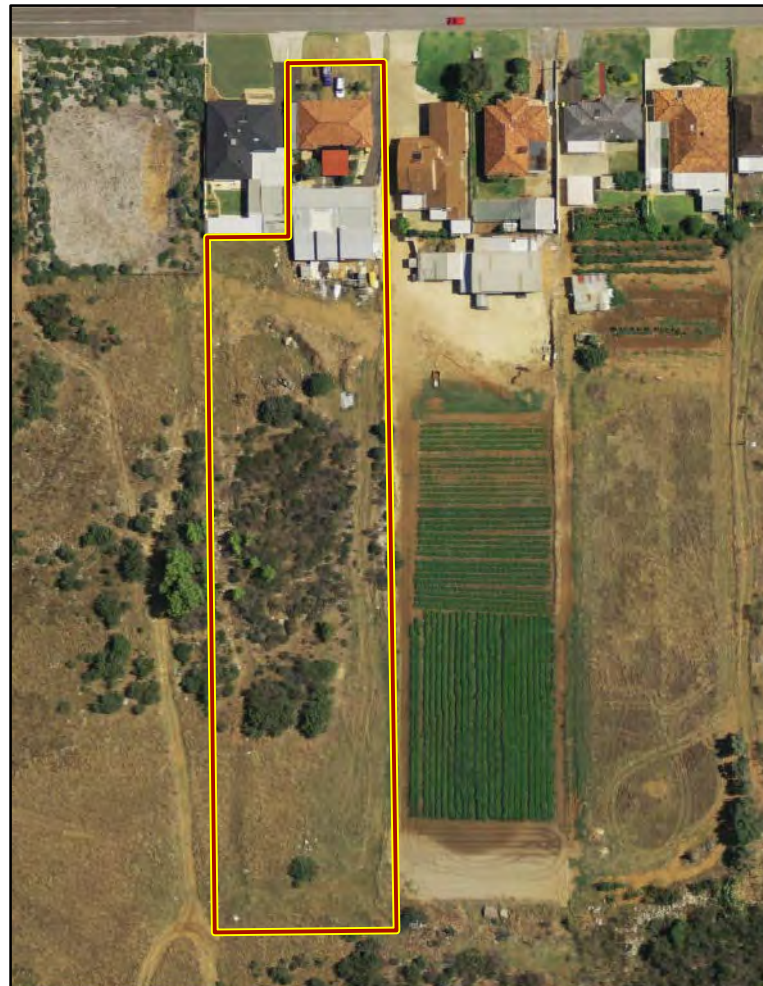
DATE: 2010



DATE: 2011 SUMMER



DATE: 2011 WINTER



DATE: 2012 SUMMER



DATE: 2012 WINTER

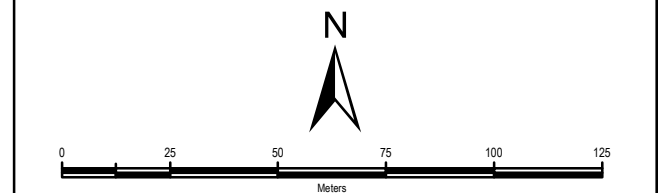


DATE: 2013 SUMMER




Legend

 Site Boundary



NOTES
Aerial Imagery sourced from Landgate/SLIP

	SCALE	1:1,750	(A3)
	DRAWN	CED	
	DATE DRAWN	14/05/2019	
	CHECKED	-	
	DATE CHECKED	-	
	PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (2010 - 2013 SUMMER)		
Job No	J1702031	Fig No	FIGURE 4D
		Rev	A



DATE: 2013 WINTER



DATE: 2014 SUMMER



DATE: 2014 WINTER



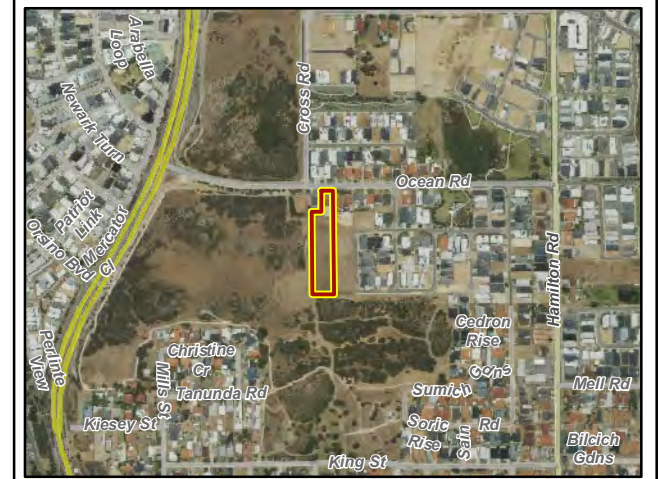
DATE: 2014 AUTUMN



DATE: 2014 SPRING

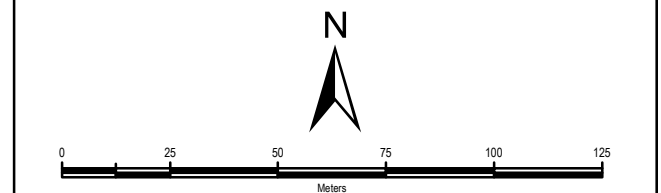


DATE: 2015 SUMMER




Legend

 Site Boundary



NOTES
Aerial Imagery sourced from Landgate/SLIP

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	DATE DRAWN	14/05/2019	
	CHECKED	-	
	DATE CHECKED	-	
	PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (2013 WINTER - 2015 SUMMER)		
Job No	J1702031	Fig No	FIGURE 4E
		Rev	A



DATE: 2015 AUTUMN



DATE: 2015 WINTER



DATE: 2015 SPRING



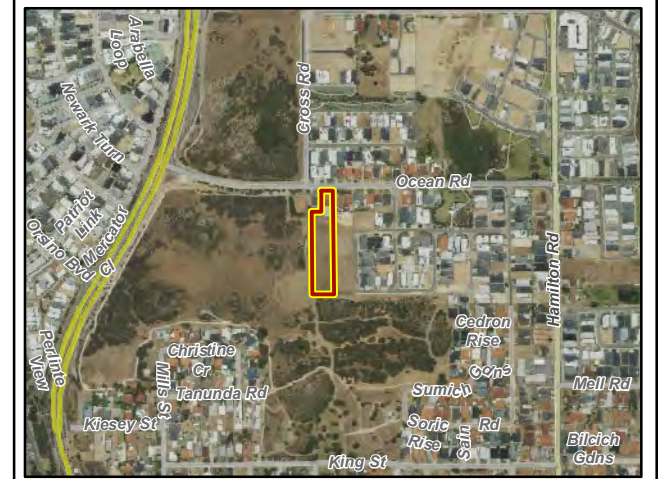
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DATE: 2016 AUTUMN

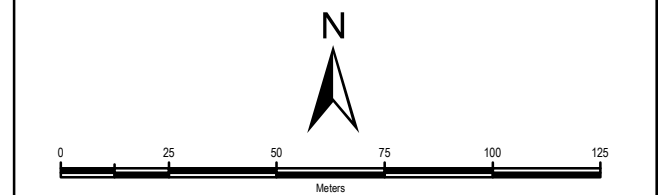


DATE: 2016 WINTER




Legend

 Site Boundary



NOTES
Aerial Imagery sourced from Landgate/SLIP

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	DATE DRAWN	14/05/2019	
	CHECKED	-	
	DATE CHECKED	-	
	PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR
PROJECT	PROPOSED SUBDIVISION
LOCATION	65 OCEAN ROAD COOGEE
TITLE	HISTORICAL AERIAL IMAGERY (2015 AUTUMN - 2016 WINTER)
Job No	J1702031
Fig No	FIGURE 4F
Rev	A



DATE: 2016 SPRING



DATE: 2017 SUMMER



DATE: 2017 AUTUMN



DATE: 2017 WINTER



DATE: 2017 SPRING

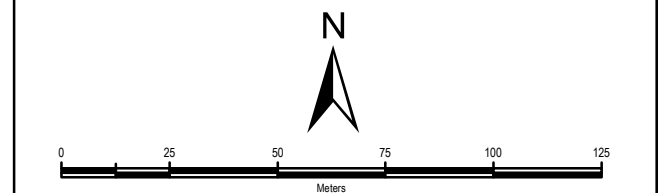


DATE: 2018 SUMMER




Legend

 Site Boundary



NOTES
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	DATE DRAWN	14/05/2019	
	CHECKED	-	
	DATE CHECKED	-	
	PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (2016 SPRING - 2018 SUMMER)		
Job No	J1702031	Fig No	FIGURE 4G
		Rev	A



DATE: 2018 AUTUMN



DATE: 2018 WINTER

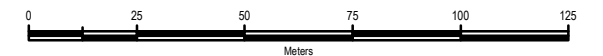


DATE: 2018 DECEMBER



Legend

Site Boundary



NOTES
Aerial Imagery sourced from Landgate/SLIP



SCALE	1:1,750	(A3)
DRAWN	CED	
DATE DRAWN	14/05/2019	
CHECKED	-	
DATE CHECKED	-	
PROJECTION	GDA 1994 MGA Zone 50	



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CLIENT	REALSTAR		
PROJECT	PROPOSED SUBDIVISION		
LOCATION	65 OCEAN ROAD COOGEE		
TITLE	HISTORICAL AERIAL IMAGERY (2018 AUTUMN - 2018 DECEMBER)		
Job No	J1702031	Fig No	FIGURE 4H
		Rev	A



Appendix A: Site Photographs



Photograph 1: Front of the house, looking south



Photograph 2: Rear of the property facing north (note mound of outcropping limestone)



Appendix B: Understanding Your Report

UNDERSTANDING YOUR REPORT

GALT FORM PMP29 Rev3

1. EXPECTATIONS OF THE REPORT

This document has been prepared to clarify what is and is not provided in your report. It is intended to inform you of what your realistic expectations of this report should be and how to manage your risks associated with the conditions on site.

Geotechnical engineering and environmental science are less exact than other engineering and scientific disciplines. We include this information to help you understand where our responsibilities begin and end. You should read and understand this information. Please contact us if you do not understand the report or this explanation. We have extensive experience in a wide variety of projects and we can help you to manage your risk.

2. THIS REPORT RELATES TO PROJECT-SPECIFIC CONDITIONS

This report was developed for a unique set of project-specific conditions to meet the needs of the nominated client. It took into account the following:

- ✦ the project objectives as we understood them and as described in this report;
- ✦ the specific site mentioned in this report; and
- ✦ the current and proposed development at the site.

It should not be used for any purpose other than that indicated in the report. You should not rely on this report if any of the following conditions apply:

- ✦ the report was not written for you;
- ✦ the report was not written for the site specific to your development;
- ✦ the report was not written for your project (including a development at the correct site but other than that listed in the report); or
- ✦ the report was written before significant changes occurred at the site (such as a development or a change in ground conditions).

You should always inform us of changes in the proposed project (including minor changes) and request an assessment of their impact.

Where we are not informed of developments relevant to your report, we cannot be held responsible or liable for problems that may arise as a consequence.

Where design is to be carried out by others using information provided by us, we recommend that we be involved in the design process by being engaged for consultation with other members of the project team. Furthermore, we recommend that we be able to review work produced by other members of the project team that relies on information provided in our report.

3. SOIL LOGS

Our reports often include logs of intrusive and non-intrusive investigation techniques. These logs are based on our interpretation of field data and laboratory results. The logs should only be read in conjunction with the report they were issued with and should not be re-drawn for inclusion in other documents not prepared by us.

4. THIRD PARTY RELIANCE

We have prepared this report for use by the client. This report must be regarded as confidential to the client and the client's professional advisors. We do not accept any responsibility for contents of this document from any party other than the nominated client. We take no responsibility for any damages suffered by a third party because of any decisions or actions they may make based on this report. Any reliance or decisions made by a third party based on this report are the responsibility of the third party and not of us.

5. CHANGE IN SUBSURFACE CONDITIONS

The recommendations in this report are based on the ground conditions that existed at the time when the study was undertaken. Changes in ground conditions can occur in numerous ways including anthropogenic events (such as construction or contaminating activities on or adjacent to the site) or natural events (such as floods, groundwater fluctuations or earthquakes). We should be consulted prior to use of this report so that we can comment on its reliability. It is important to note that where ground conditions have changed, additional sampling, testing or analysis may be required to fully assess the changed conditions.

6. SUBSURFACE CONDITIONS DURING CONSTRUCTION

Practical constraints mean that we cannot know every minute detail about the subsurface conditions at a particular site. We use professional judgement to form an opinion about the subsurface conditions at the site. Some variation to our evaluated conditions is likely and significant variation is possible. Accordingly, our report should not be considered as final as it is developed from professional judgement and opinion.

The most effective means of dealing with unanticipated ground conditions is to engage us for construction support. We can only finalise our recommendations by observing actual subsurface conditions encountered during construction. We cannot accept liability for a report's recommendations if we cannot observe construction.

7. ENVIRONMENTAL AND GEOTECHNICAL ISSUES

Unless specifically mentioned otherwise in our report, environmental considerations are not addressed in geotechnical reports. Similarly, geotechnical issues are not addressed in environmental reports. The investigation techniques used for geotechnical investigations can differ from those used for environmental investigations. It is the client's responsibility to satisfy themselves that geotechnical and environmental considerations have been taken into account for the site.

Geotechnical advice presented in a Galt Environmental report has been provided by Galt Geotechnics under a sub-contract agreement. Similarly, environmental advice presented in a Galt Geotechnics report has been provided by Galt Environmental under a sub-contract agreement.

Unless specifically noted otherwise, no parties shall draw any inferences about the applicability of the Western Australian state government landfill levy from the contents of this document.

O:\Administration\Standard Forms and Documents\GEPL Forms\PMP29-Rev3 Understanding your Report Env Logo.docx

Appendix 3 – Traffic Impact Assessment



transport planning
traffic engineering
transport modelling

t19.142.vb.I03.doc

13 April 2021

Attention: City of Cockburn Planning Department

To whom it may concern,

RE: LOT 34 (HN 65) OCEAN ROAD, COOGEE

INTRODUCTION

Transcore has been engaged by Realzone Holdings Pty Ltd to prepare a brief traffic report on the proposed residential subdivision development located at Lot 34 (HN 65) Ocean Road in Coogee, City of Cockburn.

The proposed subdivision forms part of the approved *District Structure Plan Packham North* (DSP). The subject site (Lot 34) is located at the south west corner of the DSP area and to the south of the existing Cross Road/Ocean Road intersection as shown in **Figure 1** overleaf.

PROPOSED DEVELOPEMENT

The proposal for the subject site (approximately 7,609m² in size) is for a subdivision development comprising a total of 13 residential single-dwelling lots zoned between R25 and R30 and a P.O.S. area of 828m² at the southern end of the site.

The proposal provides for roadway connections to Ocean Road at the north end and the existing road system to the immediate east in the form of (westbound) extension of Rasano Promenade and Prizba Rise. These two road extensions are proposed to connect within the subject site and form a loop road to facilitate property access for lots fronting these two roads. This loop road enables front access to all residential roads within the subdivision. The two northernmost subdivision lots fronting Ocean Road will take access directly from this road.

