

Sustainable Development Directorate

APPENDICES

Item 12.2.1C

Under Separate Electronic Cover

ORDINARY COUNCIL MEETING

To Be Held

Wednesday, 21st May 2025 Commencing at 5.00pm

Αt

ADMINISTRATION CENTRE EATON

1 Council Drive - EATON

(Appendix ORD: 12.2.1C)

LOCAL STRUCTURE PLAN

Parkridge Estate







DOCUMENT CONTROL

Control Version	Date	Status	Distribution	Comment
Α	30/08/2022	Draft	Internal	QA check
В	02/09/2022	Draft	Client	For review
С	29/09/2022	Draft	Client	For review
D	21/10/2022	Final	Shire of Dardanup	Lodgement
E	26/05/2022	Final	Shire of Dardanup	Lodgement
F	21/02/2025	Final	State Solicitors Office	Lodgement

Prepared for: Parkridge Pty Ltd Date: 27 February 2025

Prepared by: KS Job No: 22294
Reviewed by: AR / BF Ref: F

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ENDORSEMENT PAGE

This Structure Plan is prepared under the provisions of the Shire of Dardanup Local Planning Scheme No. 3.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN AMENDMENT

WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:
Date
Signed for and on behalf of the Western Australian Planning Commission:
An officer of the Commission duly authorized by the Commission pursuant to section 16 of the
An officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:
Witness
Date
Date of Expiry



TABLE OF AMENDMENT(S)

	Amendment No.	Summary of Amendment	Amendment Type	Date approved by WAPC
Γ	1	Relocation of POS and	Standard	
		reconfiguration of residential cells.		

TABLE OF DENSITY PLANS

Density Plan No.	Area of density plan application	Date endorsed by WAPC



Executive Summary

Local Structure Plan Parkridge Estate, Eaton

This amendment to the Parkridge Local Structure Plan (LSP) has been prepared to guide the subdivision and development of the land.

On approval, this amendment, is intended to extend the life of the Structure Plan for a further 10 years or longer as determined by the Western Australian Planning Commission (WAPC) in accordance with Schedule 2, cl.28(2) of the *Planning and Development* (Local Planning Schemes) Regulations 2015. The amendment to the Structure Plan has been written in a way that it both incorporates the existing elements of the approved Structure Plan whilst incorporating the current requirements and revisions as identified within the report.

The Local Structure Plan (LSP) area falls within the locality of Eaton in the Shire of Dardanup. The subject land is situated to the west of Eaton Drive, approximately 2.5km from the Eaton Fair Shopping Precinct and approximately 12km by road, northeast of the Bunbury City Centre.

This LSP area will accommodate low and medium density residential housing, and areas of Public Open Space (POS). The LSP outlines a land use and movement network framework for the development of the subject site.

The lots subject to this modification were formed from the original Lot 1 of Wellington Location 19 (Location 19), purchased by Parkridge Pty Ltd in 1993. The land area of Location 19, being 257.77ha, has subsequently been developed for residential purposes, POS, Regional Open Space (ROS), a recreation centre, a high school, a primary school, and an aged care facility.

The original LSP for Location 19 formed part of the initial Amendment 47 to the Shire of Dardanup's Town Planning Scheme No. 3 (TPS 3), which was approved and endorsed by the Minister in 1993.

Subsequently, a revised LSP for the northern portion of Location 19 was approved by the Western Australian Planning Commission (WAPC) on October 1, 2019.

The northern portion of the site and land subject to this modification including Lots 9010 and lots developed since the 2019 LSP approval. Lot 9010 and Lot 9504 (known as the 'Homestead Lot') are the remaining land parcels yet to be developed from the original Location 19 landholding.

The Homestead Lot will not be considered as part of this LSP modification, but will be investigated for future development separately from this process.

This modification seeks to distribute the POS throughout the remaining land to be developed and to re-orientate the residential cells predominantly in a north-south grid pattern to assist with solar passive design effectiveness. The design has been updated to make it contemporary, efficient, and accurately reflect the current planning and servicing requirements.

The contemporary design of the amended LSP maximises the accessibility of green spaces while addressing Bushfire Management, Traffic and Water Management policies and guidelines. The road layout largely promotes the development of regular shape lots of different sizes to accommodate a variety of community needs.

The POS contribution proposed has resulted from an audit of POS already ceded from Location 19. The audit and calculations of POS provided within this LSP demonstrates that well in excess of the general 10% POS requirement has been proposed.



The LSP Summary Table below details the nature and key outcomes of the LSP.

TABLE 1 - LSP SUMMARY TABLE

ITEM		DATA	STRUCTURE PLAN REF (section no.)
Total area of Location 19	257.7700 ha		
Total area covered by this LSP modification	32.5407 ha		Section 1.2
Area of each land use proposed:	Hectares	Lot Yield	
- Residential (R20)	6.3138 ha	129 lots (developed)	Section 4.3
- Residential (R30-R40)	10.7646ha	358 lots (estimate)	Section 4.3
- Residential (R40)	3.5200ha	160 lots (estimate)	
Total estimated lot yield	647 lots		Section 4.3
Estimated number of dwellings	647 dwellings	;	Section 4.3
Estimated residential site density	19.8 dwelling	gs per site hectare	Section 4.3
Estimated population	1617 people *		Section 4.3

^{*} Based on ABS 2021 Census – Eaton Average number of people per household 2.5.



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Table of Technical Appendices

Appendix No.	Document Title	Nature of Document	Referral/Approval Agency	Approval Status & Modification
Α	Certificates of Title	Supporting	-	-
В	POS Audit	Supporting	-	-
С	Environmental Assessment and Black Cockatoo Habitat Tree review	Supporting	-	-
D	Local Water Management Strategy	Supporting	Shire of Dardanup and Department of Water and Environmental Regulation	Submitted to Shire and DWER
E	Bushfire Management Plan	Supporting	Department of Fire and Emergency Services	-
F	Transport Impact Assessment	Supporting	-	Updated version attached
G	Servicing Report	Supporting	-	-



PART ONE: IMPLEMENTATION



1 LOCAL STRUCTURE PLAN AREA

This modification to the approved Local Structure Plan applies to Lot 9010 Peninsula Lakes Drive, Eaton and the lots developed in accordance with the LSP approved in 2019. The LSP area being the land contained within the inner edge of the line denoting the Local Structure Plan boundary shown on the Local Structure Plan Map (**Plan 1**).

2 OPFRATION

In accordance with Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes)* Regulations 2015 ('Regulations'), this Structure Plan comes into operation when it is approved by the Western Australian Planning Commission ('WAPC'), pursuant to Schedule 2, Part 4, Clause 22 of the Regulations.

It is requested that this amendment extends the validity of the LSP for a further 10 years from that date, or another period determined by the WAPC in accordance with the Planning and Development (Local Planning Scheme) Regulations 2015 Schedule 2 – Deemed Provisions.

The (amended) Structure Plan is to be given due regard when making decisions on the development and subdivision of land within the Structure Plan area.

3 STAGING

The development staging shall follow an orderly sequence and provide a manageable level of service of essential infrastructure for roads, drains and utility services.

Implementation will occur through subdivision applications prepared by the developer in response to market demand. It is anticipated that development will expand generally to the north from the existing residential lots created previously in Parkridge.

4 SUBDIVISION AND DEVELOPMENT REQUIREMENTS

Subdivision within the Structure Plan area is to be in accordance with the layout and residential density code prescribed by the Structure Plan.

Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zone or reserve under the Scheme.

4.1 GENERAL REQUIREMENTS

The following subdivision and development requirements are to be implemented in conjunction with the Structure Plan map:

- 1. Subdivision, development, and land use within the structure plan area is to be generally in accordance with the Structure Plan.
- 2. All proposed lots are to be connected to reticulated water, sewer, power and telecommunications.
- 3. Lots requiring the preparation of a Local Development Plan shall be determined in accordance with Liveable Neighbourhoods and noted on the required Density Plan of the proposed subdivision to be provided prior to an application for subdivision.

4.2 PUBLIC OPEN SPACE

Public Open Space (POS) will be provided generally in accordance with the Public Open Space Schedule (**Table 2**) and **Tables 3** and **Figure 4** of this LSP amendment.



At the time of subdivision, 10% of POS is to be ceded free of cost, with the balance to be set aside as a separate lot pending future acquisition using cash in-lieu funds from other subdivisions.

4.3 STREET TREES

A sum of \$300.00 per lot, incremented by CPI, shall be paid to the local government for the provision of street trees.

Trees to be planted shall be *Agonis flexuosa*, to provide for wildlife habitat corridors, particularly Western Ringtail Possum and Brushtail Possum that are known to frequent the wider locality.

4.4 BUSHFIRE MANAGEMENT

Land within the Structure Plan area is mapped as being bushfire prone under the Department of Fire and Emergency Services Bushfire Prone Mapping.

This amended Local Structure Plan is supported by a Bushfire Management Plan, prepared in accordance with State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP3.7). Any development on land within the Structure Plan area shall be constructed in accordance with the recommendations made by the Bushfire Management Plan and shall comply with the requirements of Australian Standard 3959 – Construction of Buildings in Bushfire Prone Areas.

4.5 DENSITY PLANS

The land identified as residential within existing Lot 9008 has designated a code range of R30-40. A Density Plan that determines final R-Code allocation is required for each stage of subdivision within the Structure Plan area.

The allocation of residential densities shall be in accordance with the following locational criteria:

- a) The R30 density code shall apply as the base code to all 'Residential' zoned lots, with the exception of identified in the density plan with each subdivision application or shown on the LSP Map.
- b) Medium densities of up to R40 shall be provided throughout the site to provide for a mix of lot sizes and affordable home sites.

4.6 FOOTPATHS

The applicant/owner shall make provision for footpaths through the structure plan area. The location and width of footpaths are to be determined at subdivision stage and shall be in accordance with the requirements of Liveable Neighbourhoods.

4.7 SCHOOL CONTRIBUTION

It should be noted that Parkridge has previously provided land for the purpose of a Primary School site and is **not** required to make a financial contribution for this purpose on subdivision of lots within the LSP area.

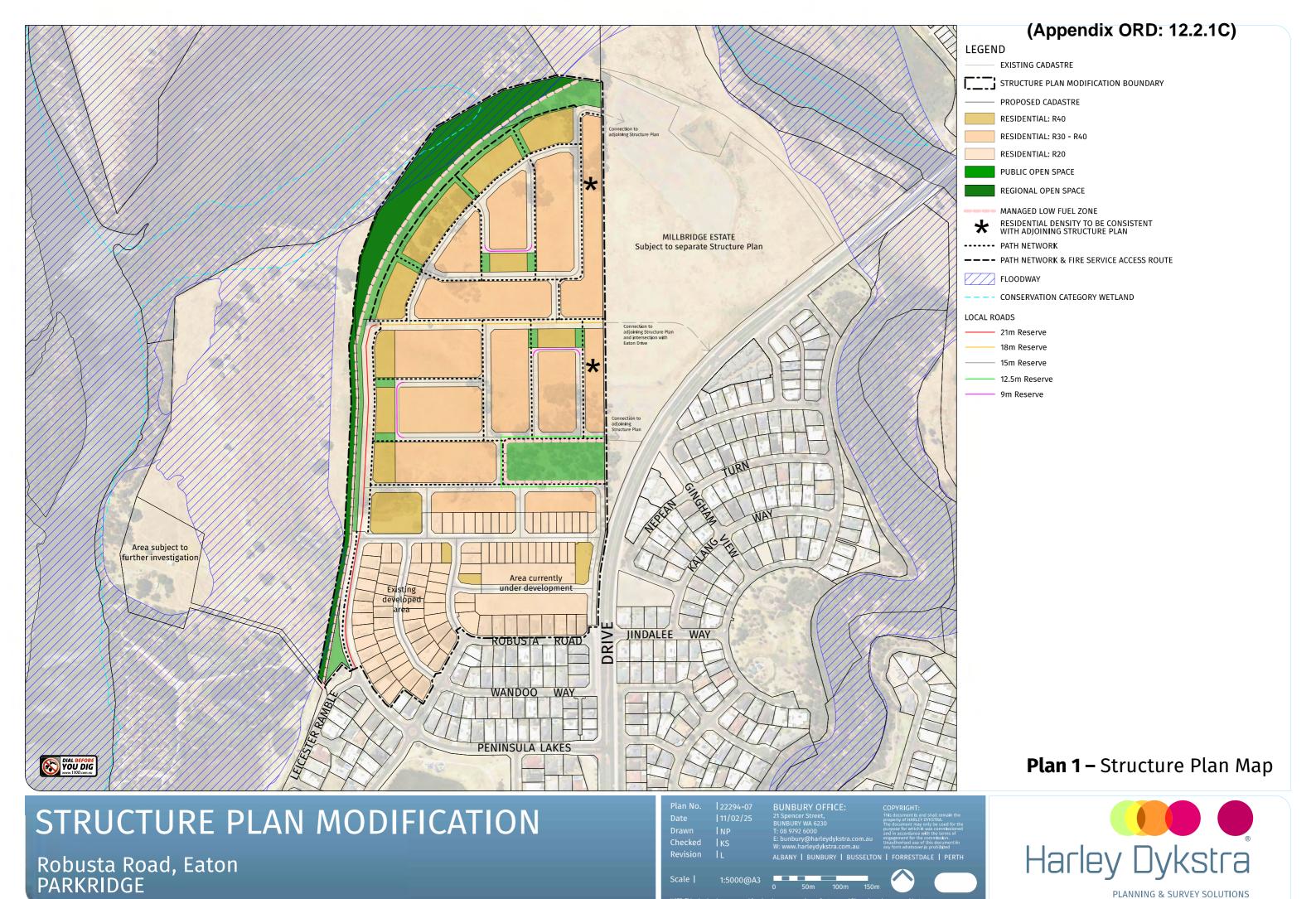
4.8 INTERFACE WITH ADJOINING DEVELOPMENT

The amended LSP provides for orderly connection of local roads from Parkridge to the adjoining Millbridge Estate and to the wider road network, via the connections shown on the amended Structure Plan Map at **Figure 1**.