Pedestrians will access lots via internal subdivision system of paths which will integrate with existing pedestrian footpaths in place along Rasano Promenade and Prizba Rise which then connect to Ocean Road path via Chicho Way. The two northernmost lots have pedestrian access via the existing footpath on the northern side of Ocean Road.



Figure 1: Location of the subject site

The subdivision will be serviced with City residential kerbside waste collection. Bins will be placed out within verges on regular waste collection days. Due to the creation of loop road connection within the subdivision rubbish collection truck would be able to move in forward gear only.

The proposed subdivision plans are included for reference in **APPENDIX A**.

TRAFFIC GENERATION

The traffic volumes likely to be generated by the proposed subdivision development have been estimated in accordance with the WAPC *“Transport Impact Assessment Guidelines 2016”*, which provides daily and peak hour trip rates for relevant land uses.

Accordingly, the trip rates which were used to estimate the traffic generation of the proposed residential development are:

- ✚ Peak hour trips: 0.8 trips per dwelling.
- ✚ Daily trips: 8.0 trips per dwelling.

It is estimated that the proposed subdivision would generate 104 daily vehicle trips, with approximately 10 trips during the AM and PM peak hour periods. These trips include both inbound and outbound vehicle movements. It is anticipated that most of the vehicle types would be passenger cars and to a lesser extent 4WDs.

The **Table 1** provided below is based on the following directional split assumptions:

- ✚ AM peak split estimated at 25% / 75% inbound/outbound; and,
- ✚ PM peak split estimated at 63% / 37% inbound/outbound.

The residential traffic generated by the proposed subdivision will be distributed to and from arterial roads via Ocean Road.

Table 1: Peak hour trips for the proposed development

Period	Direction	Traffic Split	Total Trips
AM Peak	Inbound	3	10
	Outbound	7	
PM Peak	Inbound	6	10
	Outbound	4	
Total Daily	Inbound	52	104
	Outbound	52	

IMPACT ON SURROUNDING ROADS

The WAPC *Transport Impact Assessment Guidelines for Developments* (2016) provides the following guidance on the assessment of traffic impacts:

“As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 percent may. All sections of road with an increase greater than 10 percent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 percent of capacity. Therefore, any section of road where development traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis.”

The proposed residential subdivision will not increase traffic flows on any road adjacent to the site anywhere near the quoted WAPC threshold of +100vph to warrant further analysis.

The immediately adjacent roads are constructed as *Access Street C* (Ocean Road) or *Access Street D* (Rasano Promenade), designed to carry up to about 3,000 and 1,000 vehicles per day (vpd), respectively. The estimated daily trip generation of the proposed subdivision therefore represents <1% of daily road capacity and as such it can be concluded that the traffic impact for the proposed subdivision is insignificant.

PUBLIC TRANSPORT OPPORTUNITIES

The subject site has access to bus service No. 532 operating along Hamilton Road approximately 420m to the east of the subject site. This bus route connects to Cockburn

Central Train Station and Fremantle Train Station thus providing opportunity to transfer to other connecting bus services and Fremantle and Mandurah train lines.

CYCLE ACCESS

Perth Bicycle Network Map indicates a good road riding environment along the Ocean Road immediately north of the subject site. Similarly, the adjacent road network to the immediate east is estimated to carry low traffic volumes so cyclists and cars can safely share the local road network within the subdivision.

OTHER CONSIDERATIONS

No specific safety issues have been identified in relation to the proposal. No site-specific issues were identified within the scope of this assessment.

CONCLUSIONS

The site features good connectivity with the existing road and pedestrian network. There is also access to the existing public transport services via existing path system.

The traffic analysis undertaken in this report shows that the traffic generation of the proposed subdivision is negligible and as such would have insignificant impact on the surrounding road network.

It is concluded that the findings of this assessment are supportive of the proposed subdivision development.

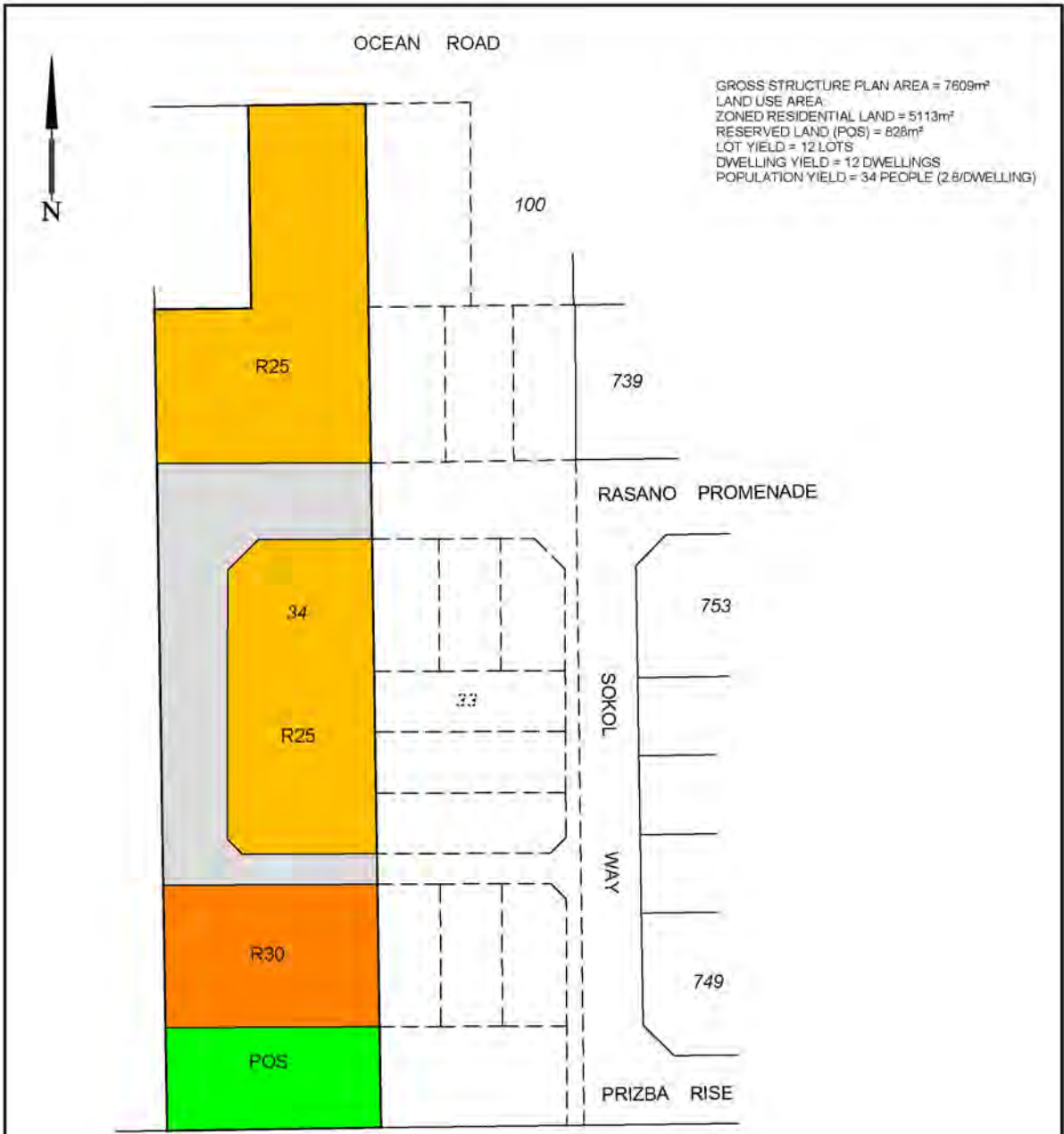
I trust the information documented in this letter will assist in the current deliberations.

Yours truly,

A handwritten signature in black ink, appearing to read 'V. Baltic', is placed over a light grey rectangular background.

Vladimir Baltic
Senior Traffic and Transport Engineer

APPENDIX A SUBDIVISION PLANS



▲50591
9905

SCALE 1:750 @ A3
 0m 7.5m 15m 22.5m 30m 37.5m

LEGEND

	SUBJECT SITE		PUBLIC OPEN SPACE
	RESIDENTIAL (R25)		ROADS
	RESIDENTIAL (R30)		

BASE MAPPING DERIVED FROM LANDGATE'S SCDB

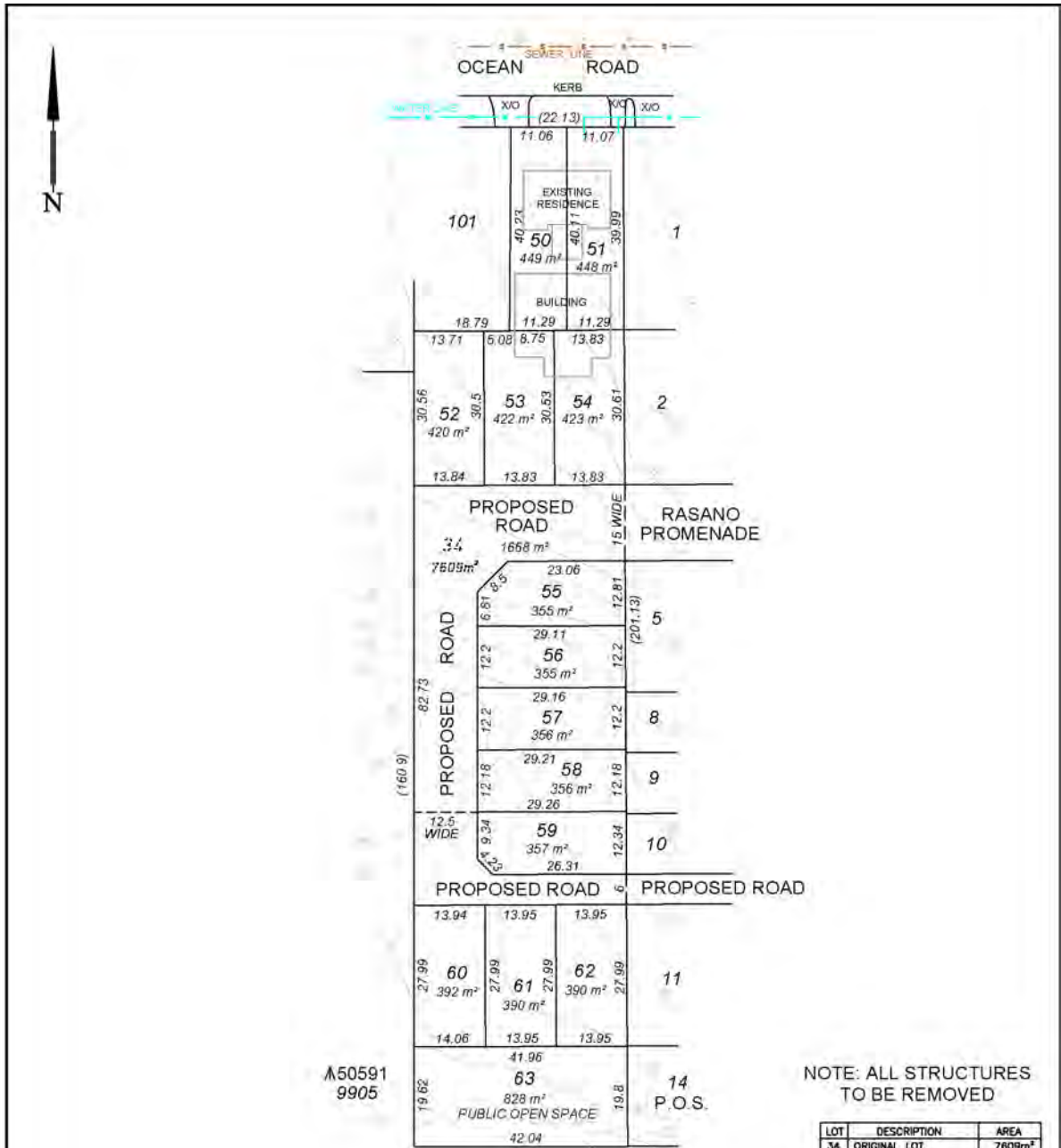
PLAN OF:
PROPOSED LOCAL STRUCTURE PLAN

PROJECT: LOT 34 ON P 5190 65 OCEAN ROAD, COOGEE	CLIENT: REALSTAR HORIZONTAL DATUM: MGA94 VERTICAL DATUM: N/A
--	--

DP/PLAN/DIAGRAM: P 5190
C/T: VOL 1623 FOL 989
LOCAL AUTHORITY: CITY OF COCKBURN

SCANLAN SURVEYS PTY LTD
 LICENSED SURVEYORS
 P O BOX 429 MIDLAND 6936
 PH: 08 9250 2261
 www.scanlansurveys.com.au
 bill@scanlansurveys.com.au

DRAWN BY: KO 17/05/2019			
CHECKED BY: WS 17/05/2019			
APPROVED BY: WS 17/05/2019			
DRAWING FILE: 90161810.DWG			
REV	DESCRIPTION	BY	DATE
A	R25 AND ROADS AMENDED		18/02/2021
DRAWING: 8016/18/10		REV: A	



NOTE: ALL STRUCTURES TO BE REMOVED

WARNINGS:
 1. LOT NUMBERS, DIMENSIONS AND AREAS SUBJECT TO WAPC APPROVAL, SURVEY AND LANDGATE AUDIT.

PLAN OF SUBDIVISION APPLICATION	
PROJECT: LOT 34 ON P 5190 65 OCEAN ROAD, COOGEE	CLIENT: REALSTAR
	HORIZONTAL DATUM: PLANE
	VERTICAL DATUM: AHD
DP/PLAN/DIAGRAM: P 5190	SCANLAN SURVEYS PTY LTD LICENSED SURVEYORS P O BOX 429 MIDLAND 6936 PH: 08 9250 2261 www.scanlansurveys.com.au bill@scanlansurveys.com.au
C/T: VOL 1623 FOL 989	
LOCAL AUTHORITY: CITY OF COCKBURN	

SCALE 1:750 @ A3
 0m 7.5m 15m 22.5m 30m 37.5m

LOT	DESCRIPTION	AREA
34	ORIGINAL LOT	7609m ²
50	PROPOSED LOT	449m ²
51	PROPOSED LOT	448m ²
52	PROPOSED LOT	420m ²
53	PROPOSED LOT	422m ²
54	PROPOSED LOT	423m ²
55	PROPOSED LOT	355m ²
56	PROPOSED LOT	355m ²
57	PROPOSED LOT	356m ²
58	PROPOSED LOT	356m ²
59	PROPOSED LOT	357m ²
60	PROPOSED LOT	392m ²
61	PROPOSED LOT	390m ²
62	PROPOSED LOT	390m ²
63	PROPOSED LOT	828m ²
	PROPOSED ROAD	1668m ²

DRAWN BY:	LF	8/04/2019		
CHECKED BY:	WS	8/04/2019	B	PROPOSED ROAD & LOTS 50 - 59 AMENDED
APPROVED BY:	WS	8/04/2019	A	PROPOSED LOTS/OPERATED AND LOT SLAB/BEDED
DRAWING FILE:	8016188.DWG		REV	DESCRIPTION
			BY	DATE
			DRAWING:	8016/18/8
			REV:	B

Appendix 4 – Bushfire Management Plan



Bushfire Management Plan

Local Structure Plan

Lot 34 Ocean Road, Coogee
City of Cockburn




bushfire safety
CONSULTING
Science. Culture. Solutions.

Prepared For:
Realzone Holdings Pty Ltd
10 February 2022
Version 5.0

bushfiresafetyconsulting.com.au

Document Information

Prepared for: Realzone Holdings Pty Ltd
Project Name: Local Structure Plan – Lot 34 Ocean Road, Coogee
Address: Lot 34 (#65) Ocean Road, Coogee WA 6166
Prepared by: Rohan Carboon, Bushfire Safety Consulting Pty Ltd

I hereby declare that I am a BPAD accredited bushfire practitioner.	
Accreditation No.	23160
Signature	
Date	10/02/2022



Document Control

BUSHFIRE MANAGEMENT PLAN - LOT 34 (#65) OCEAN ROAD, COOGEE 6166			
REPORT VERSION	PURPOSE	AUTHOR/REVIEWER AND ACCREDITATION DETAILS	DATE SUBMITTED
V1	DRAFT FOR REVIEW	ROHAN CARBOON (BPAD 32160)	12/02/2018
V2	FINAL FOR SUBMISSION	ROHAN CARBOON (BPAD 32160)	20/02/2020
V3	UPDATED LAYOUT	ROHAN CARBOON (BPAD 32160)	8/02/2021
V4	RESUBMISSION	ROHAN CARBOON (BPAD 32160)	24/08/2021
V5	AMENDED LAYOUT	ROHAN CARBOON (BPAD 32160)	10/02/2022

Front cover photo: Structure Plan

Bushfire Safety Consulting Pty Ltd
PO Box 84
STONEVILLE WA 6081

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EXECUTIVE SUMMARY

This Bushfire Management Plan (BMP) has been prepared to support a Local Structure Plan (LSP) for Lot 34 (#65) Ocean Road in Coogee. The site is 7580 m² in size and is mostly degraded grassland and weeds. The site is exposed to bushfire threat from the west and south, where scrub and grassland vegetation is predominant.

A Simplified Procedure (Method 1) Bushfire Attack Level (BAL) Assessment, as detailed in the *Australian Standard 3959 Construction of Buildings in Bushfire-Prone Areas (AS 3959)*, has been undertaken to determine predicted radiant heat flux levels on the western and southern interface and demonstrates that the residential lots can achieve a predicted radiant heat flux exposure of less than 29kW/m².

A 7.5m wide limestone fire service access route is also proposed adjacent to Lot 52 and Lot 60 on the western interface and a 0.5m strip of land from the lots will be ceded to the City to be added to the limestone track as has been agreed to by the City of Cockburn. The developer will maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost. After this 5 year period the City will maintain the firebreak in perpetuity.

The proposed development can achieve all of the Acceptable Solutions and Performance Principles in the *Guidelines for Planning in Bushfire Prone Areas V1.3* (the Guidelines).

The developer is responsible for establishing the Asset Protection Zone (APZ), public roads, hydrants and the limestone track adjacent to the site.

It is expected that the implementation of this BMP will reduce the threat to residents, the public and fire fighters in the area addressed by this BMP. The proposal complies with the *State Planning Policy No. 3.7: Planning in Bushfire Prone Areas (SPP 3.7)* and the Guidelines.

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1 PROPOSAL DETAILS

This Bushfire Management Plan (BMP) has been prepared to support a Local Structure Plan (LSP) for the site bounded by Ocean Road to the north, a residential development to the east and a bushland reserve to the south and west. The LSP proposal is to subdivide the site into 12 residential lots and a Public Open Space (POS) in Lot 63 (Figure 1). A Strip of land 0.5m wide on the western edge of lots 52 and 60 will be ceded to the City of Cockburn and developed as a limestone fire access track. The developer will maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost. After this period of time the City will maintain the firebreak in perpetuity. This area is herein referred to as “the site” and its location is shown in Figure 2.

The lots are to be created on the south side of Ocean Road and adjacent to three proposed roads, including an extension of Rasano Promenade. The lots will have access onto at least one of these public roads.

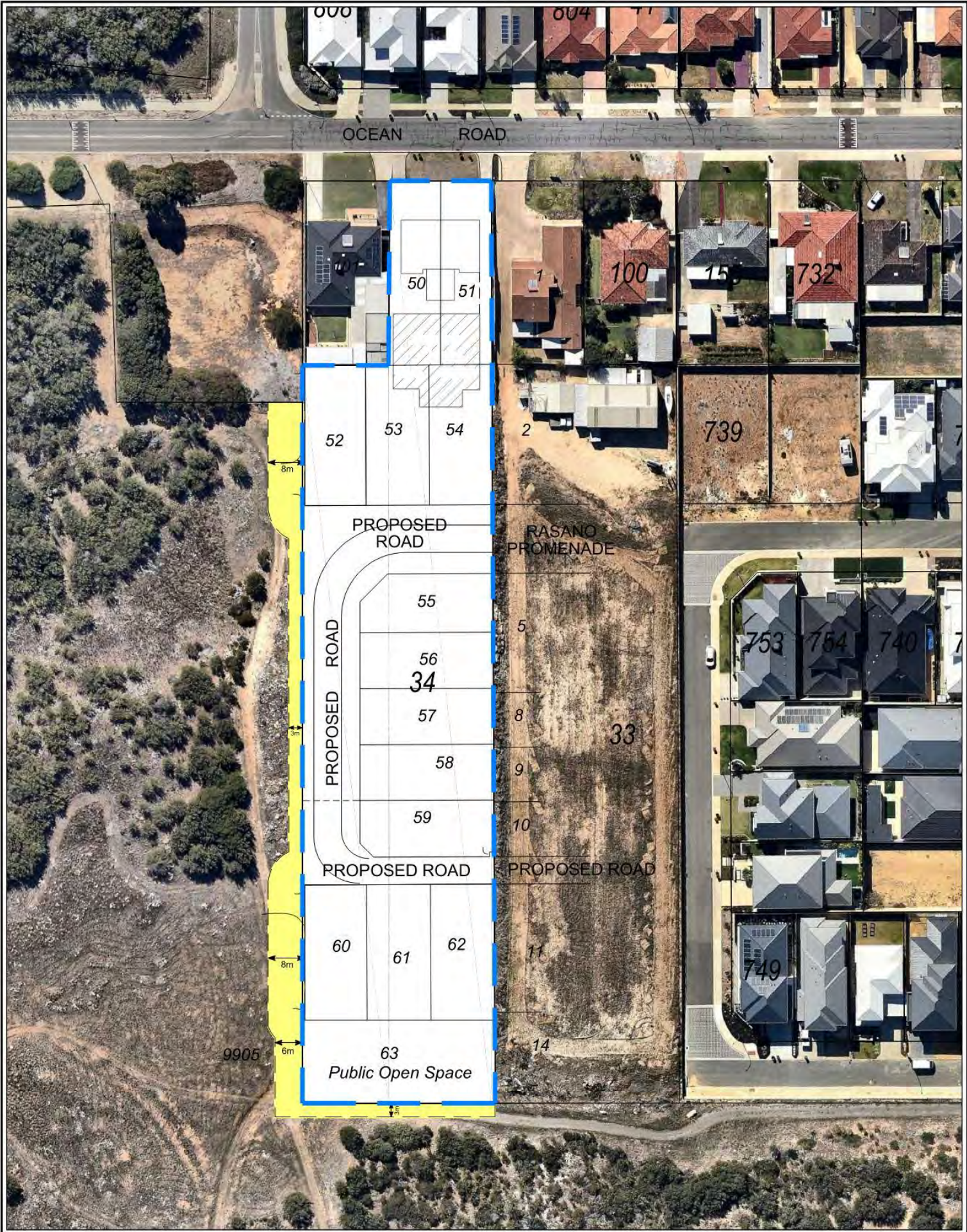
The site adjoins existing residential areas in Coogee (Figure 2) to the north and a proposed residential development to the east. The bushland to the north-west, west and south are zoned as parks and recreation reservations and consists mostly of scrub and grassland. The site itself is currently undeveloped and is primarily covered weed and grass.

The area is reticulated, and scheme water is provided.

This BMP has been prepared to support the LSP application by addressing bushfire management issues within the proposed development.

This BMP provides responses to the performance criteria set out in the Guidelines.

If there is a bushfire within or near the site, implementing this BMP will reduce the threat to residents, property and emergency response personnel.



Location details: Lot 34 Ocean Road, Coogee
 Assessment date: June 2019
 Prepared by: Bushfire Safety Consulting
 Accreditation level: Level 3 BPAD Practitioner
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 Date aerial photo: May 2019

FIGURE 1
LOCAL STRUCTURE
PLAN

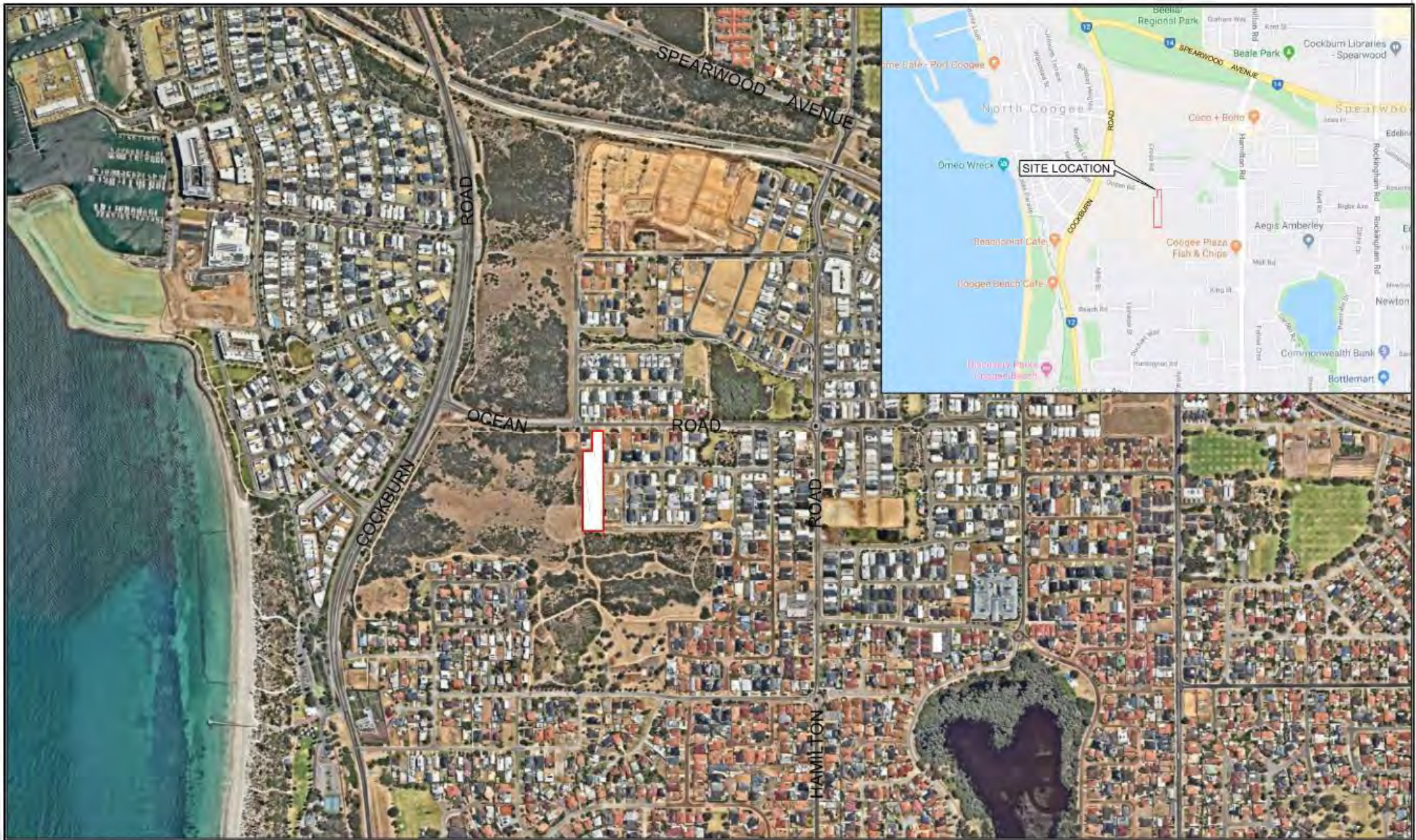
SCALE 1:750 @ A3
 DATE: FEBRUARY 2022



SUBJECT LAND
 LIMESTONE FIREBREAK

SOURCE OF PHOTOGRAPHY: NEARMAP

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 Date aerial photo: December 2021


FIGURE 2 SITE LOCATION

0 100 200 300m
 SCALE 1:10 000 @A4
 DATE: FEBRUARY 2022



NOR 11

LEGEND

 SUBJECT LAND

Base mapping supplied by Nearmap & Google Maps

1.1 Policy and Guidelines

1.1.1 Application of SPP 3.7

The SPP 3.7 provides the foundation for land use planning to address bushfire risk management in Western Australia. It is used to inform and guide decision makers, referral agencies and land owners/proponents to help achieve acceptable bushfire protection outcomes.

The policy contains objectives and policy measures as well as reference to the bushfire protection criteria as outlined in the Guidelines. The policy applies to this LSP application because the area is located in a designated bushfire prone area on the WA map of Bushfire Prone Areas (**Figure 3**).