Calculation of Required POS Provision Total site area (ha) - Original Location 19		
Total Site area (IIa) - Original Location 15		257.7700
Deductions		
Environmental	0.0000	
Conservation Category Wetland	0.0000	
Regional Open Space Reserves	83.4378	
Restricted Access Conservation Areas	0.0000	
Surface area of natural water bodies	0.0000	
Infrastructure		
Regional Road Reservations, widenings - Primary/Other	5.1264	
Public utilities (include pump station sites, transmission corridors)	0.1887	
Drainage (steep sided drains and basins)	0.0000	
Non Residential Land Uses		
Primary School	4.0010	
High School	8.7529	
Activity centres, commercial, retail (excluding residential component)	0.0000	
Community Purposes Sites	13.7223	
Public Purpose Reserves	0.0000	
Other		
Developed by others (WAPC 127984)	3.4043	
Over 55s site (formally school site)	0.2476	
Surplus Restricted Public Open Space Not Credited	0.5823	
Total Deductions		
Total Deductions		119.4633
Gross Subdivisible Area (total site area minus deductions)		138.3067
Required Public Open Space (10%)		13.8307
Breakdown of POS Provided		
Restricted Public Open Space		
Conservation Category Wetland Buffer (up to 50m)	0.0000	
Resource Enhancement, multiple use wetland or similar and associated	3.3484	
buffers (up to 30m) Reserved land encumbered by easements ie powerlines, sewer gas -		
deemed suitable for POS	0.0000	
Total Restricted POS	3.3484	
Maximum 20% credit	2.7661	
Total Restricted POS Credited to a maximum of 20%		2.7661
Surplus Restricted POS Not Credited i.e. over the maximum 20%	0.5823	
Unrestricted Public Open Space: by function (refer Note 4)		
Sport	0.0000	
Recreation	12.8944	
Nature	0.0000	
Total Unrestricted POS	12.8944	
Total Unrestricted POS		12.8944
TOTAL		15.6605
		11.32%





PART TWO: EXPLANATORY SECTION



1 PLANNING BACKGROUND

1.1 Introduction and Purpose

This Local Structure Plan (LSP) modification has been prepared by Harley Dykstra on behalf of Parkridge Group Pty Ltd. The LSP considers the POS provided for the original landholding being for Lot 1 of Wellington Location 19 (Location 19). The portion subject to this LSP modification are Lots 9010 Peninsula Lakes Drive, Eaton and the developed lots as shown on the Structure Plan Map (the 'subject land').

This LSP has been prepared in accordance with the obligations set out in the Shire of Dardanup Town Planning Scheme No.3 for 'Residential' development.

This proposal is accompanied by a Structure Plan Map (**Figure 1**) prepared in accordance with the *Planning and Development* (*Local Planning Scheme*) *Regulations*, 2015, which is included at Part One of this Report.

The Explanatory Section of this Structure Plan report includes a detailed description of the proposal, provides an evaluation of the relevant town planning, environmental, bushfire management, local water management and servicing considerations applicable to the land, and details the rationale supporting the proposed LSP layout and development requirements. The Explanatory Section also includes the history of WAPC subdivision approvals requiring the provision of Public Open in relation to Location 19.

Specialist reporting was undertaken for the Structure Plan approved in October 2019. These reports have been updated to reflect the proposes LSP modifications and relevant changes to policy.

The objectives of the Structure Plan are to:

- Provide a framework to guide the use, subdivision and development of the land to create a high quality, liveable urban precinct; and
- Provide for a range of lot products and sizes to facilitate the creation of a diverse housing mix of typologies and range of affordability to cater for a varied demographic.

1.2 Land Description

Location & Context

The subject land, known as 'Parkridge' is located within the locality of Eaton, within the Shire of Dardanup. It is approximately 2.5km north of the Eaton town centre.

Parkridge is a successful residential development providing low to medium density homesites.

Eaton Drive links Parkridge and the residential development of Millbridge to the east to Treendale to the north of the Collie River.

The location of Parkridge can be seen in Figure 1 (overleaf).



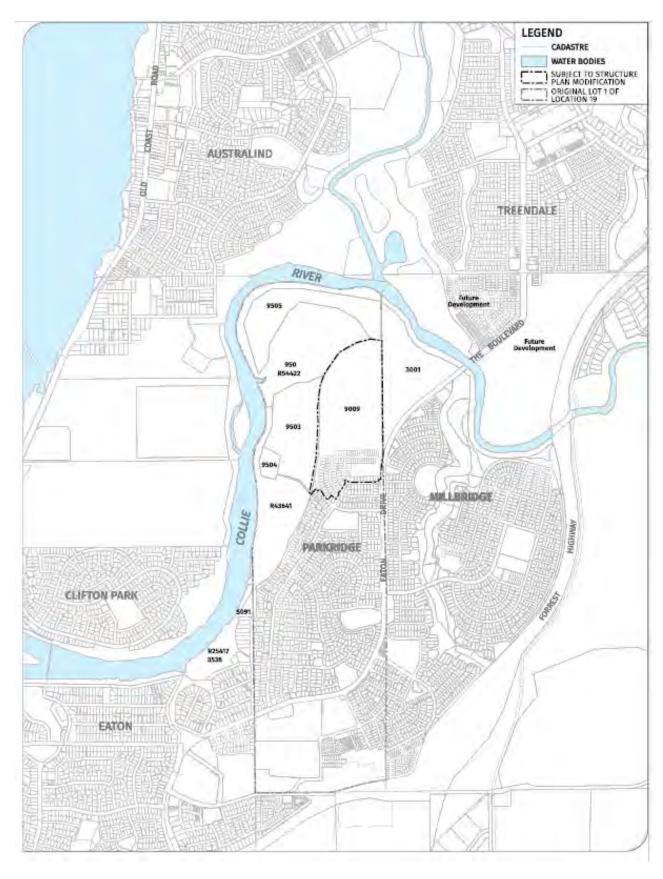


FIGURE 1 – LOCATION PLAN



Area and Land Use

Location 19, compromised an area of 257.7700ha and was bounded by the Collie River to the north and north-eastern boundaries. Forrest Highway now adjoins the original southern boundary.

The land subject to this LSP modification is the northern portion of Location 19 has an area of 24.7571ha which includes Lot 9010 being the main parcel of land, and the lots developed to date within the LSP area.

The land is parkland cleared with some small patches of remnant vegetation, most of which relate to the Collie River foreshore area.

Other than lots under development on the southern edge, the site is vacant and has been used for broad acre farming/grazing with improved pasture.

Development has occurred from the southern portion of the site generally in a northern direction with staged subdivision and allocation of POS. Several POS Audits and calculations have been undertaken with the latest prepared by Harley Dykstra a copy of which, available for review at **Appendix B.**

Approximately 75% of Parkridge Estate has been developed to date. The remaining northern portion of the site is subject to this Structure Plan modification.

Legal Description and Ownership

Details of the LSP land yet to be developed within the LSP area is shown in Table 1 below. A copy of the Certificate of Title is included at **Appendix A.**

Lot No.Plan/
DiagramVolumeFolioRegistered Proprietor(s)90104289302182432PARKRIDGE GROUP PTY LTD

TABLE 2 – LAND OWNERSHIP DETAILS

1.3 Background Planning Information

The original Structure Plan for Location 19 (Parkridge) was adopted by the Shire of Dardanup in December 1991 and endorsed by the WAPC.

The Shire of Dardanup also initiated Amendment 47 to TPS 3 to rezone Location 19 to Residential Area and Recreation. Amendment 47 was approved in July 1993.

Between 1993 and 2007, Parkridge subdivided Location 19 in accordance with the approved Structure Plan with several stages of development resulting in residential lots and POS being created.

In early 2007, planning consultants, Koltasz Smith prepared a revised Structure Plan for the northern portion of the site which, following consultation with the Shire of Dardanup, included a proposed sports ground. However, after matters relating to the provision of POS were unable to be resolved the 2007 Structure Plan was not progressed.

Further subdivisions were approved by the WAPC with the condition that Public Open Space be vested in the Crown in accordance with the Planning and Development Act 2015. This was accepted





by the developer and subsequent portions of land were provided as POS and the conditions of the approval cleared by the Shire and WAPC.

In 2015, The Shire of Dardanup rezoned the remaining portion of Location 19 yet to be developed to a 'Development' zone. This change of zoning resulted in a Local Structure Plan to be approved prior to any further subdivision. Additionally, the Shire of Dardanup resolved to prepare a Local Structure Plan for Parkridge land. This Structure Plan was also not progressed.

In 2016, the WAPC refused an application for subdivision primarily on the grounds that there was no approved Local Structure Plan over the application area.

To progress development of the remaining portion of Parkridge, planning consultants TME/Calibre were instructed to prepare a Local Structure Plan over the northern portion of the site. This Local Structure Plan was approved on October 1, 2019.

In March 2022, correspondence between Mr Saulsman of Parkridge Group and the West Australian Planning Commission (WAPC) resulted in the WAPC recommending an audit be undertaken to determine the POS already ceded and the balance of POS to be provided on the remaining land to be developed.

The POS Audit seeks to confirm the amount of POS provided to date, and to guide and justify a modification to the approved Structure Plan. The POS Audit was submitted to the DPLH in June 2022 for review and comment. A review of the audit was undertaken as part of this LSP modification, a copy of which can be found in **Appendix B**.



2 PLANNING FRAMEWORK

2.1 ZONING AND RESERVATIONS

Greater Bunbury Region Scheme

Most of the lot 9010 is zoned 'Urban' under the Greater Bunbury Region Scheme (GBRS). A small section of the north-western edge of lot 9010 is zoned Regional Open Space as is the land to the west and north of lot 9010.

Shire of Dardanup - Town Planning Scheme No. 3

The land zoned Urban in the GBRS is identified as 'Development' zone within the Shire of Dardanup's Local Planning Scheme No.3 as shown in **Figure 2.**

Clause 3.16.9 of the scheme identifies that 'It is intended that the land in a Residential Development Area be progressively developed for residential purposes and such other business and public uses as are normally associated with residential development'.

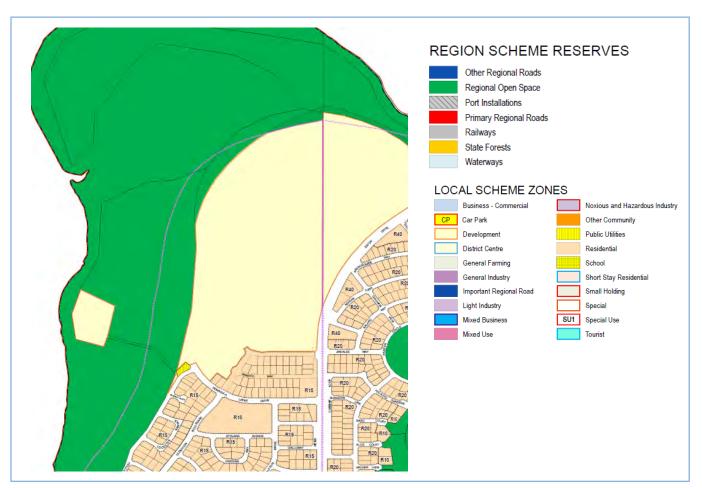


FIGURE 2 - ZONING MAP



Shire of Dardanup - Draft Local Planning Scheme No. 9

The Shire of Dardanup has prepared a Draft Local Planning Scheme which was advertised for comment early in 2023. The zoning shown on the Draft scheme is consistent with that shown in the current Town Planning Scheme No.3.

Regional and sub-regional structure plan

The Greater Bunbury Strategy 2013 was prepared by the Department of Planning to guide urban, industrial and regional land use planning, and associated infrastructure delivery in the Greater Bunbury sub-region in the short, medium and long terms.