The following policy measures will need to be comply with SPP 3.7:

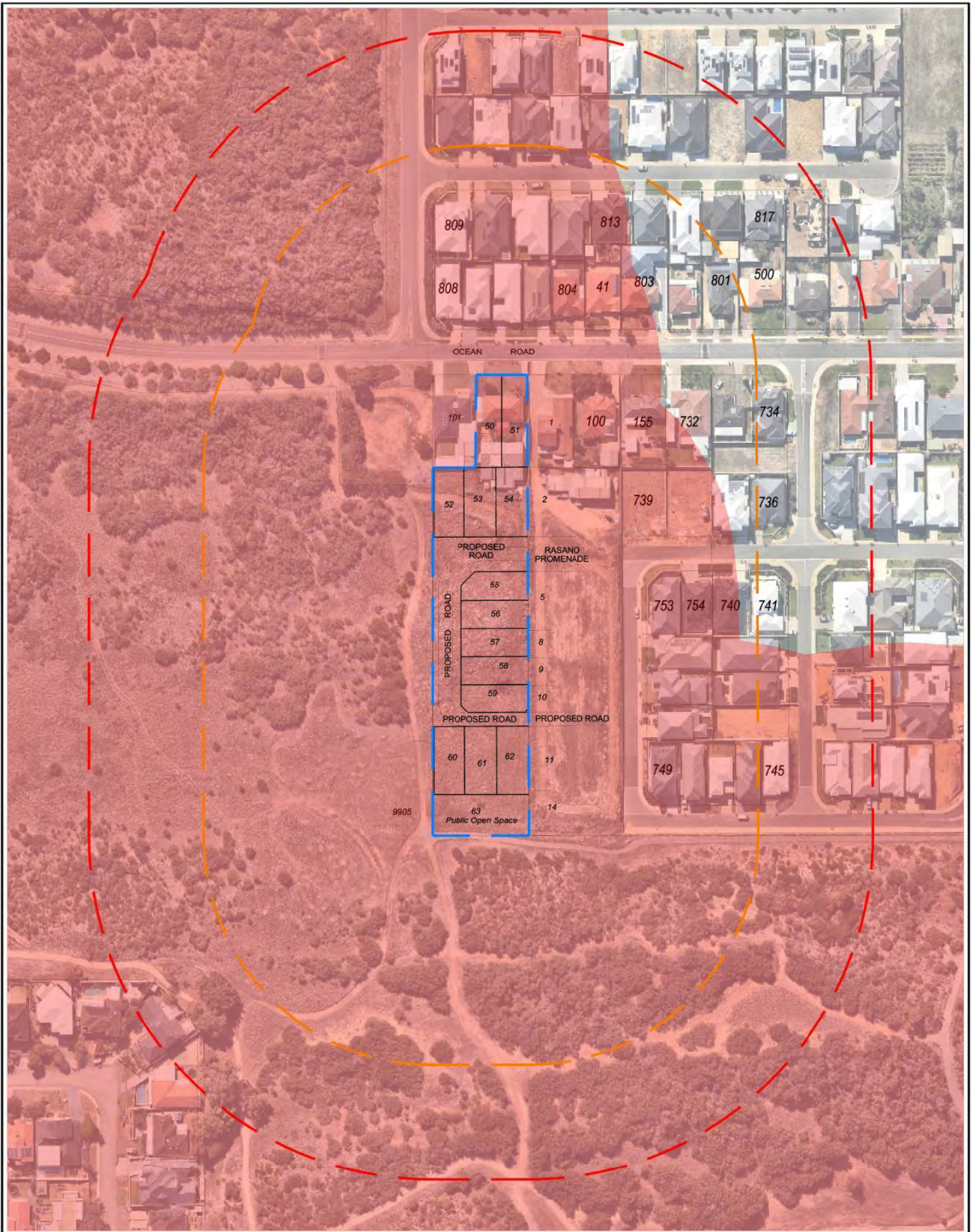
Table 1: Policy measures

Policy Measure 6.2	The LSP is located within a designated bushfire prone area and will have a Bushfire Hazard Level above low and a Bushfire Attack Level rating above BAL-LOW.
Policy Measure 6.4	Policy 6.4 applies meaning the LSP application will be accompanied by: <ul style="list-style-type: none"> - BAL Contour Plan; - Lot specific BAL ratings; - Identification of relevant issues; and - Demonstration of compliance with the guidelines.

The LSP development does not propose vulnerable or high-risk land use and is not considered as minor or unavoidable development under SPP 3.7.

1.1.2 Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)

The Department of Planning has released the *Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)*. The requirements of this document are accommodated within this BMP. The *Guidelines for Planning in Bushfire Prone Areas V 1.3(2017)* is intended to inform and guide decision makers, referral authorities and proponents to achieve acceptable bushfire protection outcomes, including expectations at the different stages of planning.



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**FIGURE 3
BUSHFIRE PRONE
AREAS**

0 10 20 30 40 50 60m
 SCALE 1:1500 @ A3
 DATE: FEBRUARY 2022



SUBJECT LAND
 ASSESSMENT AREA (150m) FROM THE
 EXTERNAL BOUNDARY OF THE SUBJECT SITE
 ASSESSMENT AREA (100m) FROM THE
 EXTERNAL BOUNDARY OF THE SUBJECT SITE
 BUSHFIRE PRONE AREAS

SOURCE OF PHOTOGRAPHY: NEARMAP



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2 ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

The site is cleared of all vegetation and has some regrowth of weed species and grasses only. There are no native vegetation issues that could impact the site.

2.2 Re-vegetation/Landscape Plans

A small area POS is provided in proposed Lot 63 and will include some turf and landscaped areas and also a drainage function for the site. No plans have been developed for the POS. The POS area will be actively maintained in a low threat condition.

3 BUSHFIRE ASSESSMENT RESULTS

Bushfires are common in the City of Cockburn and local brigades respond to numerous bushfires in the district annually. Given the bushfire threat in the area this BMP plays a critical role in ensuring that the development of the land appropriately mitigates the risk from bushfire.

3.1 Assessment Inputs

The methodology used to assess the site is outlined in the *Guidelines for Planning in Bushfire Prone Areas V1.3 (2017)*. The lot layout is known and a strategic level bushfire hazard assessment is not required. A BAL Contour map is provided in accordance with Appendix 3 of the Guidelines.

Assessing bushfire threat at the site-specific level accounts for the predominant class of vegetation on the site and surrounding area for a minimum of 150 m, as shown in Figure 4.




3.1.1 Vegetation Classification





The site is covered with weed and grass species and some areas have been cleared of all vegetation to accommodate the adjacent development works. The site will be completely cleared to accommodate the residential development and a small drainage reserve will have vegetation with managed fuels loads in perpetuity.





Two main vegetation classes dominate the surrounding reserve to the south and west. These are Class D Scrub (plots 1 and 2) and Class G Grassland (Plots 3 and 4). The vegetation in the Reserve is highly degraded and grass areas near the site are slashed by the City of Cockburn which maintains the Class G Grassland classification. The limestone fire trail batter will not be revegetated but it is also expected that any natural revegetation on the batter will not exceed Class G Grassland classification, this will similarly be maintained by the City of Cockburn. These areas pose a bushfire risk to the site, however the City of Cockburn has confirmed that in the long term the reserve is planned to accommodate a golf course development so the bushfire risk could reduce under these conditions.





The vegetation plots that surround the site, to a boundary of 150 metres are found in Figure 4 with plot descriptions below (Table 2).

Table 2: Vegetation classification of site and surrounding area

<p>Photo ID: 1</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with some grass understorey, vegetation dominated by <i>Leptospermum sp.</i> with a mixed understorey.</p>	
<p>Photo ID: 2</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub - upslope</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with some grass understorey, vegetation dominated by <i>Leptospermum sp.</i> with a mixed understorey.</p>	
<p>Photo ID:3</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with grass understorey, vegetation dominated by <i>Leptospermum</i> and <i>Acacia sp.</i></p>	
<p>Photo ID: 4</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with grass understorey, vegetation dominated by <i>Leptospermum sp.</i></p>	

<p>Photo ID: 5</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height dominated by <i>Leptospermum</i>.</p>	
<p>Photo ID: 6</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height dominated by <i>Leptospermum sp.</i></p>	
<p>Photo ID: 7</p> <p>Plot Number: 1</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with grass understorey, vegetation dominated by <i>Leptospermum</i> and <i>Acacia sp.</i></p>	
<p>Photo ID: 8</p> <p>Plot Number: 2</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with grass understorey, vegetation dominated by <i>Leptospermum sp.</i></p>	

<p>Photo ID: 9</p> <p>Plot Number: 2</p> <p>Vegetation classification or exclusion clause: Class D Scrub</p> <p>Description/justification of classification: Mixed species of scrub 2-3 m in height with grass understorey, vegetation dominated by <i>Leptospermum sp.</i> with a mixed understorey.</p>	
<p>Photo ID: 10</p> <p>Plot Number: 3</p> <p>Vegetation classification or exclusion clause: Class G Grassland</p> <p>Description/justification of classification: Open Grassy area between clumps of scrub and slashed annually by the City of Cockburn.</p>	
<p>Photo ID: 11</p> <p>Plot Number: 3</p> <p>Vegetation classification or exclusion clause: Class G Grassland</p> <p>Description/justification of classification: Open Grassy area between clumps of scrub and the areas adjacent to the development is slashed annually by the City of Cockburn.</p>	
<p>Photo ID: 12</p> <p>Plot Number: 3</p> <p>Vegetation classification or exclusion clause: Class G Grassland</p> <p>Description/justification of classification: Open Grassy area between clumps of scrub and the areas adjacent to the development is slashed annually by the City of Cockburn to maintain the grassland.</p>	

<p>Photo ID: 13</p> <p>Plot Number: 3</p> <p>Vegetation classification or exclusion clause: Class G Grassland</p> <p>Description/justification of classification: Open Grassy area between clumps of scrub and the areas adjacent to the development is slashed annually by the City of Cockburn.</p>	
<p>Photo ID: 14</p> <p>Plot Number: 4</p> <p>Vegetation classification or exclusion clause: Class G Grassland</p> <p>Description/justification of classification: Open Grassy area between clumps of scrub.</p>	
<p>Photo ID: 15</p> <p>Plot Number: 5</p> <p>Vegetation classification or exclusion clause: Class A Forest</p> <p>Description/justification of classification: small clump of eucalypts over weeds and grasses.</p>	
<p>Photo ID: 16</p> <p>Plot Number: 6</p> <p>Vegetation classification or exclusion clause: Exclusion Clause 2.2.2.3 (e)</p> <p>Description/justification of classification: non-vegetated areas</p>	

<p>Photo ID: 17</p> <p>Plot Number: 6</p> <p>Vegetation classification or exclusion clause: Exclusion Clause 2.2.2.3 (e)</p> <p>Description/justification of classification: This area has been cleared and is now non-vegetated.</p>	
<p>Photo ID: 18</p> <p>Plot Number: 7</p> <p>Vegetation classification or exclusion clause: Exclusion Clause 2.2.2.3 (f)</p> <p>Description/justification of classification: completely cleared and maintained vegetation in drainage sump.</p>	
<p>Photo ID: 19</p> <p>Plot Number: 7</p> <p>Vegetation classification or exclusion clause: Exclusion Clause 2.2.2.3 (f)</p> <p>Description/justification of classification: completely cleared and maintained vegetation in drainage sump.</p>	

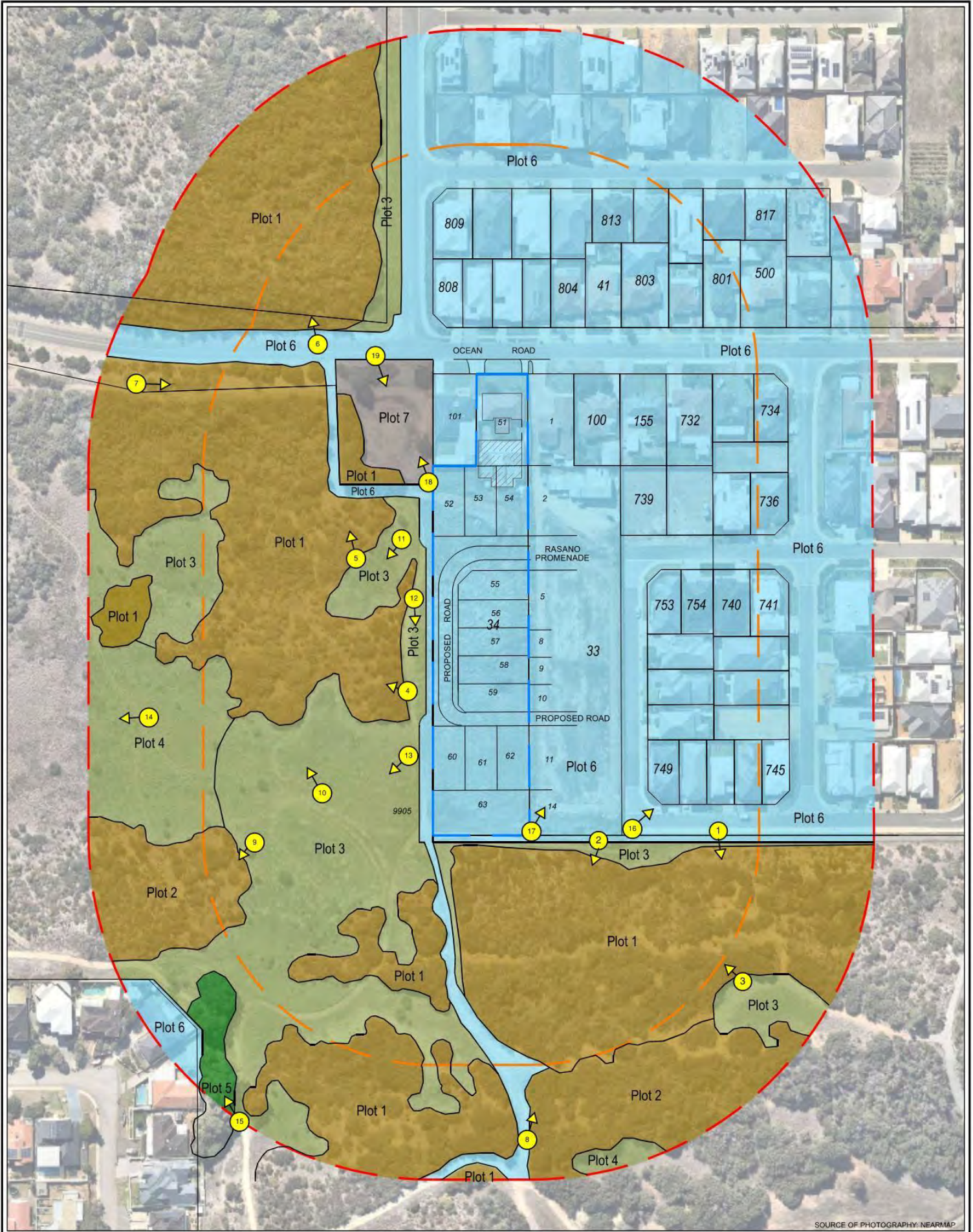
3.1.2 Effective Slope

Classified vegetation occurs to the west and south of the site and the effective slope at the interface zone is upslope 0-5 degrees.

The effective slope is outlined in Table 3.