The Greater Bunbury Sub-Regional Structure Plan 2013 identifies the land as 'Urban Undeveloped Land' and 'Regional Open Space' reservation, consistent with the zonings of TPS No.3.

Shire of Dardanup Local Planning Strategy

The Shire of Dardanup Local Planning Strategy was adopted by Council in March 2014 was prepared to provide a strategic plan that will plan for the future of the Shire in a responsible manner and reflect the aspirations of the shire and its community, accommodates future needs, and creates opportunities to enhance local attributes.

At the time of the Strategy's completion, it estimated that the Eaton/Millbridge urban area would reach a population of 15,000 persons when fully developed, possibly higher if the residential densities are increased.

The residential portion of the subject land is identified for urban development in the Greater Bunbury Region Scheme and Shire of Dardanup Town Planning Strategy, development of this site is likely to have been incorporated into the population and housing predictions included within the Local Planning Strategy.

Residential density proposed for the subject land is consistent with the current TPS 3, discussions will continue with officers at the Shire of Dardanup during the structure planning process, to ensure the proposed development is consistent with the densities proposed as part of LPS 9.

2.2 PLANNING POLICIES

Livable Neighbourhoods

Livable Neighbourhoods (LN) is the WAPC's primary policy for the design and assessment of structure plans (regional, district and local) and subdivision for new urban (predominantly residential) areas in Perth metropolitan and Peel regions and major regional centres, on greenfield and large infill sites.

Element 1 of LN defines the principles of community design and guides the broad planning of urban areas to foster a sense of community, local identity, and space. Objective 5 of LN states: Provide public open space that meets the recreational, social and health needs of existing and future communities.

LN defines the walking distance, using the pedestrian network, between residents and the nearest POS (of any size) should be no more than 300m over the neighbourhood as a whole. Further, where regional open space (ROS) adjoins the site it should be considered as a major component of the POS network to provide function at a neighbourhood scale. The following table from LN defines the POS size hierarchy and catchment area for accessibility.



(Appendix ORD: 12.2.1C)

	Small	Local	Neighbourhood	District
Size	Up to 4000m² (0.4ha)	0.4-1ha	1ha – 5ha	5ha and above
Accessibility catchment	300m	300m	800m	2km

Figure 3 demonstrates the walkable catchments in relation to the POS and ROS at Parkridge.

Element 5 of LN specifically addresses the provision and requirement of POS to contribute to the quality of life, vitality, identity, community interaction and sense of place in neighbourhoods.

LN identifies the function of POS as sport, recreation and nature. All publicly accessible land can contribute to function, even if it is not a POS site. For example, a regional sporting facility on regional open space (ROS) providing sport opportunities, a Bush Forever site providing a nature function and a walking trail on an easement providing recreation opportunities.

Further, LN states ROS were identified at regional/subregional planning level, should be accessible and useable for local residents as local POS.

LN states the provision of POS in residential areas is 10% of the gross subdivisible area. This is to be provided free of cost and vested in the in the Crown under the provisions of Section 152 of the *Planning and Development Act 2005*.

POS land considered to be restricted can provide a portion of the POS contribution, however this is limited to 2% of the overall minimum 10% contribution.

LN requires the calculation of POS is to be demonstrated through the preparation of a POS Schedule consistent with the proforma shown as Table 16 in LN. A POS schedule for Parkridge is provided in Section 4.2 of this report, which demonstrates sufficient POS has been provided for Location 19 and the LSP area.





Figure 3 – Walkable Catchments



Development Control Policy 2.3 - Public Open Space in Residential Areas

The basic component of this policy is the requirement that 10% of the gross subdivisible area of a conditional subdivision shall be given up free of cost by the subdivider for public open space. This has been the basis of public open space policy in the State for many years and emanates from the recommendations of the Plan for the Metropolitan Region Perth and Fremantle, 1955 Report (the Stephenson - Hepburn Plan).

The general requirements of the policy states:

"The Commission's normal requirement in residential areas is that, where practicable, 10 percent of the gross subdivisible area be given up free of cost by the subdivider and vested in the Crown under the provisions of Section 20A of the Town Planning and Development Act, 1928 (as amended) as a Reserve for Recreation. In determining the gross subdivisible area the Commission deducts any land which is surveyed for schools, major regional roads, public utility sites, municipal use sites, or, at its discretion, any other nonresidential use site."

The determination of POS requirement for Parkridge has been calculated by various audits and calculations over several years. It has previously been accepted by the DPLH and the WAPC that the State Administrative Tribunal (SAT) resolution WASAT 113 (DR231 of 2010) that the total POS to be provided for Location 19 was 13.2513 hectares.

It must be noted that the POS Audit (**Appendix B**) details the POS ceded to the Crown in accordance with the relevant WAPC condition of subdivision and in accordance Section 152 of the *Planning and Development Act* 2005, and in accordance with Section 41 of the *Land Administration Act* 1997. This POS is subject to the Minister's Management Order given to the Local Authority.

Development Control Policy 5.3 - Use of Land Reserved for Parks and Recreation and Regional Open Space

This policy establishes the Western Australian Planning Commission's (WAPC) position regarding the use and development of land reserved for Parks and Recreation in the Metropolitan Region Scheme (MRS) and Regional Open Space in the Greater Bunbury and Peel Region Schemes (GBRS and PRS).

The policy outlines the circumstances that may be appropriate to permit incorporated clubs, community groups and in some circumstances private business to locate on land reserved for Parks and Recreation or Regional Open Space (ROS). Further the policy states that land reserved for Parks and Recreation or Regional Open Space may be used for:

- passive recreation.
- · active sporting pursuits.
- · cultural and or community activities.
- activities promoting community education of the environment; and/or
- uses that are compatible with and or support the amenity of the reservation (i.e. cafe, restaurant) where specific facilities for such purposes have been approved by the WAPC.

The use of ROS for community recreation has been investigated by the Shire of Dardanup for purposes such as the off-lead dog exercise area, proposed to the west of Parkridge Estate. Council resolved at its Ordinary Council meeting of 28th April 2021, it develop detailed designs and costings for the location.

Formal dual use paths and nature walkways currently are located in the ROS along the Collie River Foreshore. These will be developed further as Parkridge continues the release of staged development in a northerly direction.



The use of the ROS for such purposes is a desirable outcome for the benefit of both Parkridge residents and the general community. The design of the LSP road network allows easy access to the ROS by being orientated in such a way that most streets lead directly to the ROS.

State Planning Policy 3.7 – Planning in Bushfire Prone Areas

State Planning Policy 3.7 (SPP 3.7) seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. SPP 3.7 applies to strategic planning proposals, including Structure Plans, over land designated as bushfire prone by the Department of Fire and Emergency Services. **Figure 3** (overleaf) is an excerpt of this map.

Given the Structure Plan area is partially designated as Bushfire Prone, SPP 3.7 is applicable to the LSP area. The requirements of SPP 3.7 are addressed by a Bushfire Management Plan prepared by Bushfire Works. Further details are provided in Section 6.1 of this report.

Shire of Dardanup Development Policy No.28 - Acid Sulphate Soils

The Shire of Dardanup recognises the Western Australian (WAPC) Planning Bulletin No. 64, which forms part of the Shire's Policy as the appropriate means of dealing with Acid Sulphate Soils.

The Policy indicates that any areas of high-risk Acid Sulphate Soils are to be identified on a Development Guide Plan or Subdivision Guide Plan, prior to the approval of the subdivision or rezoning of development. Any application on such land, should be accompanied by a Detailed Site Assessment and an Acid Sulphate Soil Management Plan that addresses the matter set out in the Western Australian (WAPC) Planning Bulletin No. 64 prior to the approval of the subdivision, rezoning or development.

The small pocket of urban development on the eastern edge of the subject is identified as High to Moderate risk according to Acid Sulphate Soil Risk Mapping from the Department of Environment Regulation.

A Detailed Site Assessment and Acid Sulphate Soil Management Plan will be undertaken as part of the subdivision stage of development.

Shire of Dardanup Development Policy No.20 – Local Biodiversity

The Shire of Dardanup Local Biodiversity Policy was endorsed in 2011. The Policy aims to preserve significant areas of remnant vegetation, significant wetlands, and waterways as well as key biodiversity corridors for future generations.

Lot 9503 and most the adjoining land to the west of the structure plan area is identified for Regional Open Space, consistent with Town Planning Scheme No.3. The Structure Plan design ensures there is a defined boundary between the Regional Open Space and the Urban development in the form of a road, which also acts as an additional fire buffer measure.

The structure plan design and designation of Regional Open Space allocations are consistent with the Shire's Local Biodiversity Policy.

Shire of Dardanup Development Policy No.18 – Sustainability

The objective of the Sustainability Policy is 'to enable the Environmental, Social and Economic objectives at all levels of development to be clarified and described how they can be implemented. As part of the Structure Planning and Subdivision stages of this project, consideration and implementation of suitable sustainability aspects will be undertaken. Preparation of the supporting Local Water Management Strategy will also incorporate suitable sustainability measures to improve the development.



2.3 PRE LODGEMENT CONSULTATION

This Structure Plan proposal has been prepared following consultation with the Shire of Dardanup and the Department of Planning, Lands and Heritage (DPLH).

Further, a POS Audit has been submitted to the DPLH for their review and comment, with a response provided on 19^{th} August 2022.



3 SITE CONDITIONS AND CONSTRAINTS

3.1 BIODIVERSITY AND NATURAL AREA ASSETS

The subject land is currently vacant. Historically the land was used for grazing and until recently cattle were on the undeveloped portion of the site. There is a pocket of vegetation located on the eastern edge and some well-established groupings of trees along the northern boundary. The northern and western boundaries adjoin the Collie River foreshore reserve, which contains remnant vegetation.

The area subject to the structure plan has previously been assessed by the EPA during the preparation of the Region Scheme, and subsequent amendments to the Local Planning Scheme. The site has also previously been subject to an approved subdivision design that proposed to clear the remnant vegetation.

Accendo environmental consultants were engaged by the proponent to prepare an environmental assessment to support the preparation of the approved Structure Plan in 2018. A review of the Environmental Assessment was conducted in December 2022, a copy of this assessment can be found at **Appendix C.**

A Black Cockatoo Habitat Tree Review was carried out by Greg Harwood, Zoologist, in November 2022 which concluded that no evidence of cockatoo was present and no evidence of suitable tree hollows were found. A copy of the assessment can be found at **Appendix C.**

The environmental assessment can be summarised by the following:

- As a result of historical and current anthropogenic disturbances, the vegetation within the subject site is in a 'Degraded' to 'Completely Degraded' condition. It is very unlikely to contain any flora or vegetation of conservation significance and it does not provide any ecological connectivity to surrounding environmental features (i.e. the Collie River).
- The fauna assessment determined that the fauna habitat values at the subject site have been severely compromised by the removal of most of the original native vegetation and the degradation of the main remnant patches.
- There is no evidence of WRPs utilising vegetation with the subject site as habitat and overall, habitat quality in areas to be developed are low/very low.
- Based on the results of the assessment and the scale of the proposed development, likely
 impacts on WRPs and black cockatoos and/or their preferred habitat are negligible
 (Harewood 2018). Accordingly, no further approval requirements are considered necessary
 in accordance with the EPBC Act or the EP Act.
- A portion of the subject site is mapped as containing a MU wetland. MU wetlands have few
 remaining functions, values and typically their attributes have been considerably degraded
 such that they provide limited ecological value. On this basis, MU wetlands do not usually
 preclude development. The impacts to the MU wetlands within the subject site are minimal
 as these wetlands are in a "Completely Degraded" condition and are considered suitable for
 development.

The reporting concludes there exist no major constraints relating to fauna, and in particular fauna of conservation significance with respect to the proposed development. Accendo considers that there are no fatal flaws or key environmental values that cannot be accommodated to enable development of the subject site for its intended purpose.



3.2 LANDFORM AND SOILS

The site sits at a reasonably flat contour of 5m AHD, before sloping down towards the Collie River.

The subject landforms part of the Pinjarra System and is made up of the following units.

P6a: Very undulating alluvial terraces and low rises contiguous with the plain, with deep moderately well to well drained soils associated with major current river systems and larger streams. Acidic red and yellow duplex soils, less common. Typically, loamy duplexes supergroups (40%).

P6b: Very undulating alluvial terraces and low rises contiguous with the plain, with deep moderately well to well drained soils associated with prior stream deposits. Soils are uniform brownish sands (40% brown deep sand, 30% yellow deep sand).

B6: Sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands. Pale deep sand (55%), poor sand effective duplex.

3.3 GROUNDWATER AND SURFACE WATER

A Local Water Management Strategy (LWMS) has been prepared for the subject land and is included as **Appendix D** to support the LSP amendment. It provides an update to the approved Lot 9004 Eaton Drive Local Water Management Strategy and highlights how water is to be managed in response to the revised layout.

This updated LWMS also considered the larger foreshore area that was analysed as part of the original structure planning and approved LWMS.

The majority of the undeveloped subject land is cleared and seeded with grass and pasture species with minimal to sparse tree and understorey species. The landform of the site consists of undulating sand dunes with a low lying swampy area in the centre of the site within the Collie River floodplain. A high point exists in the south western corner adjacent to the Collie River which will be developed at a later date.

Winter groundwater levels at the site are approximately 3 m from the surface at the eastern boundary sloping steeply towards the Collie River, in line with surface topography. The objective of this LWMS is to detail the updated best management practices approach to water management that will be undertaken for this development, in accordance with Better Urban Water Management (WAPC, 2008).

This will include managing, protecting and conserving the total water cycle of the local environment and the greater catchment. The practices will involve:

- Stormwater management that incorporates the latest's water sensitive urban design practices;
- Groundwater resource management;
- Protection and enhancement of ecosystems dependent on water resources from the subject land;
- Sustainable water servicing.

The effectiveness, efficiency and benefits provided by the best management practices require a collaborative effort between local governments, developers and relevant regulatory authorities. Further summary of the practices to be undertaken for the subject land can be found in the LWMS at **Appendix D.**

3.4 BUSHFIRE HAZARD

A Bushfire Management Plan (BMP) has been prepared for the approved Structure Plan for Parkridge Estate and can be found at **Appendix E**.



(Appendix ORD: 12.2.1C)

The aim of the report is to reduce the threat to the residents in the proposed subdivision in the event of a bushfire within or adjacent to the development. It demonstrates:

- How the hazard level will be reduced and maintained for the life of the development; and
- That compliance with the Bushfire Protection Criteria in the Guidelines can be achieved.

All of the proposed lots will have a Bushfire Attack Level of BAL-29 rating or less. The majority of the lots in the Estate will have a BAL-12.5 or BAL-Low rating.

Due to the expected lot yield, there are potentially a number of stages of residential development.

Until the adjoining Lot 3001 to east is developed, a temporary Emergency Access way will be created through Lot 3001 along the alignment of the proposed subdivision road giving secondary access to Eaton Drive. In principle agreement has been reached with the adjoining developer for reciprocal works required in relation to bushfire management and access.

The BMP illustrates the potential radiant heat impacts and associated BAL ratings of the proposed subdivision in reference to any classified vegetation remaining within 100 metres of the assessment area after the development is completed.

Figure 7 (of the BMP Report) and the BAL assessment confirms that all proposed lots have a BAL-29 or lower rating. The proposed subdivision complies with the objectives of the State Planning Policy 3.7 as:

- 1. It avoids any increase in the threat of bushfire to people, property and infrastructure
- 2. It reduces vulnerability to bushfire through the identification and consideration of bushfire risks in the design of the development and the decision-making process.
- 3. The design of the subdivision and the development takes into account bushfire protection requirements and includes specific bushfire protection measures
- 4. Achieves an appropriate balance between bushfire risk management measures and biodiversity, conservation values and environmental protection.

3.5 HERITAGE

Hough Homestead is located on Lot 9504 adjoining the site and although not included in this LSP, may be subject to further planning and investigation in the future. The homestead is listed in the Shire of Dardanup Local Heritage Survey (Place No,44, 2016) and is detailed as having 'some/moderate significance' within the Heritage Survey.

3.6 TRANSPORT IMPACT ASSESSMENT

A Transport Impact Assessment (TIA) was prepared in support of the LSP amendment by Stantec Consulting Engineers. The report determined the proposed road network would adequately cater for the needs of the expected population. A complete copy of this report is in **Appendix F**.

The TIA considered the internal traffic movements as well as external to the site. This included road links to the Millbridge Estate which is proposed to connect to the site in three locations.

The performance of two intersections were assessed in detail being:

- Eaton Drive/Peninsula Lakes Drive intersection, and
- Eaton Drive/Millbridge Estate Access intersection.

The intersections of Eaton Drive/Peninsula Lakes Drive and Eaton Drive/ Millbridge Estate Access are anticipated to operate at satisfactory levels of service, with minimal queues and delays in the 2040 ultimate design year.



The TIA has determined that the LSP area is adequately connected to the surrounding road network and overall the estimated trips to be generated by the Parkridge Structure Plan area will not significantly affect the surrounding road network.

3.7 CONTEXT AND OTHER LAND USE CONSTRAINTS AND OPPORTUNITIES

Land to the immediate south and east of Parkridge is all zoned for residential development and forms part of the Eaton and Millbridge Estates. Further to the north, within the Shire of Harvey is Treendale Estate and Clifton Park is located on the western side of the Collie River. The location of subject land in conjunction with these residential estates is consistent with the development proposed for the site.



4 LAND USE AND SUBDIVISION REQUIREMENTS

The landowner is looking to pursue development within the area subject to modification proposed by this LSP amendment. Residential development is proposed for the area consistent with the zoning in the Local Planning Scheme and surrounding developments.

The breakdown of land use areas is detailed in the Structure Plan Table (**Table 1**) and identified on the Structure Plan Map (**Figure 1: Local Structure Plan**).

The structure plan report is supported by a Local Water Management Strategy, Bushfire Management Plan, Transport Impact Assessment, Environmental Assessment, and the Structure Plan Map which has been prepared in accordance with the requirements of Clause 3.16 of TPS 3 and Schedule 2, Part 4, clause 16 of the deemed provisions of the Regulations.

4.1 DESIGN PRINCIPLES

The amended Local Structure Plan layout seeks to maximise the outlook opportunities for residential development taking advantage of the significant areas of local and regional open space. The grid road pattern seeks to maximise opportunities for solar orientation of housing and provide for high levels of permeability, equity, and accessibility. The road layout provides for diversity and interest in the local street environments to assist in the development of local character and a sense of place consistent with Liveable Neighbourhood objectives.

The main road connections into the development will be the extension of Peninsula Lakes Drive and Robusta Road. Other than the existing intersection of Peninsula Lakes Drive/ Eaton Drive and the proposed northern intersection (on land to be developed by Millbridge) no roads are proposed to connect directly with Eaton Drive.

The adjoining regional open space to the Collie River is located to serve the community needs, provide a buffer to adjoining and surrounding land uses, integration and protection to existing vegetated areas and enhance sensitive water cycle management.

4.2 PUBLIC OPEN SPACE

Public Open Space has been provided throughout the original landholding and is proposed within the LSP amendment area as shown on the LSP Map.

Regional Open Space (ROS) frames the development on the western and northern boundaries, providing foreshore to the Collie River, wetlands and cleared pasture. The majority of the ROS is within an area designated as floodway. The land is currently utilised by the public for passive and active recreation purposes.

The POS proposed by the LSP amendment area will provide for a variety of active recreation pursuits. The largest parcel proposed is located on the eastern boundary of the site and is to contain an area of native vegetation. The vegetation is mainly parkland cleared due to historic grazing of the property. It is proposed that this parcel of POS become a nature based play area.

A linear parcel of POS is proposed along the north western part of the site to allow a walk trail adjoining the ROS with views over the foreshore area. This will link to a parcel in the north eastern most part of the site that is zoned POS in the Local Planning Scheme. It will also connect to POS within Millbridge Estate to the east.

Other smaller pocket parks are proposed throughout the LSP area. These will provide green space and pedestrian linkages within the LSP area.

Several audits and calculations of the POS requirement for Parkridge have been undertaken by private consultants, the Shire of Dardanup and the DPLH over a number of years. While previously, is has generally been accepted that the SAT resolution - WASAT 113 (DR231 of 2010), that the total



(Appendix ORD: 12.2.1C)

POS to be provided for Location 19 was **13.2513ha.** However, the POS Audit provided in **Appendix B** addresses current policy and planning legislation. The audit concludes that sufficient POS has been provided through the staged development of Parkridge Land.

The following Public Open Space Schedule is a calculation of POS provided through the staged subdivision of the original landholding, being Location 19, includes equivalent areas from cash-in-lieu payments and the POS proposed by this LSP amendment.

Table 3 below shows the existing and proposed POS parcels. Reference numbers shown on the table can be cross-referenced and visually represented on the POS Plan in **Figure 4**. Further detail of each of the existing POS provided to date is provided the POS Audit in **Appendix B**.

Table 4, Public Open Space Schedule, demonstrates the calculation of POS in relation to the development of Locations 19. This should be viewed in conjunction with Figure 4 which shows the boundary of the original Location 19, the amendment area and deductions from the POS calculation.



Plan Ref	Reserve No.	Lot Details	WAPC ref	Date Ceded	Common Name	Area (ha) unrestricted	Area (ha) restricted	Purpose	Comments
Α	45333	5820 on P22133	89548	1998	Lusitano Park	0.4169		Public Recreation	
В	44580	5767 on P21400	48548	1997	Sindhi Park	1.6977		Public Recreation	
С	45531	4 on D91019	97513	1999	Bethanie Park	0.9732		Public Recreation	
D	45358	19 on DP41075	97513	1998	Eaton Recreation Centre site	2.9057		Public Recreation	
Е	46255	6060 on P23654	108130	2001	Eaton Drive linear strip	0.1664		Public Recreation	
F	48392	1028 on DP1028	118210	2005	Cleveland Bay Park		2.7625	Public Recreation	Resource Enhancement Wetland
G	50572	437 on DP42392	118006	2010	Gromark Park	0.2025		Public Recreation	
U U	30372	438 on DP42392	118000	2010	GIOIIIdIK Faik	0.1481		rubiic Necreation	
Н	48364	890 on P42393	125521	2005	Cleveland Bay Park	0.0739		Public Recreation	
I	48392	300 on DP47211	126335	2008	Cleveland Bay Park		0.331	Public Recreation	Resource Enhancement Wetland
J	48933	874 on DP48838	127566	2006	Peninsula Lakes Park	2.3695		Public Recreation	
K	48870	875 on DP50198	127566	2006	Peninsula Lakes Drive Entry	0.1451		Public Recreation	
М	43641	5679 on P19531	91326	1995	Strip near Scout Hall	0.383		Public Rec, Foreshore Manage & Drainage	42.37ha ROS required as condition of subdivision. Balance as POS.
N	53879	8001 on P420816	159295	2021	Peninsula near Homestead lot	0.1411		Public Recreation	
0			141716			0.4704		Cash-in-lieu payment	Cash-in-lieu payment area equivalent
			TOTAL POS	AREA CE	DED & CASH IN LIEU TO DATE	10.0935	3.0935		
Р						0.4258		Zoned Recreation - LPS 3	Area zoned Recreation in LPS 3
Q						1.096		Recreation	Nature park
R						1.005		Recreation	Rear of R20 lots
S						0.2741		Recreation	Combined Pocket Parks
Т							0.2549	Drainage	Swale along Peninsula Lakes Drive
			TOTAL PO	S AREA V	VITH CASH-IN-LIEU PAYMENT	12.8944	3.3484		