Table 3: Summary of vegetation type and effective slope

Vegetation Area/ Plot	Applied Vegetation Classification	Effective Slope under the Classified Vegetation (degrees)
1	Class D Scrub	Upslope
2	Class D Scrub	Downslope 0-5
3	Class G Grassland	Upslope
4	Class G Grassland	Downslope 0-5
5	Class A Forest	Flat/Upslope
6	Exclusion Clause 2.2.3.2.(f)	N/A
7	Exclusion Clause 2.2.3.2.(e)	N/A



SOURCE OF PHOTOGRAPHY: NEARMAP

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 Date aerial photo: May 2019

FIGURE 4 VEGETATION CLASSIFICATION MAP (BAL CONTOUR MAP)

SCALE 1:1500 @ A3
 DATE: APRIL 2021



- SUBJECT LAND
- ASSESSMENT AREA (150m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE
- ASSESSMENT AREA (100m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE
- PLOT 1 - CLASS D SCRUB - UPSLOPE
- PLOT 2 - CLASS D SCRUB - DOWNSLOPE 0-5
- PLOT 3 CLASS G GRASSLAND - UPSLOPE
- PLOT 4 CLASS G GRASSLAND - DOWNSLOPE 0-5
- PLOT 5 CLASS A FOREST - UPSLOPE
- PLOT 6 EXCLUSION CLAUSE 2.2.3.2(e)
- PLOT 7 EXCLUSION CLAUSE 2.2.3.2(f)



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3.2 Assessment Outputs

A BAL contour assessment was undertaken according to Appendix Three of the Guidelines and the results are found in Figure 5. A Method 1 BAL Assessment was undertaken to determine the BAL contours impacting the site and the outputs are provided in Table 4. Figure 5 outlines the final developed scenario where the entire site is fuel reduced and managed to APZ standards and the adjacent lot (Lot 33) is currently under construction and vegetation is removed permanently for residential development.

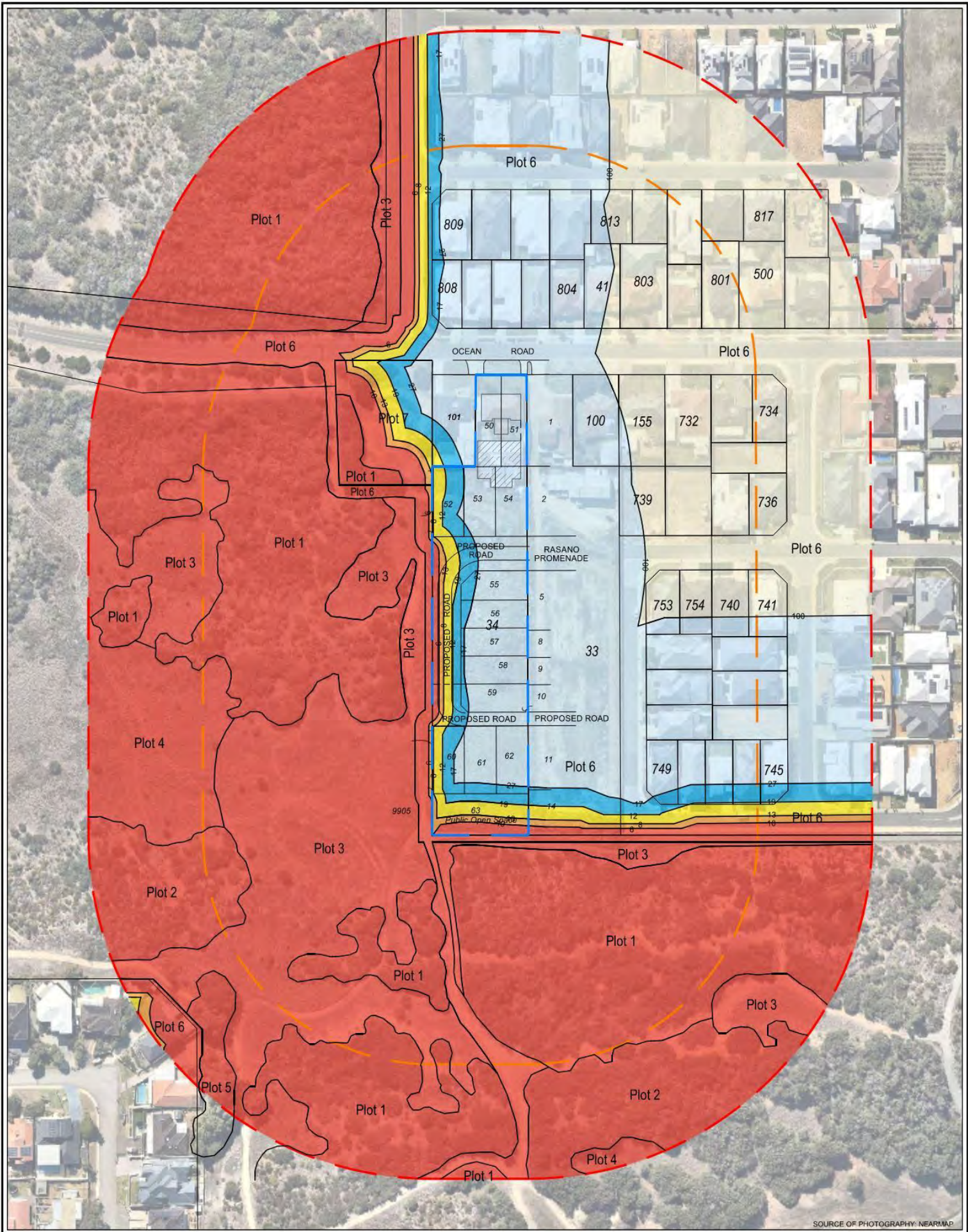
Table 4: Summary of assessment outputs, Method 1

Lot	Applied Vegetation Classification	Plot No.	Separation distance to Classified Vegetation (m)	Highest BAL Contour
51	Class D - Scrub	Plot 1	32	BAL-12.5
	Class G Grassland	Plot 3	28	BAL-12.5
52	Class D - Scrub	Plot 1	12.5	BAL-29
	Class G Grassland	Plot 3	8	BAL-29
53	Class D - Scrub	Plot 1	26	BAL-19
54	Class D - Scrub	Plot 1	36	BAL-12.5
55	Class D - Scrub	Plot 1	19	BAL-19
56	Class D - Scrub	Plot 1	20.7	BAL-19
57	Class D - Scrub	Plot 1	23.8	BAL-19
58	Class D - Scrub	Plot 1	23.5	BAL-19
59	Class D - Scrub	Plot 1	22.1	BAL-19
60	Class D - Scrub	Plot 1	13	BAL-29
	Class G Grassland	Plot 1	8	BAL-29
61	Class D - Scrub	Plot 1	23.3	BAL-19
62	Class D - Scrub	Plot 1	23.3	BAL-19

4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

The scrub vegetation to the south and west of the site (Class D Scrub) poses the greatest threat to the development. The scrub vegetation is recolonising the degraded areas and is expanding. Areas immediately west and south of the site are slashed and maintained as Class G Grassland by the City of Cockburn. This slashing maintains scrub fuels at the existing boundaries provides certainty that scrub will not encroach closer to the site.

The behaviour of fire in scrub vegetation is impacted by wind speed and the area is exposed to strong winds due to the topography and open nature of the vegetation resulting in the potential for a fast moving wind driven scrub fire south and west of the site. Extreme bushfire behaviour could impact the site as evident in the BAL Contour plan. The provision of an APZ on the perimeter road and the landscaped POS area offers most lots a sufficient setback to ensure predicted radiant heat flux levels to levels acceptable within the guidelines. Public access and water supply are provided to acceptable levels.



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 Date aerial photo: May 2019

**FIGURE 5
 BAL CONTOUR
 PLAN**

0 10 20 30 40 50 60m
 SCALE 1:1500 @ A3
 DATE: FEBRUARY 2022

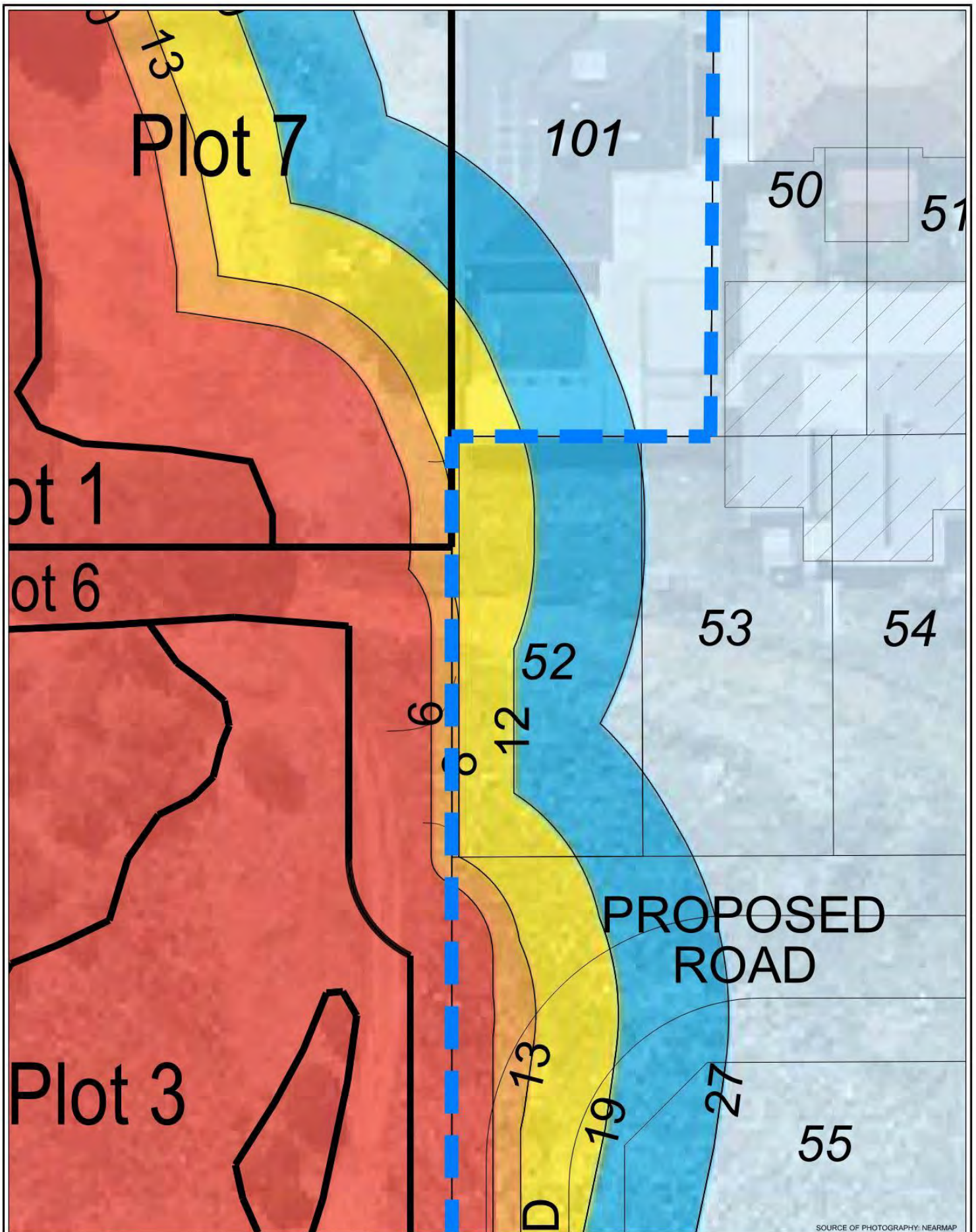


INDICATIVE BUSHFIRE ATTACK LEVELS

- BAL LOW
- BAL 12.5
- BAL 19
- BAL 29
- BAL 40
- BAL FLAME ZONE



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**FIGURE 6
 BAL CONTOUR
 PLAN**



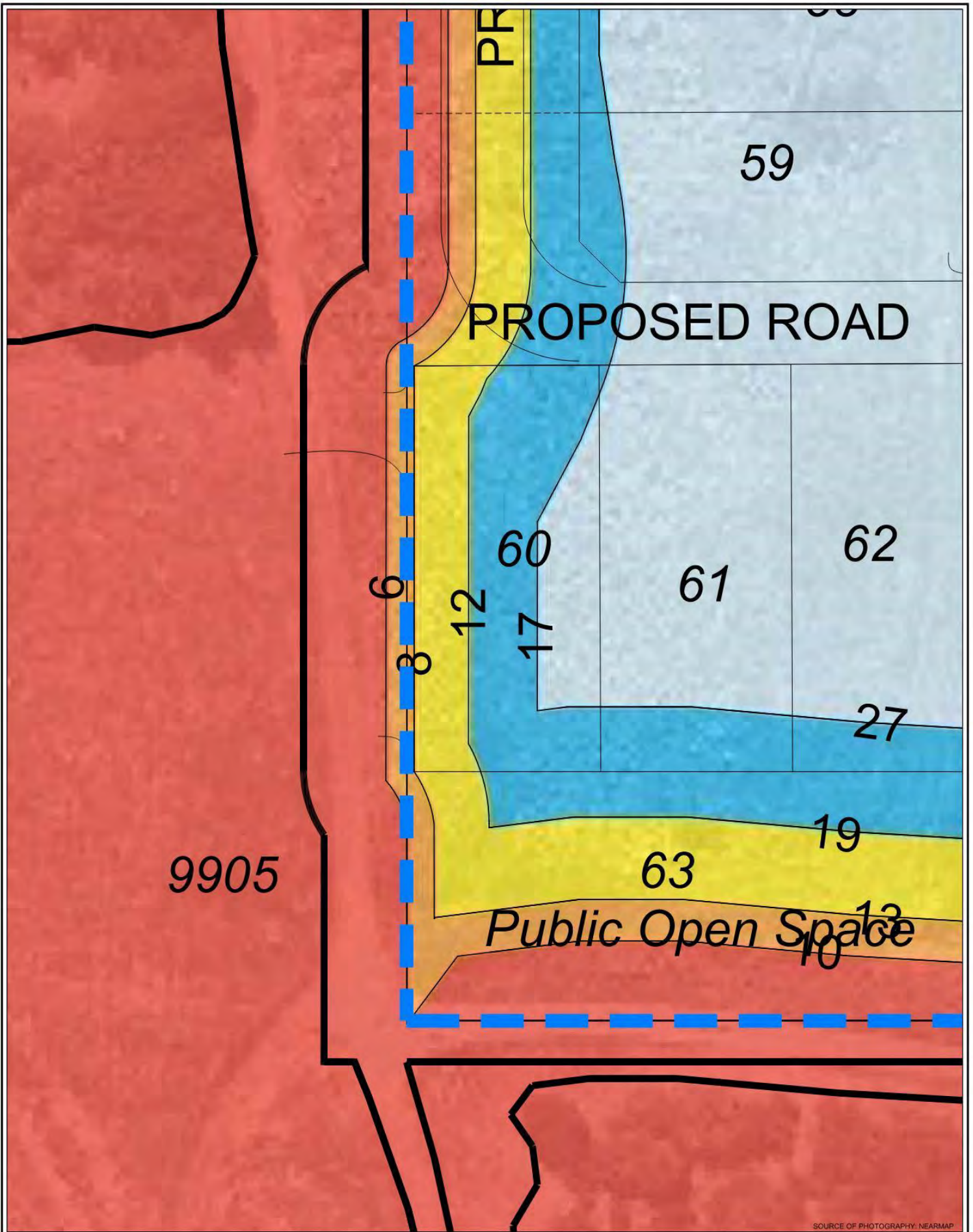
SCALE 1:250 @ A3
 DATE: FEBRUARY 2022

INDICATIVE BUSHFIRE ATTACK LEVELS

- BAL LOW
- BAL 12.5
- BAL 19
- BAL 29
- BAL 40
- BAL FLAME ZONE



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FIGURE 7
BAL CONTOUR
PLAN

0 2 4 6 8 10m
 SCALE 1:250 @ A3
 DATE: FEBRUARY 2022

INDICATIVE BUSHFIRE ATTACK LEVELS

-  BAL LOW
-  BAL 12.5
-  BAL 19
-  BAL 29
-  BAL 40
-  BAL FLAME ZONE



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5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA

This report adopts an acceptable solution and performance-based system of control for each bushfire protection criteria. This methodology is consistent with Appendix Four of the Guidelines. The management issues are:

- Location of the development
- Siting and Design of Development
- Vehicular access
- Water

Acceptable solutions are proposed for all of the bushfire protection criteria and each illustrates a means of satisfactorily meeting the corresponding performance criteria.

Land use planning bushfire risk mitigation strategies are comprehensively detailed in the following sections by providing responses to the performance criteria that fulfil the intent of the bushfire hazard management issues outlined in the Guidelines. The compliance checklist is attached as Table 5 and a spatial representation of the bushfire management strategies are illustrated in Figure 6.

Table 5: Compliance Table

Bushfire Protection Criteria	Method of compliance	Proposed bushfire management strategies
Element 1: Location	A1.1 Development Location	<p>The Method 1 BAL Assessment outlined in this report demonstrates that all proposed lot boundaries achieve BAL-29 or lower. Two lots (lots 52 and 60) are orientated side on to the adjacent local government reserve, 0.5m of land has been ceded to the local Government to create a total 8m wide limestone surface Firebreak/track. This 8m firebreak will be installed adjacent to lots 52 and 60 on the immediate western interface with the site by the Developer and maintained in perpetuity by the City of Cockburn. Lots 52 and 60 are impacted by BAL-29 only.</p> <p>The limestone track connects with the existing fire access tracks in the reserve. The developer will maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost.</p>
Element 2: Siting and Design	A2.1 Asset Protection Zone (APZ)	<p>The Method 1 BAL Assessment outlined in this report demonstrates that all proposed lot boundaries achieve BAL-29 or lower. Two lots (lots 52 and 60) are orientated side on to the adjacent local government reserve and BAL-40 and is contained in the new reserve boundary. The firebreak being maintained in perpetuity by the City to ensure vegetation is kept to a low threat level.</p> <p>The perimeter Asset Protection Zones (APZs) occupies the western perimeter road and the landscaped POS area at the southern end of the site.</p> <p>The lot layout can accommodate dwellings to BAL-29 or lower on all lots. The APZ extends over all lots as they are all contained within the future bushfire prone area. The APZ is managed in accordance with the requirements of Schedule 1 Standards for Asset Protection Zones outlined in Appendix 1.</p>

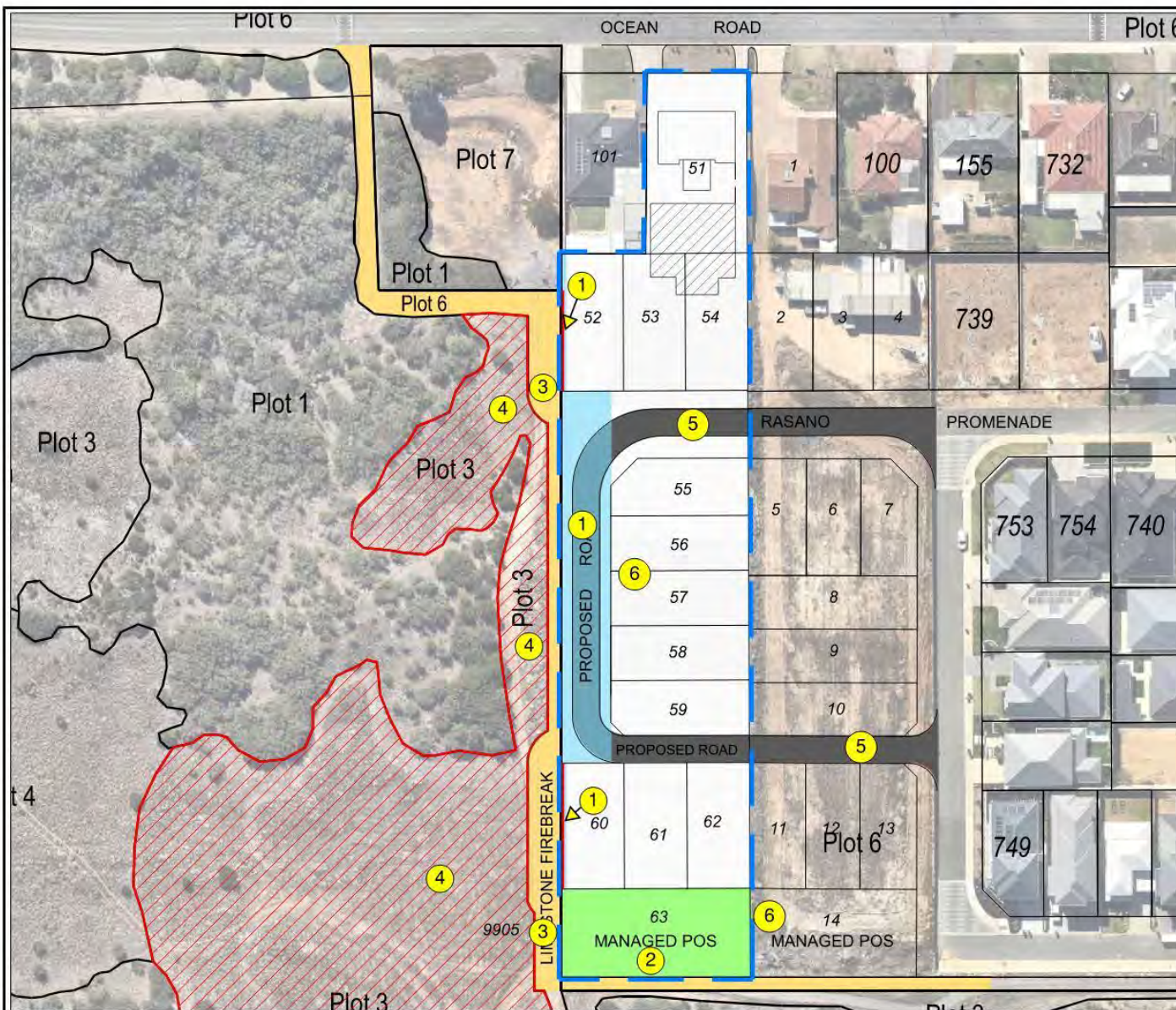
Element 3: Vehicular Access	A3.1 Two access routes	The proposed road layout is a loop that extends from the adjacent approved Local Structure Plan and provides two access routes on the public road network and extensions to Sokol Way and Rasano Promenade.
	A3.2 Public Road	Proposed roads and Sokol Way and Rasano Promenade comply with minimum public road standards outlined in Appendix 2 .
	A3.3 Cul-de-sac	There are no planned cul-de-sacs.
	A3.4 Battle-axe	There are no battle axes proposed
	A3.5 Private driveway longer than 50 metres	There are no private driveways longer than 50m proposed.
	A3.6 Emergency access way	There are no emergency access ways proposed.
	A3.7 Fire Service Access Routes	There are no Fire Service Access Routes proposed.
	A3.8 Firebreak width	A total 8m wide limestone surface Firebreak/track will be installed adjacent to lots 52 and 60 on the immediate western interface with the site by the Developer and maintained in perpetuity by the City of Cockburn. The limestone track will be 3 metres in all other areas. The limestone track connects with the existing fire access tracks in the reserve. The developer will maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost. Compliance is achieved with the current City of Cockburn Fire Control Order (Appendix 3). Maximum lot size is 890m ² . Perimeter firebreaks are not required, compliance is achieved.
Element 4: Water	A4.1 Reticulated areas	The development has access to a reticulated water supply and hydrants will be installed in accordance with minimum Water Corporation and DFES standards.
	A4.2 Non-reticulated areas	Not applicable.
	A4.3 Individual lots within non-reticulated areas (for 1 additional lot only)	Not applicable.

5.1 Additional Management Strategies

The site will be developed in a single stage. APZ standards within the site will be maintained by the developer prior to the creation of titles until the sale of lots.

The 8m wide Fire Break Access track on the western interface of the site adjacent to Lots 52 and 60 will be constructed by the Developer, maintained for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost. Following this the limestone track will be maintained in perpetuity by the City of Cockburn in a low threat and non-vegetated condition. Elsewhere on the western interface the limestone track is 3m wide.

There are no specific Vulnerable or High-Risk Land Uses proposed at the site. Any specific applications will trigger the necessary requirements under SPP 3.7.



-  SUBJECT LAND
-  PROPOSED ROADS
-  LIMESTONE FIREBREAK
-  ASSET PROTECTION ZONE
-  AREA OF MAINTAINED GRASSLAND BY THE CITY OF COCKBURN

REQUIREMENTS

1. A permanent perimeter APZ will be established over the western road reserve. A strip of land 0.5m wide is to be ceded to the Crown at subdivision and form part of a limestone firebreak in the adjoining reserve. All lots on this interface are exposed to BAL-29 or less.
2. A Landscape Plan has not been developed, the future POS area will be planned with bushfire threat considerations to ensure bushfire threat is maintained in a low threat condition. Fuel management will consist of regular pruning, removal of dead plant material and accumulated fine fuels. This management regime will ensure the reserve remains classed as Exclusion Clause 2.2.3.2(f).
3. An eight and three metre wide limestone Fire break / trail will be installed on the western interface of the development to ensure good fire access on the development interface and that no bushfire threat is immediately adjacent to the site. The developer will install and maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost.
4. The limestone trail batter and grassland areas are maintained by the City of Cockburn as grassland vegetation.
5. Proposed internal roads provide excellent egress within and from the site to adjacent public roads.
6. The area is provided with a reticulated water supply. The provision of scheme water together with fire hydrants will meet the specifications of Water Corporation Standard DS63 and DFES requirements.

FIGURE 6 - SPATIAL REPRESENTATION OF BUSHFIRE MANAGEMENT STRATEGIES


Science. Culture. Solutions.
 PO BOX 84 STONEVILLE WA 6081
 Mbl: 0429 949 262
 www.bushfiresafetyconsulting.com.au

SCALE 1:1000 @ A3
 DATE: AUGUST 2021



Location details: Lot 34 Ocean Road, Coogee
 Assessment date: June 2019
 Prepared by: Bushfire Safety Consulting
 Accreditation level: Level 3 BPAD Practitioner
 Accreditation number: BPAD 23160
 Accreditation expiry date: 31st January 2022
 Date aerial photo: May 2019

6 RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

Table 6 outlines the initial and ongoing responsibilities, actions and associated works that need to be undertaken by the Developer, future landowners and the City of Cockburn. The check boxes for implementation actions will be used for subdivision clearance. A Bushfire Planning Practitioner will certify the BAL ratings are correct and necessary implementation actions have been completed.

Table 6: Responsibility for bushfire measures

DEVELOPER / PROPONENT / LANDOWNER	
LSP, SUBDIVISION STAGE AND ONGOING MANAGEMENT	
No.	Implementation Action
1	At subdivision stage ensure water supply, vehicular access standards and internal APZs are established and maintained.
2	At subdivision stage, 0.5m of land is to be ceded from Lots 52 and 60 as POS for the purposes of a limestone firebreak. This land will form part of a limestone firebreak. This land will form part of the limestone firebreak on the adjoining reserve to a total of 8 metres. The limestone trail is established to standards acceptable by the City of Cockburn on the western interface. The developer will maintain the limestone firebreak for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost.
3	At subdivision stage, assess and confirm the BAL ratings for individual lots prior to the creation of titles.
4	Install the public roads to standards outlined in Appendix 2.
5	Ensure the POS reserve is established and maintained to managed fuel loads and low threat managed condition.
6	Update the Bushfire Management Plan as requested by the City of Cockburn if it has reason to believe site conditions have substantially changed, or new methodologies or practice are adopted as identified in future revisions of the “Guidelines”.
CITY OF COCKBURN – ONGOING MANAGEMENT	
7	Maintain public roads to appropriate standards and ensure compliance with the City of Cockburn’s Fire Control Order.
8	Provide fire prevention and preparedness advice to landowners upon request, and the City of Cockburn’s Fire Control Order.

9	Maintain the fire trail batter and grassland areas as grassland in the adjacent reserve, by slashing any revegetation of shrubs, etc.
---	--

7 CONCLUSION

This Plan provides acceptable solutions and responses to the performance criteria that fulfil the intent of the bushfire hazard management issues outlined in the Guidelines.

However, community bushfire safety is a shared responsibility between governments, fire agencies, communities and individuals.

The Local Structure Plan is located in the bushfire prone area (i.e. within 100 m of classified vegetation) and risk is reduced via building compliance with AS 3959. BAL-29 is not exceeded for future dwellings and recommended perimeter APZ incorporates the key western interface areas.

The establishment and management of a 8m wide limestone Fire Trail adjacent to Lots 52 and 60 inside the reserve has agreement from the City of Cockburn. Elsewhere the limestone trail is 3m wide. The developer will install the limestone track and maintain it for a period of 5 years, or alternatively provide a bond equal to the estimated maintenance cost. After this period, the City of Cockburn will maintain it in perpetuity.

A minimum of two access options and dedicated fire hydrant spacings for fire-fighting are provided. The proposed development will fall within the acceptable level of risk.

REFERENCES

DFES. (2017). *PREPARE. ACT. SURVIVE.*

http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/BushfireManualsandGuides/DE_S_Bushfire-Prepare_Act_Survive_Booklet.pdf

Standards Australia Ltd. 2018. *AS 3959-2018 Construction of buildings in bushfire-prone areas.* Sydney, Australia: SAI Global Ltd.

Western Australian Planning Commission (WAPC). 2017. *Guidelines for Planning in Bushfire Prone Areas V1.3.* Perth, Australia: The Department of Planning, Lands and Heritage.

Western Australian Planning Commission (WAPC). 2015. *State Planning Policy No. 3.7: planning in Bushfire Prone Areas (SPP3.7).* Perth, Australia: The Department of Planning, Lands and Heritage.

Western Australian Planning Commission (WAPC). 2019. *Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and Design* Perth, Australia: The Department of Planning, Lands and Heritage.