TABLE 3 – POS Table





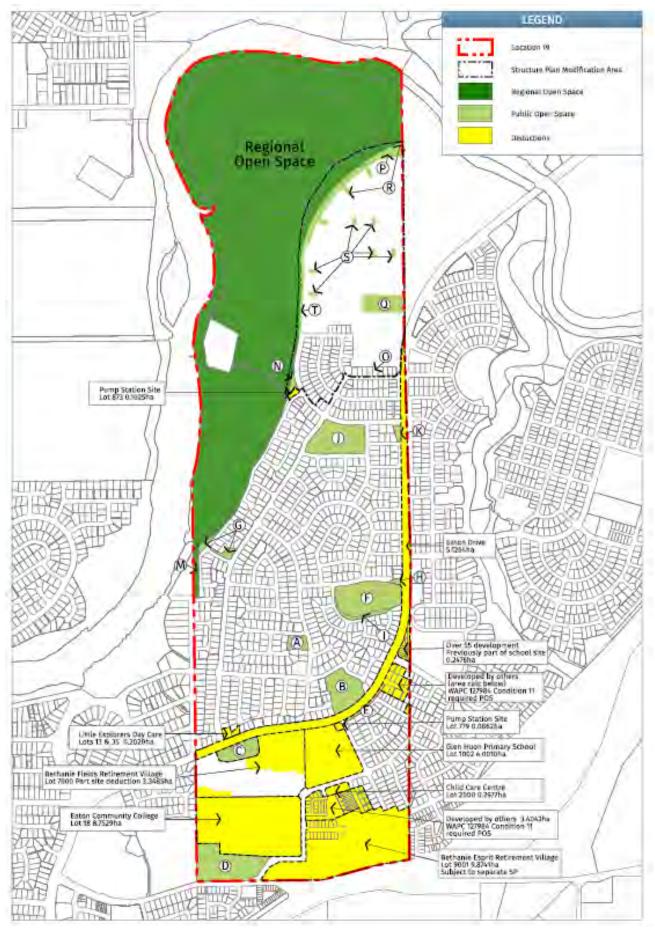


Figure 4 - POS and Deductions Plan



Table 4 - Public open space schedule			Note
Calculation of Required POS Provision Total site area (ha) - Original Location 19		257.7700	1
Deductions			
Environmental	0.0000		
Conservation Category Wetland	0.0000		
Bush Forever	0.0000		
Regional Open Space Reserves	83.4378		2
Restricted Access Conservation Areas	0.0000		
Surface area of natural water bodies	0.0000		
Infrastructure			
Regional Road Reservations, widenings - Primary/Other	5.1264		3
Public utilities (include pump station sites, transmission corridors)	0.1887		4
Drainage (steep sided drains and basins)	0.0000		
Non Residential Land Uses			
Primary School	4.0010		5
High School	8.7529		6
Activity centres, commercial, retail (excluding residential component)	0.0000		
Community Purposes Sites	13.7223		7
Public Purpose Reserves	0.0000		,
Other	0.0000		
Developed by others (WAPC 127984)	3.4043		8
Over 55s site (formally school site)	0.2476		9
Surplus Restricted Public Open Space Not Credited	0.5823		
Total Deductions	0.3823		
Total Deductions		119.4633	
Gross Subdivisible Area (total site area minus deductions)		138.3067	
Required Public Open Space (10%)		13.8307	
Breakdown of POS Provided		13.8307	
Restricted Public Open Space			
Conservation Category Wetland Buffer (up to 50m)	0.0000		
Resource Enhancement, multiple use wetland or similar and associated buffers (up to 30m)	3.3484		10
Reserved land encumbered by easements ie powerlines, sewer gas - deemed suitable for POS	0.0000		
Total Restricted POS	3.3484		
Maximum 20% credit	2.7661		
Total Restricted POS Credited to a maximum of 20%		2.7661	
Surplus Restricted POS Not Credited i.e. over the maximum 20%	0.5823		
Unrestricted Public Open Space: by function (refer Note 4)			
Sport	0.0000		
Recreation	12.8944		11
Nature	0.0000		
Total Unrestricted POS	12.8944		
Total Unrestricted POS		12.8944	
TOTAL		15.66605	
POS Provision as Percentage of Gross Subdivisible Area		11.32%	



The notes below relate to the reference numbers in Table 4, Public Open Space Schedule.

- 1. The area of Location 19 has been adjusted to that shown on Landgate. The alteration from the original area is due to the high water mark survey of the Collie River.
- 2. 83.8345ha ROS minus POS ref M 0.383ha ceded as POS through the subdivision process.
- 3. Portion of Eaton Drive within Location 19.
- 4. Lot 779 on P21399 (0.0862ha), Lot 873 on P50198 (0.1025ha)
- 5. Lot 1002 on DP 21399 Glen Huon Primary School
- 6. Lot 18 on P 41075 Eaton Community College
- 7. 7000 on P35107 (3.3485ha) Private Recreation at Bethanie Fields site, Lot 9001 on P426046 (9.8741ha) – Bethanie Esprit Site-subject to a separate LSP,
 - Lot 200 on P428688 (0.202ha) Child Care Centre, Glen Huon Boulevard, Lot 2000 on P39882 (0.2977ha) Child Care Centre, Murdoch Drive.
- 8. Developed by others through Subdivision Approval 127984, Condition 11 of approval requiring the ceding of POS.
- 9. Over 55's development by others. Was formally part of the private school site.
- 10. Plan ref I & F Resource Enhancement Wetland, Plan Ref T drainage.
- 11. Plan ref A B C D G H J K L M N (ceded to date) O (cash in lieu equivalent), P, Q, R, S (Proposed)

Further information regarding the calculation of POS and deductions are available in the POS Audit in **Appendix B**.

4.3 RESIDENTIAL

Consistent with current WAPC policy (including the Residential Design Codes and Liveable Neighbourhoods), the amended Local Structure Plan provides for a range of residential densities and therefore housing choice and lifestyle opportunities.

The amended Local Structure Plan has been formulated to meet the requirements of Liveable Neighbourhoods. The Residential Design Codes (R-Codes), administered by the City, will provide a comprehensive basis for the control of residential development within the structure plan area. The R-Codes will "outline the 'rules' which apply to residential development".

The portion of Parkridge Estate, being subject to this Structure Plan modification is proposed to yield in order of 647 lots. The expected lot yield and sizes are based on the density identified on the Structure Plan (refer *Figure 1*).

The lots within the LSP modification area, developed to date and those currently under development, yield 129 freehold lots. Some further subdivision of lots identified as R40 are expected to developed further into group housing sites.

A density range of between R30 and R40 is shown on the undeveloped portion of the site. This is in-line with current planning policy and practices. The coding of R30 will prevail unless indicated as R40 on the density plan submitted with a subdivision application. This will enable a range of lots sizes to be created at subdivision stage in accordance with the criteria set out in Part 1 of this Structure Plan.

The estimated population based on the lot yield is 1,617 persons. This calculation is based on the Australian Bureau of Statistics 2021 Census for Eaton, Millbridge and Pelican Point average number of people per household of 2.5.

As per the requirements of the Structure Plan Framework, a Density Plan will be lodged in conjunction with the subdivision application to allocate the final density for each stage.



The design of the residential cells is based predominantly on a grid system to allow the effective use of solar orientation of future dwellings and to allow lots to be developed of a regular shape.

Higher density is proposed overlooking the ROS and in proximity to the proposed pocket parks.

The proposed largest POS to contain the most of the existing vegetation on the site is surrounded by local roads to allow access to this park and provide separation for bushfire management.

The very eastern portion of urban development (as identified on the Structure Plan) will be developed in conjunction with Millbridge Estate to ensure residential lots and road alignments are congruent. Liaison with the developer of Millbridge is on-going to allow the seamless development of each site. While each of the two sites will develop independently, an agreement will be put in place between the developers of each site to allow the temporary use for such matters as low-fuel zones, emergency access ways, temporary turning circles and temporary drainage basins.

4.4 MOVEMENT NETWORKS

Road reserves are to be designed generally in accordance with the Structure Plan Map included as **Figure 1**. The road reserve widths of the proposed internal road network are between 21m for Peninsula Lakes Drive, 18m for the east west link through to the Millbridge Estate, 15. For local access streets and 9m laneways, which are generally consistent with the Liveable Neighbourhoods (WAPC 2009) requirements.

The Transport Impact Assessment demonstrates that the proposed road widths are appropriate for the expected traffic numbers and flow.

As part of the Local Structure Plan, it is proposed that Peninsula Lakes Drive continue northward into the development to meet with the east-west link through Millbridge Estate and onto Eaton Drive, utilising the planned intersection location.

Peninsula Lakes Drive will form the western development boundary between the residential estate and the Regional Open Space.

No additional connection points directly onto Eaton Drive are proposed as part of the Structure Plan. Connection onto Eaton Drive will occur through the existing Peninsula Lakes Drive and the future connection further north through Millbridge Estate.

The proposed local road network is predominantly a grid layout utilising T intersections. No crossroads are proposed.

Provision is to be made for on-street parking within road reserves at regular intervals along the length of Peninsula Lakes Drive adjoining the Regional Open Space to allow public access.

A dual-use path networks is proposed to provide pedestrian and cycle access throughout the estate. The location of which is shown on the Structure Plan Map (**Figure 1**).

4.5 WATER MANAGEMENT

A Local Water Management Strategy (LWMS) was undertaken as part of the approved Structure Plan and updated to address the modification proposed. A copy of the updated LWMS is attached at **Appendix D.**

Figure 2 of the LWMS identifies the key elements for the Local Water Management Strategy, including the direction of flows and location of bioretention basins.

The bioretention basins will be designed to create new wetlands habitats by the use of locally native plant species and by maintaining pre-development surface and groundwater flows to the buffer area, the vegetation will be provided with similar water needs after development, whilst



experiencing improved water quality through the use of constructed vegetated bioretention areas (swales) and other suitably designed and best practice water sensitive urban design techniques.

4.6 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

The proposed development of Parkridge Estate, Eaton will require connection to reticulated water and sewer, both of which are in the adjoining residential developments and readily available for connection.

Power, gas and telecommunications will be connected as part of the subdivisional works.

A Servicing Report has been prepared which demonstrates the land is capable of being supplied with the necessary infrastructure to proceed with development. This Assessment is included as **Appendix G.**



5 CONCLUSION

The proposed modification to the Parkridge Local Structure Plan has been prepared in accordance with the requirements of the *Planning and Development* (Local Planning Schemes) Regulations 2015. Further, the Structure Plan complies with the applicable State and Local Planning Policy Framework as set out in section 2.2 of this Report.

This LSP has been prepared to outline a land use and movement network framework for the development of Parkridge Estate, to accommodate low and medium residential housing. The LSP demonstrates that sufficient POS has been provided within Location 19 through the previous development of the land parcel and the POS to be provided within the land parcel yet to be developed.

The LSP seeks to stipulate the key boundaries between land uses, address the key interface considerations and identify the key matters that need to be addressed at the detailed subdivision and development stages. This LSP therefore affords a certain degree of flexibility for innovative and creative detailed design responses, if there is compliance with the key elements and principles of the LSP and that the key objectives are realised.

The LSP seeks to extend the life of the Structure Plan for a further 10 years or longer as determined by the Western Australian Planning Commission (WAPC) in accordance with Schedule 2, cl.28(2) of the Planning and Development (Local Planning Schemes) Regulations 2015.

Following adoption of the Structure Plan, development and subdivision applications can be considered and approved where they comply with the Structure Plan.



APPENDICES INDEX

APPENDIX NO.	NATURE OF DOCUMENT
Α	Certificates of Title
В	POS Audit
С	Environmental Assessment
D	Local Water Management Strategy
E	Bushfire Management Plan
F	Transport Impact Assessment
G	Servicing and Infrastructure



APPENDIX A | CERTIFICATES OF TITLE

TITLE NUMBER

Volume

Folio

4067

529

WESTERN



RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

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.



LAND DESCRIPTION:

LOT 9010 ON DEPOSITED PLAN 428930

REGISTERED PROPRIETOR:

(FIRST SCHEDULE)

PARKRIDGE GROUP PTY LTD OF 29 STROME ROAD APPLECROSS WA 6153

(AF Q301636) REGISTERED 5/2/2025

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:

(SECOND SCHEDULE)

- 1. EASEMENT BURDEN CREATED UNDER SECTION 167 P. & D. ACT FOR DRAINAGE/SEWERAGE PURPOSES TO LOCAL AUTHORITY SEE DEPOSITED PLAN 428930 AS CREATED ON DEPOSITED PLAN 423332
- 2. P791756 MORTGAGE TO AUSTRALIAN SECURE CAPITAL FUND LTD OF SUITE 6C 33 PARK ROAD MILTON QLD 4064 REGISTERED 20/11/2023.

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.

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: DP428930 PREVIOUS TITLE: 4058-833

PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.

LOCAL GOVERNMENT AUTHORITY: SHIRE OF DARDANUP

NOTE 1: P534088 SECTION 138D TLA APPLIES TO CAVEAT P478068



APPENDIX B | POS Audit

POS AUDIT

Parkridge Estate, Eaton







DOCUMENT CONTROL

Control Version	Date	Status	Distribution	Comment
A	31/05/2022	Draft	HD	For QA
В	16/06/2022	Draft	Client	For Review
С	21/06/2022	Final	WAPC	For Lodgement
D	21/10/2022	Final	Local Government	Supporting document - LSP
E	26/02/2025	Final	SSO	Supporting document - LSP

Prepared for: Parkridge Group Pty Ltd Date: 27 February 2025

Prepared by: KS Job No: 22294
Reviewed by: AR Ref: E

DISCLAIMER

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1. INTRODUCTION

Parkridge Estate located in Eaton, within the Shire of Dardanup is a residential estate which commenced planning in 1993.

The original Lot 1 of Wellington Location 19 purchased by Parkridge Group in 1993, has subsequently been developed and now includes:

- Approximately 1500 residential lots;
- A high school;
- A primary school;
- A Child Care Centre;
- Two aged care/retirement villages;
- Public Open Space (POS); and
- Regional Open Space (ROS).

The northern portion of the estate currently being developed is subject to an approved Structure Plan.

In March 2022, correspondence between Mr Saulsman of Parkridge Group and the West Australian Planning Commission (WAPC) resulted in the WAPC recommending an audit be undertaken to determine the POS already ceded and the balance of POS to be provided on the remaining land to be developed.

This POS Audit seeks to clarify the amount of POS provided to date, to guide and justify an amendment to the approved Local Structure Plan.



2. SUBDIVISION/ SUBJECT LAND HISTORY

The original Lot 1 of Location 19 (Location 19), compromised an area of 254.2595 hectares and was bounded by the Collie River to the north and north-eastern boundaries. Forrest Highway now adjoins the original southern boundary.

The area of Location 19 has been revised on Landgate, primarily due to the survey of the high water mark and is now calculated to be 257.7700ha. Calculations within this audit and the Local Structure Plan Amendment have been based on this revised area.

Numerous subdivision approvals have been issued by the WAPC allowing lots to be developed together with the provision of POS.

2.1 Previous POS Calculations and Planning Applications

The POS provided on the development of Location 19 has been subject to various planning approvals, State Administration Tribunal determinations and Audits. These methods are described below.

Structure Plan and Rezoning of Location 19

A Structure Plan for Location 19 was adopted by the Shire of Dardanup in December 1991 and endorsed by the WAPC. The Structure Plan designated the land as Residential R15 and determined the total POS to be ceded, subject to detailed design was to be **12.98 hectares**.

The Shire also initiated Amendment 47 to TPS 3 to zone location 19 to Residential Area and Recreation. Amendment 47 was finally approval was in July 1993.

A subsequent appeal to the State Administrative Tribunal determined the following:

- i. In 2010, The Parkridge Group appealed against a decision of the WAPC to impose conditions relating to POS provision. WASAT 113 (DR231 of 2010) (WAPC ref:1417160).
- ii. The SAT dismissed the POS. It did not resolve the POS for the balance of the land but confirmed (para 34) that Parkridge and the WAPC had agreed that the total POS for Location 19 was **13.2513 hectares**.
- iii. At (para 35), The SAT recommended that to determine the balance of POS, a POS Audit be carried out.

Shire of Dardanup POS Audit

In May 2002, the WAPC issued an approval for subdivision (ref 118210) for a large portion of the Parkridge development, being the land east of Lusitano Avenue and west of Eaton Drive.

Condition 12 of the approval required 10% of the of the subdivisible land be provided as 'Reserve for Recreation'. Further, advice Note (v) recommended that a public open audit be undertaken to ascertain the amount of POS provided by the subdivider for the estate.

Subsequently, the Shire of Dardanup undertook a POS Audit in May 2002. The Shire confirmed that the POS ceded by Parkridge was **8.4239 hectares** being 9.146% of the land.



This figure was disputed by the DPLH following a subsequent audit undertaken by planning officers of DPLH.

Structure Plan Review

In January 2007, Parkridge appointed Koltasz Smith Town Planners to prepare a Structure Plan for Locations 9501, 9502, and 9504 Robusta Road, Eaton.

In February 2007, Kris Kennedy of Koltasz Smith met with the Shire of Dardanup's Planning Officers to discuss the proposed Structure Plan. The Officers advised that 10% of the land, some 4ha had to be provided as POS and the Shire would not entertain the Structure Plan unless this was agreed to and resolved "upfront".

In March 2007, Parkridge sought clarity from the DPLH regarding the total provision of POS, which DPLH responded to in June 2007 with an audit of the POS ceded to date. The audit was of the view:

- An area of 0.3904 hectares of Reserve 45531 (Ref C on Audit Plan) was a drainage basin, and this area was deemed not to be POS for the purpose of the calculations.
- Part of Reserve 48933, (Ref J on Audit Plan), calculates that 0.7500 hectares is a drainage basin, and this area was deemed not to be POS for the purpose of the calculations.
- Part of Reserve 48392 (Ref F on Audit Plan), calculates that 2.5996 hectares being EPP wetland was deemed not to be POS for the purpose of the calculations.

In November 2007, the Shire of Dardanup advised Parkridge that for the Shire to consider any proposed Structure Plan, the requirements of the POS audit as determined by the DPLH in June 2007 was to be met.

In 2010, The Parkridge Group appealed against a decision of the WAPC to impose conditions relating to POS provision. WASAT 113 (DR231 of 2010) (WAPC ref:1417160).

Although SAT dismissed the appeal, it did resolve that (para 34) Parkridge and the WAPC had agreed that the total POS to be provided for Location 19 was **13.2513 hectares**.

At (para 35), the SAT recommended that to determine the balance of POS, a POS Audit be carried out.

Parkridge - POS Audit

In 2013, Planning Consultancy firm Gray Lewis were engaged by Parkridge Group to undertake a report to examine the history of subdivision approvals and specifically the POS provided to date. The report included an overall POS audit and examined in detail each parcel of POS ceded as a reserve.

The Audit established that Parkridge had provided <u>14.5 hectares</u> (in 2014). The Grey Lewis audit is available at **Appendix E.**

DPLH Calculation of POS

In email correspondence (Sept 12, 2014) between DPLH Planning Officer, Mr David Brash and Parkridge Group Director, Mr Thurston Saulsman, Mr Brash confirmed that the total POS obligation for the Gross subdivisible Area of the original land parcel, Location 19 is **13.2513 hectares**.

Mr Brash advises (Sept 12, 2014) that 11.8879 hectares is the total area of POS ceded to date, not including WAPC 141716 and agreement was to be sought with Mr Saulsman.

However, the correspondence also states that the Department does not agree with the subdivider in terms of the 10% POS credit, specifically some of the parcels ceded to date would not meet the requirements of POS and should not be included in calculations.



The calculations provided with the correspondence state the following:

- An area of 0.3904 hectares of Reserve 45531 (Ref C on Audit Plan) is a drainage basin, and this area is excluded as POS.
- Part of Reserve 48933, (Ref J on Audit Plan), calculates that 0.7500 hectares is a drainage basin, and this area is excluded as POS.
- Part of Reserve 48392 (Ref F on Audit Plan), calculates that 2.5996 hectares being EPP wetland is excluded as POS.

A copy of the above mentioned correspondence can be found in **Appendix G.**

2.2 Subdivision Applications

Since 1993, various subdivision applications have been submitted to facilitate the staged development of Parkridge.

As per the conditions of the various WAPC approvals, Reserves 45531, 48933, and 48392 were ceded as Public Open Space reserves in accordance with the relevant WAPC Conditions and accepted at the time as part of the 10% POS Contribution.

Several parcels of land have been sold to other developers over the course of the development of Location 19 with POS ceded as development has progressed as well as cash-in-lieu payments made.

3. EXISTING POS

An audit plan has been prepared to visually assist in the calculation and position of the POS already provided as part of the development of the original Location 19.

Reference letters have been allocated to each parcel of POS. For ease of review, the letters are consistent to those on the audit undertaken by Gray Lewis in 2013.

The parcels of POS and their function are described below. These and other POS provided as part of the original Location 19 are shown on the plan and tables in **Appendices B and C.**

Further details on the drainage function of these parcels are outlined in the Technical Note by Edgeloe Engineering, which can be found at **Appendix A**.

3.1 Reserve 45333 (Ref A on Audit Plan)

Reserve 45333, being lot 5820 on Plan 22133, known as Lusitano Park was ceded in 1998 and provides for a local park and playground.

The site was ceded as part of WAPC approval 89548 and has an area of 0.1469ha.





3.2 Reserve 44580 (Ref B on Audit Plan)

Reserve 44580 on P 21400, being lot 5820 was ceded also as part of WAPC approval 89548. It provides for a neighbourhood park with landscaped and grassed areas with a gazebo.

The parcel is known as Sindhi Park and has an area of 1.6977ha as shown on the Landgate extract below.



3.3 Reserve 45531 (Ref C on Audit Plan)

Reserve 45531, being lot 4 on Diagram 91019, on Eaton Drive was created in 1999 as part of WAPC approval 97513 issued in August of 1995. The approval included residential lots, a high school, primary school and 3 reserves for recreation.

At the time the reserve of 0.9732ha was ceded for the purpose of Public Recreation, no drainage function was in place. A Landgate enquiry report showing details of the reserve can be seen in **Appendix D**.

Details of the later drainage function of the reserve and evident in historical aerial photography is detailed in the Engineering Technical Note at **Appendix A**.

Although a portion of the reserve is currently used as a drainage basin for the Bethanie retirement village, in 1999 at the time of ceding this was not the case. Reserve 45521 was not required for drainage function as part of the development of lots subject to WAPC approval 97513 and can be assumed that at the time of ceding was accepted as unrestricted POS for the purpose of Public Recreation.

The drainage function within the reserve was required by the local government some years later and now also functions as an ornamental lake adjacent to the Bethanie Fields retirement village. The site also contains landscaped gardens and walkways providing at passive recreation function.



The aerial image below is an extract of Landgate's Bunbury (2031), Collie (2131) photography captured between 29/11/2000 and 26/01/2001 after the ceding of the reserve in 1999.



3.4 Reserve 45358 (Ref D on Audit Plan)

Reserve 45358, is the land parcel now containing the Eaton Recreation Centre, sports facilities and associated parking. The reserve, being lot 19 on DP 41075, was created in 1998 as part of WAPC approval 97513 and has an area of 2.9057ha.

The land was ceded as Public Recreation by Parkridge with a management order to the Shire of Dardanup. The Eaton Recreation Centre was developed some years following the ceding of the land, with the opening the centre in 2003.

While the recreation centre may be considered a Community Purpose, the ceding of the land as required by the subdivision approval was for the purpose of Public Recreation. If the Shire of Dardanup choose to develop the site in this manner following ceding, it does not detract from the purpose of the original ceding of land, and is included in the unrestricted POS calculation.

The aerial photography below shows the site between 29/11/2000 and 26/01/2001 following ceding and then in January 2024.







3.5 Reserve 46255 (Ref E on Audit Plan)

Reserve 46255, being lot 6060 on P23654, is a linear parcel of POS of $1664m^2$, approved as part of WAPC 108130.

The parcel was ceded for the purpose of Public Recreation in 2001, runs parallel to Eaton Drive, is landscaped and provides some separation from Eaton Drive to dwellings to the south.





3.6 Reserve 48392 (Ref F on Audit Plan)

Reserve 48392, being lots 1028 and 300, Cleveland Bay Avenue, was ceded in 2005 for the purpose of Public Recreation. A Landgate enquiry report confirming these details can be seen in **Appendix D**.

The reserve was created through the WAPC subdivision approval 118210, issued in May 2002. Condition 12 of the approval, was a requirement that '10% of the subdivisible land, in a position to be agreed between the subdivider and the local government, being shown on the Diagram or Plan of Survey as a reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the crown'. A further footnote advised this could be arranged by payment cash-in-lieu of the provision of open space.

Further, relating to WAPC approval 118210, no condition was imposed requiring the ceding of additional land specifically for the purposes of wetland.

As Condition 12 was cleared by the Shire of Dardanup, and no cash-in-lieu payment made, this would conclude Reserve 48392 was deemed as part of the 10% POS requirement.

The DPLH has considered the matter of the ceding of Reserve 48392 on numerous occasions. Although current policy may not support the ceding of this site as POS, it is evident through the clearance of the condition requiring a 10% Pos contribution that this was deemed accepted at the time.

The ceding of Reserve 48392 was specifically addressed on the following applications:

a) WAPC 101406 November 1996,

The Planning Officer noted in his report, WAPC 101406 November 1996, that the applicant requested the wetland area be excised from the application and they would liaise with the DEP regarding the wetland area.

b) WAPC 108764 October 1998,

In the Planning officer report, October 1998 WAPC 108764, the Planning officer, confirms that it was agreed that the wetland be given up as Public Open Space. The report notes there is no objection from the Water Commission. The report was authorized by Mr Mike Schramm and subdivision was recommended for approval on 10 March 1999.

c) WAPC 125521 June 2004

In June 2004 in WAPC 125521, the reporting officer states, in the report the POS requirement has been met via the ceding of wetlands under an earlier subdivision approval.

Further, relating to this parcel of land, the Shire of Dardanup's 2002 POS Audit deemed Reserve 48392 to be POS. However, to comply with the current Liveable Neighbourhoods Policy and for the purposes of this audit this parcel is to be considered as restricted POS.

The following aerial photographs show the land in 2003 following the ceding of the reserve and more recently in 2022 showing an expansion of the wetland vegetation.





Aerial Photography 14/01/2003 (Landgate)



Aerial Photography 12/02/21 (Landgate)

3.7 Reserve 50572 (Ref G on Audit Plan)

Reserve 50572, known as Gromark Park was ceded in 2010 in association with WAPC approval 118006.

It consists of 2 lots being 437 and 438 on DP 42392 with a combined area of 3506m².

The park is landscaped with a path and sitting area.





3.8 Reserve 48364 (Ref H on Audit Plan)

Reserve 48364 is a small parcel of 739m² that provides for a pocket park and path link from the cul-de-sac end of Cleveland Bay Avenue to the path network on Eaton Drive.

The land was ceded as part of WAPC approval 125521 and is described as lot 890 on Plan 42392. This parcel is considered to be unrestricted POS.



3.9 Reserve 48392 (Ref I on Audit Plan)

Reserve 48392 was ceded as part of the subdivision approval 126335 and was provided as a buffer to reserve 48392 categorised as a resource enhancement wetland.