APPENDICES

Appendix 1: Guidelines for Planning in Bushfire Prone Areas - Asset Protection Zone Standards

Appendix 2: Vehicular Access Technical Requirements

Appendix 3: City of Cockburn Fire Control Notice 2020/21

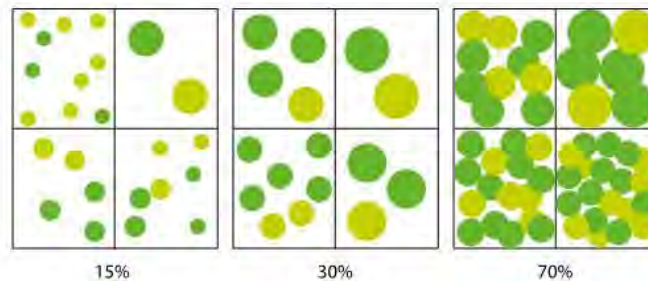
Appendix 1: Asset Protection Zone Standards

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity

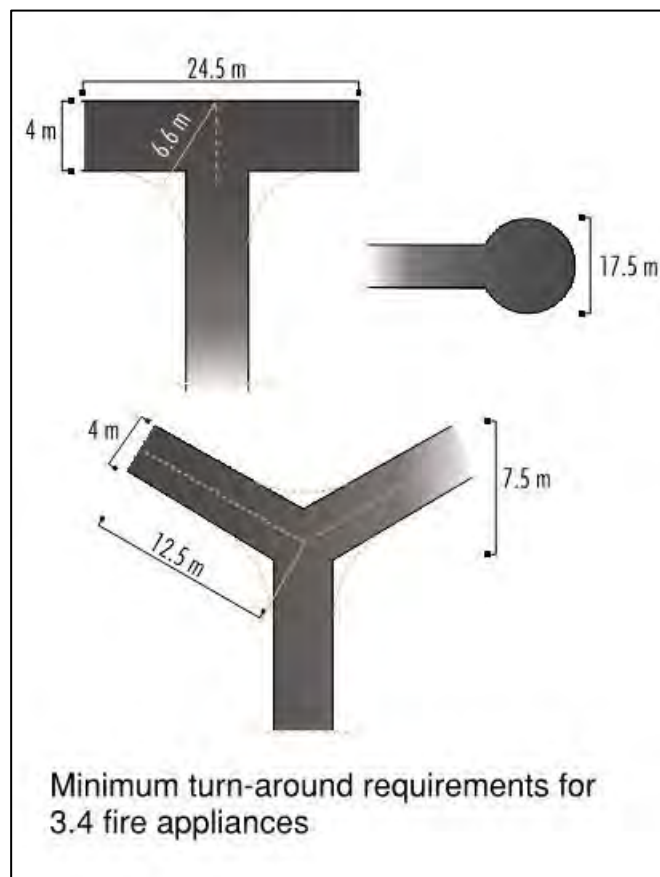


- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Appendix 2: Vehicular Access Technical Requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

*Refer to E3.2 Public roads: Trafficable surface



Appendix 3: City of Cockburn Fire Control Order 21/22

All Property (vacant or developed) - less than 4,047m²

To reduce the fire hazard on your land and to comply with the requirements of this Fire Control Order you are required to:

1. Have all flammable materials such as dry grass and weeds slashed, mown or trimmed down by other means to a maximum height of 50mm across the entire property for the duration of this firebreak time; and
1. Remove all dead vegetation.

All property (vacant or developed) - 4,047m² or greater

To reduce the fire hazard on your land and to comply with the requirements of this Fire Control Order you are required to:

1. Construct a firebreak (as defined within section 3 of this order) immediately inside all external property boundaries, this includes those adjacent to roads, drains, rail reserves and any public open space reserves
1. Remove all dead vegetation surrounding and over all habitable structures to a radius of 3 metres except living trees, shrubs, maintained grass and gardens under cultivation.

Appendix 5 – Drainage Technical Memo



Derrick D'Souza
Realstar Enterprises Pty Ltd
19 Fairhaven Terrace
HILLARYS WA 6025

Attention: Derrick D'Souza

Dear Derrick,

PROPOSED SUBDIVISION – LOT 34 OCEAN ROAD, COOGEE

INTRODUCTION

Lot 34 Ocean Road, Coogee (the site) is situated approximately 20 km southwest of the Perth CBD and is approximately 7,609m² in size, bounded by Ocean Road to the north, residential properties to the east and vacant land to the south and west.

Aerial Survey indicates that the site slopes steeply from RL 26 m AHD along the western boundary to about RL 19 m AHD along the eastern boundary. The northern portion of the site contains a single-storey residential house and a large workshop / shed. The central and southern portions of the site is vacant.

The proposed subdivision layout for the site consists of 16 lots (13 Green Title Residential lots, a public open space (POS, proposed lot 63), and 2 proposed reserve lots (at the western boundaries of lots 52 and 60)). We further understand that the existing house will be retained, however the workshop / shed will be demolished.

A combined District and Local Water Management Strategy was completed by Cardno in January 2012 for the City of Cockburn for Packham North (DWMS/LWMS) which covers the site.

This technical report is written to support the proposed structure plan for this site.

SITE GEOTECHNICAL CHARACTERISTICS

There is no geotechnical investigation available however Galt Geotechnical have completed a desktop investigation of the geotechnical and environmental characteristics of Lot 33. As the site is adjacent, it will have similar characteristics to Lot 34. The summary of the desktop investigation of Lot 33 is below. The full environmental / geotechnical report can be provided upon request.

GEOTECHNICAL SUMMARY

- Site is likely to be classified as an "A" class in accordance with AS2870 (non-reactive sand and limestone), assuming normal earthworks are completed.
- There is substantial limestone present on Lot 34. Drainage would not normally be a concern for the site with high ground surface levels and low groundwater (probably around RL 1 m to RL 2m this close to the coast). However, limestone, depending on its degree of cementation, can hinder surface and subsurface drainage. Underground devices such as Soakwells and protanks can be used for onsite disposal.
- Depending on the degree of cementation of the limestone, over excavation of the limestone and replacement with sand may be required to achieve this.



APPROVED DWMS/LWMS, CARDNO, 2012

The approved Cardno DWMS/LWMS follows the Better Urban Drainage Design principals of the Department of Water (now known as Department of Water Environmental Regulations, DWER) and the City of Cockburn, which in summary, is to maintain predevelopment flow conditions to not impact on downstream drainage/environmental systems.

The site falls within the DWMS/LWMS drainage catchment 2b and 2c, which captures a portion of catchment F2a-1. The entire drainage network ultimately flows to the western catchment in 2a and 5.

The catchment 2c drainage basin has been sized to retain all the runoff from sub-catchment 2c and a proportion of runoff from the undeveloped sub-catchment F2a-1. The design criteria in the DWMS/LWMS Section 4.4, states that runoff from the undeveloped upstream catchments can be allowed to flow through the development to the lowest point in the landscape (i.e. the Western Wetland).

However, the drainage strategy for sub-catchment 2c has retained some of the runoff from the upstream catchment instead of allowing this runoff to flow through the development. This strategy enables additional retention within sub-catchment 2c, which has ample space for drainage infrastructure, so that less storage is required in the lower proportions of the catchment (i.e. sub-catchment 2a), which has less available space for drainage infrastructure.

The majority of the storage requirements are from catchment F2a-1, therefore the location of the drainage basin should be closest to catchment F2a-1 (along the future extension of Prizba Rise) to capture the runoff before it burdens the road drainage network.

It should also be noted that the proposed drainage basin in the DWMS/LWMS is located within the Public Open Space.

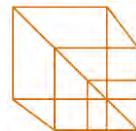
Table 1: Cardno LWMS Table 9 Surface Runoff from Sub-catchment 2c

Sub-catchment	1 Year – 1-hour ARI (m ³)	5 Year ARI (m ³)	100 Year ARI (m ³)
Catchment 2c	40	250	565
Catchment F2a-1	0*	270	870
Total	40	520	1,435

* The 1 Year – 1-hour rainfall that falls on this catchment is fully infiltrated.

The DWMS/LWMS assumes an infiltration of 2.5×10^{-5} m/s, which is 2.16m/day, which is considered reasonable for a sandy site which is located in Lot 33.

Taking into account infiltration, a total storage of 1,045m³ is required for catchment 2c, as per Figure 10b of the LWMS (refer to enclosures).



The proposed catchment 2c public open space is provided over 2 sites, Lot 33 and Lot 34 (site) Ocean Road, Coogee. Lot 33 has provided 50% of the storage requirements under the LWMS, and therefore Lot 34 would need to provide 522.5m³ of storage.

This storage can be provided using underground storage devices, such as protanks, in conjunction with a proposed drainage basin within proposed lot 63, provided that the drainage component of the POS does not exceed 20% (i.e., 152.2m² of 761m²) of the POS lot.

CONCLUSION

The proposed subdivision plan stipulates the storage is located within the most suitable location to capture the runoff from catchment F2a-1 before it enters the council's drainage network. This will reduce the burden on the drainage network, therefore reducing pipe diameter sizing and maintenance.

Adequate storage can be provided within the proposed public open space to ensure the drainage component of the storage does not exceed 20% of the proposed POS lot, as stipulated within the WAPC Liveable Neighbourhoods policy.

Based on the above, there should be no drainage constraint over the proposed development, subject to detailed design and approval at time of development.

If you require any additional information or have any questions, please contact me on 9274 6444.

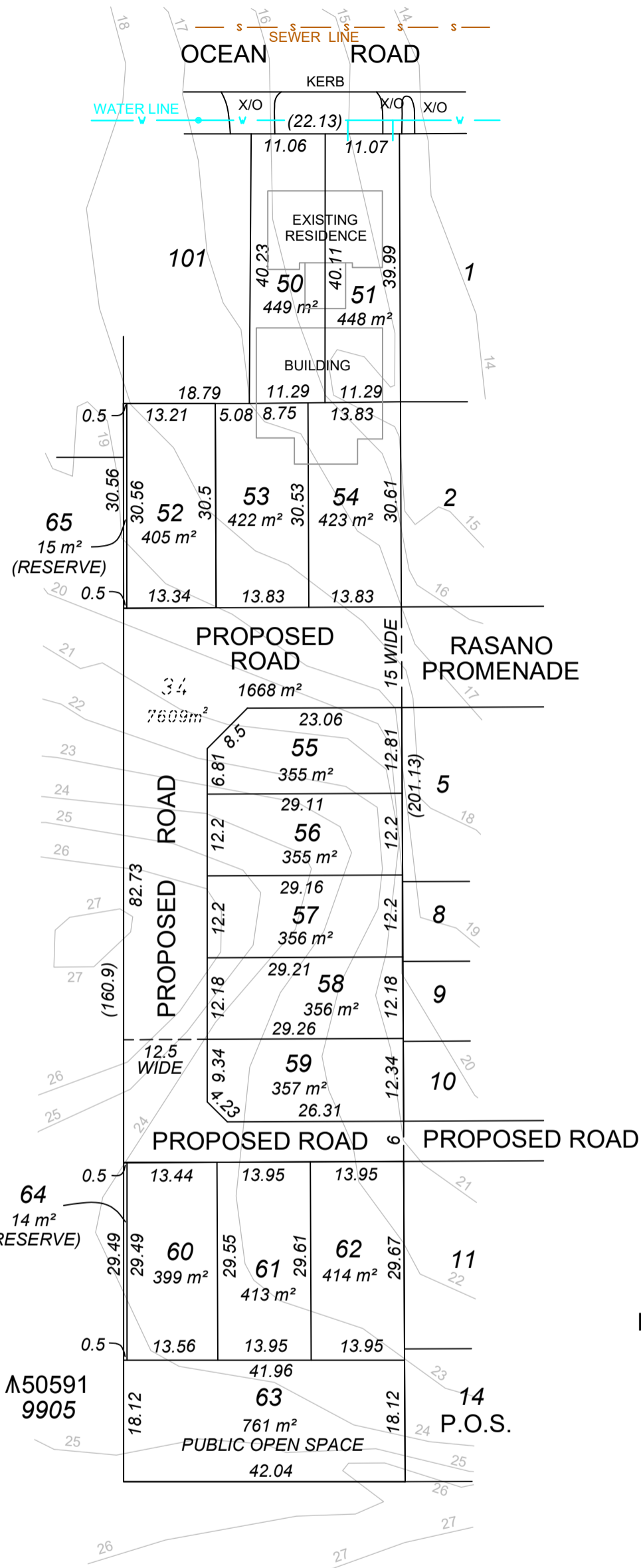
Regards

Michael McCafferty | Graduate Engineer | McDowall Affleck Pty Ltd | ABN: 23 009 033 345 |

T: +61 8 9274 6444 | F: +61 8 9250 3433 | E: mmccafferty@mapl.net.au | www.mcdowallaffleck.com.au |

22 February 2022

Enclosures: Proposed Subdivision Plan
DWMS/LWMS Reference Pages



NOTE: ALL STRUCTURES TO BE REMOVED

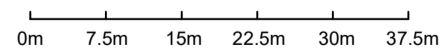
LOT	DESCRIPTION	AREA
34	ORIGINAL LOT	7609m ²
50	PROPOSED LOT	449m ²
51	PROPOSED LOT	448m ²
52	PROPOSED LOT	405m ²
53	PROPOSED LOT	422m ²
54	PROPOSED LOT	423m ²
55	PROPOSED LOT	355m ²
56	PROPOSED LOT	355m ²
57	PROPOSED LOT	356m ²
58	PROPOSED LOT	356m ²
59	PROPOSED LOT	357m ²
60	PROPOSED LOT	399m ²
61	PROPOSED LOT	413m ²
62	PROPOSED LOT	414m ²
63	PROPOSED LOT	761m ²
64	PROPOSED LOT	14m ²
65	PROPOSED LOT	15m ²
	PROPOSED ROAD	1668m ²

WARNINGS:

1. LOT NUMBERS, DIMENSIONS AND AREAS SUBJECT TO WAPC APPROVAL, SURVEY AND LANDGATE AUDIT.

PLAN OF: SUBDIVISION APPLICATION	
PROJECT: LOT 34 ON P 5190 65 OCEAN ROAD, COOGEE	CLIENT: REALSTAR
	HORIZONTAL DATUM: PLANE
	VERTICAL DATUM: AHD

SCALE 1:750 @ A3



DP/PLAN/DIAGRAM: P 5190	<p>SCANLAN SURVEYS PTY LTD LICENSED SURVEYORS P O BOX 429 MIDLAND 6936 PH: 08 9250 2261 www.scanlansurveys.com.au bill@scanlansurveys.com.au</p>	DRAWN BY: LF 8/04/2019	D	PROPOSED LOTS 60 - 64 AMENDED	LF	5/11/2021
C/T: VOL 1623 FOL 989		CHECKED BY: WS 8/04/2019	C	PROPOSED LOTS 64 & 65 ADDED	LF	13/08/2021
LOCAL AUTHORITY: CITY OF COCKBURN		APPROVED BY: WS 8/04/2019	B	PROPOSED ROAD & LOTS 55 - 59 AMENDED	LF	18/02/2021
		A	PROPOSED LOT 50 CREATED AND LOT 51 AMENDED	LF	18/06/2019	
		REV	DESCRIPTION	BY	DATE	
		DRAWING FILE: 8016188.DWG	DRAWING: 8016/18/8	REV: D		

Table 7 Surface Runoff from Catchment 1

Sub-catchment	1 year – 1 hour ARI (m ³)	5 Year ARI (m ³)	100 Year ARI (m ³)
1a	315	1,960	4,655
1b	180	1,290	2,985

Table 8 Basin Inundation Modelling Results for Catchment 1

Basin	Basin Base Area (m ²)	Basin Top Area (m ²)	Weir Height (m)	Max Basin Depth (m)	Flood Depth (m)			Inundated Area (m ²)		
					1y-1h	5y	100y	1y-1h	5y	100y
1a-1y1h	685	685	0.70	1.60	0.33	0.71	0.95	685	685	685
1a-5y	1,020	1,020	1.20	1.60	0	0.10	0.95	0	1,020	1,020
1a-100y	2,390	2,390	1.20	1.60	0	0	0	0	0	0
1b-1y1h	240	240	0.85	1.66	0.57*	0.86	1.34	240	240	240
1b-5y	380	380	0.85	1.66	0	0.77	1.34	0	380	380
1b-100y	885	885	0.81	0.81	0	0.02	0.44	0	255	885

Note: The above table presents the modelled results for each sub-catchment and basin during the modelled ARI rainfall events. For Sub-catchment 1a, the first vegetation retention basin is "1a-1y1h", the second infiltration basin is the "1a-5y" and the final infiltration basin is the "1a-100y".