Reserve 48392 with an area of 0.331ha is a linear parcel of land on the western and southern side of the reserve known a Cleveland Bay Park. For the purposes of this audit Reserve 453392 is considered as restricted POS.

3.10 Reserve 48933 (Ref J on Audit Plan)

Reserve 48933 with an area of 2.3695ha, being lot 874 on Deposited Plan 3547012, Peninsula Lakes Drive, was created in 2006 as part of Subdivision Approval 127566. The subdivision approval was for 92 residential lots as well as the POS now known as Peninsula Lakes Park. A Landgate enquiry report confirming the Reserve details can be seen in **Appendix D**.

The water body within the POS was existing prior to the reserve being created being an agricultural dam from the original farm of the locality. At the time of subdivision, it was initially proposed that the dam be filled as part of the subdivisional earthworks, as it was not required for drainage purposes and had no significant environmental value.

A request from the Shire of Dardanup however, was that the water body be retained as a feature within the POS to be enhanced and landscaped. A landscape plan was subsequently prepared with the water body as a component of the POS.

Drainage for this portion of the estate was designed as a pit and pipe network with storm water eventually entering a nutrient stripping pond located in the Regional Open Space. Further explanation of the drainage function of this reserve can be found in the Engineering Technical Note at **Appendix A**.

Condition 12 of the WAPC subdivision approval 127566, required that '10% of the subdivisible land, in a position to be agreed between the subdivider and the local government, being shown on the Diagram or Plan of Survey as a reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the crown'.

In relation to condition 12, two advice notes were included in the approval. These were as follows: iii) 'The applicant's attention is drawn to the provisions of Section 20C of the Town Planning and Development Act, 1928 whereby arrangements can be made, subject to further approval of the Commission, for a cash-in-lieu contribution by the applicant to the Local Government, in respect of Condition 12 of this approval.'

iv) states '..it is recommended that a public open space audit be undertaken to ascertain the amount of public open space provided by the developer for the estate.'



Reserve 48933 being 2.3695ha and a smaller portion of POS on Eaton Drive being 1451m² were created as part of WAPC approval 127566 and ceded in 2006. As Condition 12 was cleared by the Shire of Dardanup and WAPC, it concludes the POS was accepted and satisfied the requirements of the condition. No cash-in-lieu arrangement was made as part of meeting the conditions of the approval.

Condition 20 of the subdivision approval was that 'the subdivider prepare a drainage/public open space management plan to the specification of the Shire of Dardanup and to the satisfaction of the Western Australian Planning Commission'. Further advice note vii) states 'The Shire of Dardanup advices that Condition 20 has been imposed to ensure that drainage works form an integral part of the public open space, but do not detract from the use of the public open space for passive recreation purposes.'

Detailed drainage designs were prepared and approved by the Shire of Dardanup as part of satisfying the conditions of the subdivision approval. A Landscape Plan was also undertaken by Landscape Architects PLAN E, an extract of which can be seen in the Engineering Technical Note at **Appendix A.**

The Shire of Dardanup cleared the relevant conditions imposed with the deposited plan certified and signed by the Chief Executive Officer. Deposited Plan 48838 was subsequently endorsed by the WAPC and Landgate.

3.11 Reserve 48870 (Ref K on Audit Plan)

Reserve 48870, being lot 875 on Deposited Plan 50198 has an area of 1451m² and is situated near the entry to Peninsula Lakes Drive. The parcel was ceded as part of the WAPC approval 127566 and accepted as part of the 105 POS required of the conditional approval.

Reserve 48870 provides for a pocket park being grassed with some landscaping.



3.12 Reserve 43641 (Ref M on Audit Plan)

The original subdivision (WAPC ref 91326) of Location 19 in October 1993 was to divide the parcel into 5 superlots following the approval of Amendment 47 to the Shire of Dardanup's Town Planning Scheme No. 3

Condition 1 of the subdivision approval was that a 42.37 ha portion of land be ceded as 'Reserve of Recreation, Foreshore Management and Drainage'. However, as access to the land to be ceded was required an access leg was added and a parcel of 44.231ha was ceded. Agreement was reached at



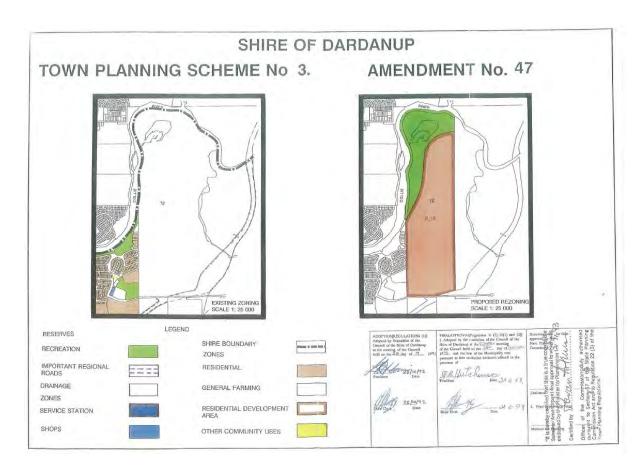
the time that the access leg be credited to POS. This area has been calculated as 0.383ha and is shown graphically on the extract from Landgate below.



A copy of the WAPC approval and Plan 19531 showing the original superlot subdivision can be found at **Appendix F.**

At the time of approval of Amendment 47, the Greater Bunbury Region Scheme did not exist and therefore what is not shown as Regional Open Space was reserved as Recreation. An extract of Amendment 47 is shown below.





3.13 Reserve 53879 (Ref N on Audit Plan)

Reserve 53879, being lot 8001 on Plan 420816, was ceded as part of subdivision approval 159295. The parcel is an area of unrestricted POS of 1411m².

3.14 Cash in Lieu (Ref O)

A cash in lieu payment was accepted to meet the condition of subdivision approval 141716. The payment equated to an area of 4704m².

4. PROPOSED POS

Areas proposed by the LSP Amendment are shown on the POS Audit Plan as well as the LSP Amendment Map.

Areas referenced P, Q, R and S are unrestricted POS and area reference T is considered restricted POS with a combined area of 2.8009ha.

Area referenced P is zoned Public Open Space in the Shire of Dardanup's Local Planning Scheme, although this parcel has not been ceded to date, having an area of 0.2549ha.



5. DEDUCTIONS

Deductions from the required minimum 10% POS requirement have been shown on the POS audit plan in yellow. Below is further detail on each parcel deducted from the POS calculation:

5.1 Regional Open Space

An area of Regional Open Space within the north western portion of the site is the main deduction from the POS calculation. The area deducted has been calculated as 83.8208ha ROS minus POS ref M 0.383ha - ceded as POS through the subdivision process.

The land parcels include:

Lot details	Reserve	Area
9505 on DP 50198	-	16.1388ha
950 on DP 427383	54422	29.9833ha
9503 on DP 50198		17.1612ha
951 on DP 427383	43641	18.3261ha
Pt 9010 on DP 428930		2.2114ha
	TOTAL ROS	83.8208ha
Deduction from ROS		
Pt 951 on DP 427383 (Ref M)	43641	0.383ha
TOTAL ROS	83.4378HA	

5.2 Eaton Drive

The portion of Eaton Drive road reserve, being 5.1264ha within Location 19 has been deducted from the POS calculation. Eaton Drive has been accepted as a deduction within all past audits undertaken.

5.3 Public Utilities

Lot 779 on P21399 (0.0862ha) and Lot 873 on P50198 (0.1025ha) both being a sewer pump station sites containing Water Corporation assets.

5.4 Schools

Lot 1002 on DP 21399 is the site of Glen Huon Primary School (4.0010ha) and Lot 18 on P 41075 being Eaton Community College site (8.7529ha).

5.5 Bethanie sites

Bethanie Fields lifestyle village was opened in 2004 and was established with a Masterplan showing an Aged Care Facility, over 55's villas, club house, bowling green, men's shed and, caravan and boat parking.

Areas deducted from the POS calculations, (3.3485ha) are those considered as private recreation areas and community facilities. Areas included in the POS calculations are the parts of the site used for the other 55's villas.

Bethanie Esprit lifestyle village was subject to a separate local structure plan, Lot 900 Edith Cowan Avenue, Eaton that was approved by the Western Australian Planning Commission on 21 September 2017. This site of 9.8741ha, has therefore been deducted from the POS calculation.



5.6 Child Care Centres

Child Care Centres operating on Lot 200 on P428688 (0.202ha) being the Little Explorers Early Learning Centre on Glen Huon Boulevard, and Lot 2000 on P39882 (0.2977ha) being the Goodstart Early Learning Centre on, Murdoch Drive have both been deducted for the POS Calculation.

5.7 Development by Others

Land parcels developed by others through Subdivision Process have been deducted from the POS calculation. These include:

- Subdivision Approval 127984, with condition 11 of approval requiring the ceding of POS. The application area of 3.4043 included residential lots and local roads.
- The 7 lots, over 55's development on the corner of Illawarra Drive and Eaton Drive was developed by others and would have been subject to POS requirements as part of the subdivision approval. The site was formally part of the private school site (Lot 200 on D 94340) given up for this purpose.

6. POS CALCULATION

The tables at **Appendix C** detail:

- 1. The POS requirements for Location 19; and
- 2. Each parcel of POS provided to date, cash-in-lieu equivalents and areas of POS proposed by LSP Amendment 1.

Table 1 calculates the POS requirement based on the adjusted area of the original Location 19 using the format within Liveable Neighbourhoods (LN), the operational policy for the design and assessment of structure plans. Deductions to the gross subdividable area are detailed in section 5 of this report. The area of total POS provided and proposed being **15.6605ha** calculates to **11.32%** provision of the gross subdividable area.

Table 2 is a breakdown of each parcel of POS ceded to date, cash-in-lieu equivalent and land proposed to be provided as shown on the POS Audit Plan. It should be noted that the parcels of POS ceded to date and referenced in the Table 2 have been accepted as the 10% POS requirement of each of the relevant WAPC approvals. The total POS provided and proposed, detailed in Table 2 is **12.8944ha of unrestricted POS and 3.3484ha of restricted POS**.

Liveable Neighbourhoods

LN gives direction on the function and allocation of POS and specifies the circumstances that land can be deemed as 'restricted use public open space'.

Restricted use public open space can contribute a maximum of two per cent towards the 10 per cent of the gross subdivisible area minimum public open space requirement.

LN states: Eligible restricted use public open space (that may form a partial contribution to the 10 per cent public open space provision) include:

- reserved land encumbered by easements (for example, power lines, sewer, gas);
- buffers to an environmentally sensitive area; and
- a resource enhancement wetland, multiple use wetland, or wetland of a similar environmental value provided that:
 - the sites contribute to the network of public open space and provide a function for the community; and
 - it is supported by local government, referral agencies and the WAPC.



7. CONCLUSION

This audit is based on approvals and allocation of POS through the subdivision process as Parkridge Estate has been developed.

This audit considers the purpose and landuse at the time of ceding of each of the parcels of POS within the original Location 19. It should be acknowledged that land given up as POS to clear a subdivision condition and accepted by the local government and the WAPC are final and remove any further obligation or liability.

While the POS ceded to date was accepted at the time subdivision as 10% of the application area, the audit applies current planning policies when calculating the overall POS requirements.

The LN methods of POS calculation used within this audit conclude the POS provided for Location 19 is in excess of the 10% requirement and therefore the POS obligation has been met. Additionally, the calculation of 13.25ha from previous audits has been exceeded with the proposed inclusion of the POS proposed by the LSP Amendment.

Acknowledgement and acceptance of this audit is respectfully sought from the DPLH and the Shire of Dardanup.



APPENDIX A | ENGINEERING TECHNICAL NOTE

Technical Note



Date: 21 April 2022

Project No: 20006

To: Kylie Shaw

From: Wayne Edgeloe

Client: Parkridge Group Pty Ltd

Subject: PARKRIDGE ESTATE POS

1 INTRODUCTION

Edgeloe Engineering has been requested to provide a background summary of two parcels of POS in Parkridge Estate in regards their drainage functions.

Wayne Edgeloe under former employment became involved the two subject parcels as described as follows.

2 RESERVE 45531

My first involvement in this site was in 2002 when TME (former employer) was engaged by the Shire of Dardanup to do a drainage study of the area around this site. TME job reference 02272. Refer Figure 1.



Figure 1 Reserve 45531 Locality Plan

My recollection is that at that time was that the Shire stormwater system had previously been discharging into the wetland areas near the current Primary School site and other depressed wet areas. This basin was then excavated to cater for redirected drainage and then became part of the Shire Drainage system.

This basin was constructed between 2001 and 2003 as shown in Figure 2.

Prior to the construction of the basin the site only had a small surface channel flowing across it.



Figure 2 Reserve 45531 Historic photos

The modelling that was done was on the basis this was a pre-existing basin to be used as part of the overall regional drainage system and it catered for major flows from along Eaton Drive before they were then subsequently discharged into the downstream system and the river.