*The UWMP will need to demonstrate reduction in flood depth to <0.5m through additional storage below ground.

The provided basin configuration for Catchment 1 demonstrates that runoff from the catchment can be managed and retained within the catchment. However, future detailed design of the basins must achieve the basin design criteria presented in **Section 4.4.3** and be presented within an UWMP.

7.2.3 Catchments 2 and 3 - Western Wetland

The area immediate south of Ocean Road currently has some market garden properties which are proposed to be developed into an urban catchment. This area receives runoff from upstream Catchment F2. This upstream catchment will not be developed.

The proposed structure plan for Catchment 2 and 3 includes pockets of POS which will have a dual use by providing stormwater retention. By utilising several locations for stormwater retention, the overall size of each basin can be reduced and this provides treatment/infiltration close to source. The basins within Catchment 2 and 3 are assumed to infiltrate at a rate of 2.5x10⁻⁵m/s, as detailed in **Appendix C**.

7.2.3.1 Sub-catchment 2c

The most upstream basins are located within Sub-catchment 2c. This basin receives runoff from the urban Sub-catchment 2c and the undeveloped Sub-catchment F2a-1. The results of the modelling and the proposed basin sizes are presented in **Table 9** and * **The** ^{1 year - 1 hour rainfall that falls on this catchment is fully infiltrated.}

Table 10.

Table 9 Surface Runoff from Sub-catchment 2c

Sub-catchment	1 year – 1 hour ARI (m ³)	5 Year ARI (m ³)	100 Year ARI (m ³)
Ct2c	40	250	565
CtF2a-1	0*	270	870
Total	40	520	1,435

* The 1 year - 1 hour rainfall that falls on this catchment is fully infiltrated.

Table 10 Basin Inundation Modelling Results for Sub-catchment 2c

Basin	Basin Base Area (m ²)	Basin Top Area (m ²)	Basin Depth (m)	Flood Depth (m)			Inundated Area (m ²)		
				1y-1h	5y	100y	1y-1h	5y	100y
2c-1y1h	30	130	0.50	0.39	0.52	0.54	100	130	130
2c-5y	35	245	0.80	0	0.78	0.83	0	235	245
2c-100y	10	205	1.00	0	0	1.02	0	0	205

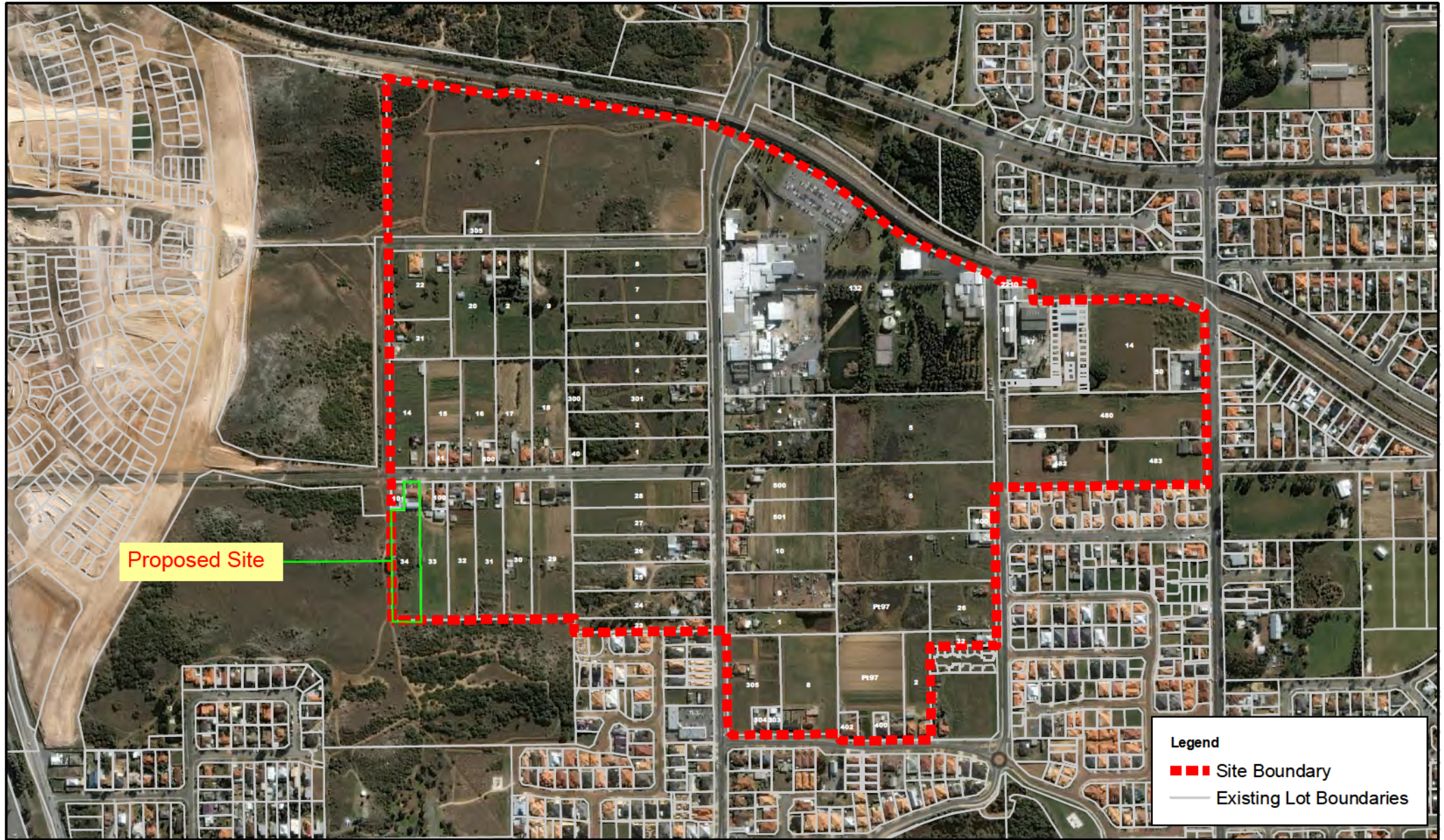
The basins have been sized to retain all of the runoff from Sub-catchment 2c and a proportion of the runoff from the undeveloped Sub-catchment F2a-1. The design criteria in **Section 4.4**, states that runoff from the undeveloped upstream catchments can be allowed to flow through the development to the lowest point in the landscape (i.e. the Western Wetland). However, the drainage strategy for Sub-catchment 2c has retained some of the runoff from the upstream catchment instead of allowing this runoff to flow through the development. This strategy enables additional retention within Sub-catchment 2c, which has ample space for drainage infrastructure, so that less storage is required in the lower proportions of the catchment (i.e. Sub-catchment 2a) which has less available space for drainage infrastructure.

7.2.3.2 Sub-catchment 2b

The total volume of discharge (185m³) from the Sub-catchment 2c basins to the downstream Sub-catchment 2b is provided within **Table 11**. This table also provides the total runoff from the contributing catchments within Sub-catchment 2b. The size of the basins proposed for Sub-catchment 2b is provided within **Table 12**.

Table 11 Surface Runoff from Sub-catchment 2b

Sub-catchment	1 year – 1 hour ARI (m ³)	5 Year ARI (m ³)	100 Year ARI (m ³)
Overflow from upstream Ct2c	0	0	185
Ct2b	90	650	1,540
CtF2a-2	0	30	95
CtF2a-4	0	50	150
Total	90	730	1,970



Legend

- ■ ■ Site Boundary
- Existing Lot Boundaries

DATE	No.	ACTIVITY - REVISION DESCRIPTION	DES	DRN	CHKD	APPD	DATE	No.	ACTIVITY - REVISION DESCRIPTION	DES	DRN	CHKD	APPD	DATE	No.	ACTIVITY - REVISION DESCRIPTION	DES	DRN	CHKD	APPD
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PROJECT **Packham North DWMS/LWMS**

DRAWING TITLE **FIGURE 2 : Development Boundary**

PRINCIPAL **City of Cockburn**

This drawing has been prepared in accordance with Cardno Quality Management System. It remains the property of Cardno WA Pty. Ltd. and shall not be used without permission. The drawing shall be preliminary only and/or not for construction until signed approved.



<p>Cardno CONSULTING ENGINEERS TOWN PLANNERS PROJECT MANAGERS ENVIRONMENTAL CONSULTANTS</p>	<p>Cardno Centre 2 Bagot Road P.O. Box 155 Subiaco Western Australia 6904 Telephone (08) 9273 3888 Facsimile (08) 9388 3831</p>	<p>Project Number V9100</p> <p>Designed SB Drawn SB</p>	<p>Drawing Number SK02</p> <p>Checked DLM Approved DLM</p>	<p>Revision 00</p> <p>Date 28/02/11</p>	<p>Original A4</p>
	<p>Local Authority City of Cockburn</p>	<p>Sheet 1 of 1</p>			



Proposed Site

Legend

- ■ ■ Site Boundary
- Structure Plan Lot Boundaries
- Public Open Space

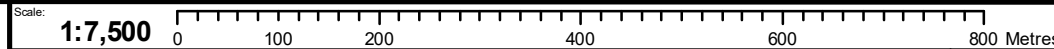
DATE	No.	ACTIVITY - REVISION DESCRIPTION	DES	DRN	CHKD	APPD	DATE	No.	ACTIVITY - REVISION DESCRIPTION	DES	DRN	CHKD	APPD	DATE	No.	ACTIVITY - REVISION DESCRIPTION	DES	DRN	CHKD	APPD
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PROJECT **Packham North DWMS/LWMS**

DRAWING TITLE **FIGURE 3 : Structure Plan**

PRINCIPAL **City of Cockburn**

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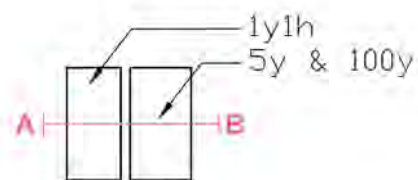
CONSULTING ENGINEERS
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Project Number	Revision	Original
V9100	00	A4
Designed SB	Checked DLM	Date 28/02/11
Drawn SB	Approved DLM	
Local Authority	City of Cockburn	Sheet 1 of 1

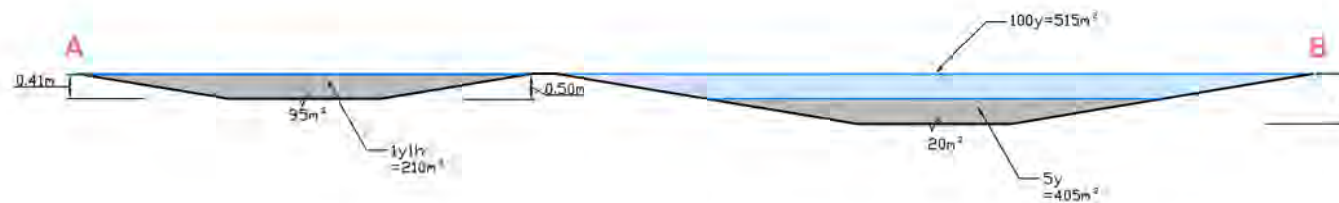
Version: 1, Version Date: 24/01/2017

Subcatchment 2b – Plan View



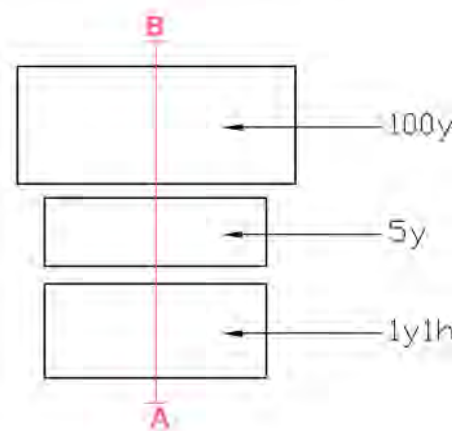
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Subcatchment 2b – Section View



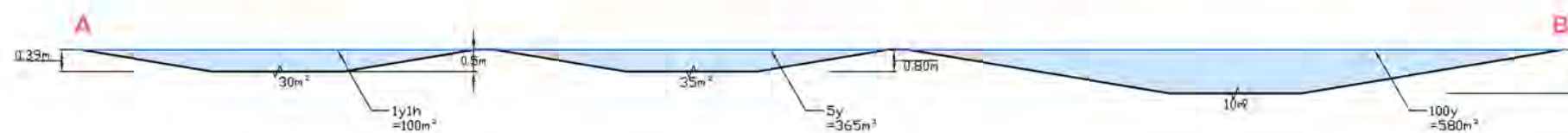
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Subcatchment 2c – Plan View



Scale 1:1500

Subcatchment 2c – Section View



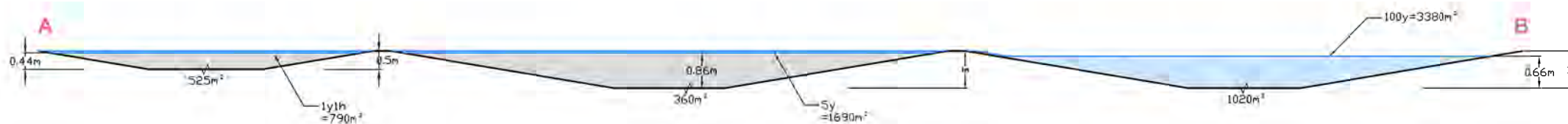
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Subcatchment 4 – Plan View



Scale 1:1500

Subcatchment 4 – Section View



Scale 1:150

DATE	No.	ACTIVITY – REVISION DESCRIPTION	DES	DRN	CHK'D	APP'D

PROJECT Packham North DWMS/LWMS
 DRAWING TITLE FIGURE 10b – Basin Configuration (2 of 5)
 PRINCIPAL City of Cockburn

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Date	13/05/11	Scale	1:150
Designed	SB	Checked	ASC
Drawn	SB	Approved	BL
Local Authority	City of Cockburn	Sheet	1 of 1
Project – Phase – Plan Number	V9100-001-SK15B	Revision	A

ORIGINAL A3