I do not have access to the old files for this project but they can be accessed from Calibre if permission is received from Shire of Dardanup to access those model files and summary report.

Those files will show clearly the extent of the drainage systems.

Around the same time, I also became involved in design of the adjoining Bethanie Aged Care development. TME job No 03014. Again, I do not have access to those files but recall the drainage basin was used at that time for discharge of overflows from the Bethanie development.

Again, permission to access those files would been to be obtained from Churches of Christ to determine the full extent of drainage going into that basin.

My overall recollection is that when Parkridge development occurred this basin was connected into that Estate Drainage System together with the flows from the Church of Christ site.

It should also be noted that this site was created in 1996 as a Reserve for Recreation but it wasn't until after 2001 that the Shire excavated it for drainage purposes.

This is shown on the certificate of title as follows in Figure 3.

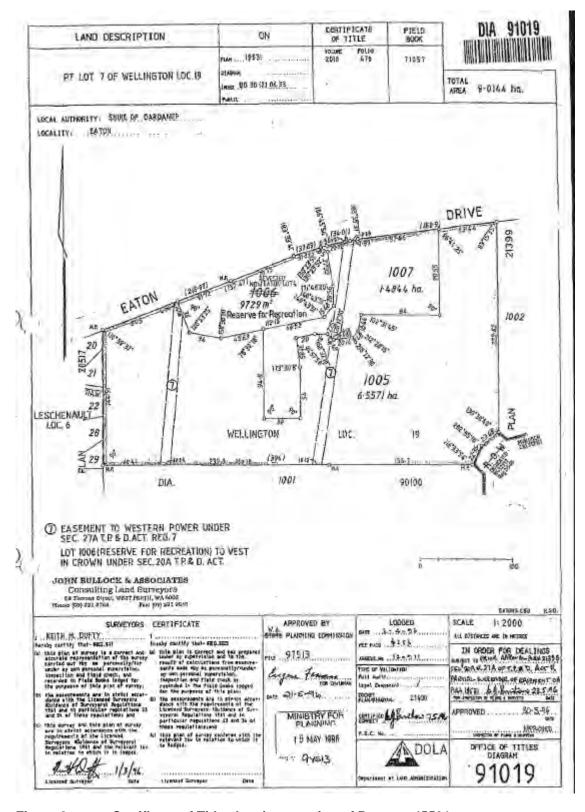


Figure 3 Certificate of Title showing creation of Reserve 45531

3 RESERVE 48933

At the time of my first involvement in Parkridge Estate in 2002 the lake in this location was an existing farm dam as shown as follows. Refer Figures 4 and 5.



Figure 4 Reserve 48933 Locality Plan



Figure 5 Historic Aerial Photo approx. 2002

At the time of development around this lake I recall that it wasn't needed for a drainage function but in fact there was a desire from the Shire for the water body to be retained in the POS and landscaped around it.

As such it was retained at the time and in addition some drainage was directed into the lake to ensure it was always full of water, even though stormwater could easily have been diverted past the is lake an into a new wetland system that was constructed in the foreshore area.

A landscape plan was also prepared at the time as shown as follows that shows the lake becoming an integral retained potion of the POS area. Refer Figure 6

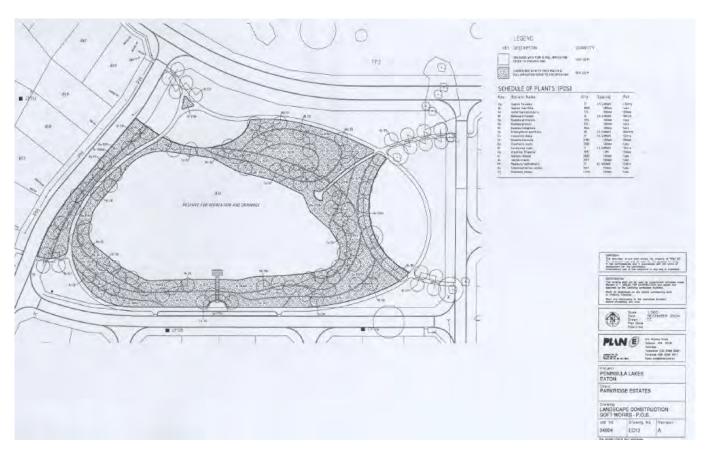


Figure 6 Reserve 48933 Concept Landscape Plan

4 SUMMARY

For both Reserves 45531 and 48933 my recollection is that rather than forming integral drainage functions for the adjoining Parkridge subdivisions they were for:

- Reserve 45531- was improved and formed an integral part of the regional Shire of Dardanup Drainage System
- Reserve 48933- was retained as water body with the main purpose of improving the open space area and
 was not solely for drainage from the Parkridge Estate adjoining and could have been bypassed except for
 the need to keep water flowing into the lake area.

I trust this investigation meets your requirements and should you require any further information please let me know.

Yours sincerely

Edgeloe Engineering Pty Ltd

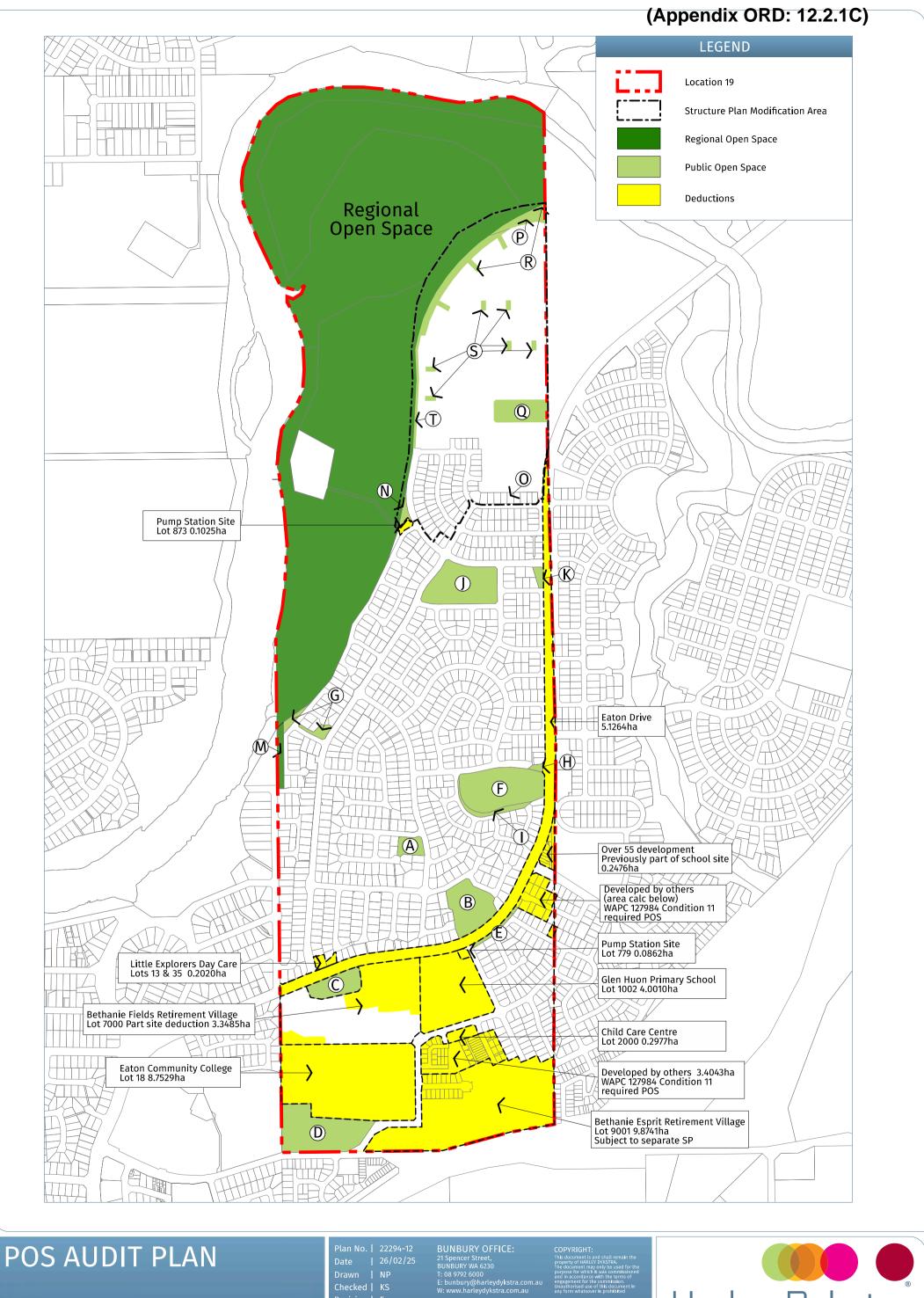
Edgeloe

R W EDGELOE BEng (Hons) FIEAust CPEng RPEQ NER APEC Engineer IntPE (Aus)

Director Edgeloe Engineering



APPENDIX B | PLAN OF POS PROVIDED





Location 19 PARKRIDGE ESTATE, EATON







APPENDIX C | POS AUDIT TABLES

Table 1 - POS Requirement (Overall Development)

Public open space schedule		
Calculation of Required POS Provision		
Total site area (ha) - Original Location 19		257.7700
Deductions		
Environmental	0.0000	
	0.0000	
Conservation Category Wetland Bush Forever	0.0000	
	83.4378	
Regional Open Space Reserves Restricted Access Conservation Areas	0.0000	
Surface area of natural water bodies	0.0000	
Infrastructure	0.0000	
Rail Reservation	0.0000	
	5.1264	
Regional Road Reservations, widenings - Primary/Other		
Public utilities (include pump station sites, transmission corridors) Drainage (steep sided drains and basins)	0.1887 0.0000	
Drainage (steep sided drains and basins) Non Residential Land Uses	0.0000	
Primary School	4.0010	
·	8.7529	
High School	0.0000	
Activity centres, commercial, retail (excluding residential component)	13.7223	
Community Purpose Sites	0.0000	
Public Purpose Reserves Other	0.0000	
	3.4043	
Developed by others (WAPC 127984)		
Over 55s site (formally school site)	0.2476	
Surplus Restricted Public Open Space Not Credited	0.5823	
Total Deductions		110.4622
Total Deductions		119.4633
Gross Subdivisible Area (total site area minus deductions)		138.3067
Required Public Open Space (10%) Breakdown of POS Provided		13.8307
Restricted Public Open Space Conservation Category Wetland Buffer (up to 50m)	0.0000	
Resource Enhancement, multiple use wetland or similar and associated buffers (up to 30m)	3.3484	
Reserved land encumbered by easements ie powerlines, sewer gas - deemed suitable for POS	0.0000	
Total Restricted POS	3.3484	
Maximum 20% credit	2.7661	
Total Restricted POS Credited to a maximum of 20%		2.7661
Surplus Restricted POS Not Credited i.e. over the maximum 20%	0.5823	
Unrestricted Public Open Space: by function (refer Note 4)	0.000	
Sport	0.0000	
Recreation	12.8944	
Nature	0.0000	
Total Unrestricted POS	12.8944	
Total Unrestricted POS		12.8944
TOTAL		15.6605
POS Provision as Percentage of Gross Subdivisible Area		11.32%

Table 2	Table 2 - POS Provided								
Plan Ref	Reserve No.	Lot Details	WAPC ref	Date Ceded	Common Name	Area (ha) unrestricted	Area (ha) restricted	Purpose	Comments
Α	45333	5820 on P22133	89548	1998	Lusitano Park	0.4169		Public Recreation	
В	44580	5767 on P21400	48548	1997	Sindhi Park	1.6977		Public Recreation	
С	45531	4 on D91019	97513	1999	Bethanie Park	0.9732		Public Recreation	
D	45358	19 on DP41075	97513	1998	Eaton Recreation Centre site	2.9057		Public Recreation	
Е	46255	6060 on P23654	108130	2001	Eaton Drive linear strip	0.1664		Public Recreation	
F	48392	1028 on DP1028	118210	2005	Cleveland Bay Park		2.7625	Public Recreation	Resource Enhancement Wetland
G	50572	437 on DP42392	118006	2010	Gromark Park	0.2025		Public Recreation	
J	30372	438 on DP42392	118000	2010	Gioillaik Faik	0.1481		r ublic Necreation	
Н	48364	890 on P42393	125521	2005	Cleveland Bay Park	0.0739		Public Recreation	
- 1	48392	300 on DP47211	126335	2008	Cleveland Bay Park		0.331	Public Recreation	Resource Enhancement Wetland
J	48933	874 on DP48838	127566	2006	Peninsula Lakes Park	2.3695		Public Recreation	
K	48870	875 on DP50198	127566	2006	Peninsula Lakes Drive Entry	0.1451		Public Recreation	
М	43641	5679 on P19531	91326	1995	Strip near Scout Hall	0.383		Public Rec, Foreshore Manage & Drainage	42.37ha ROS required as condition of subdivision. Balance as POS.
N	53879	8001 on P420816	159295	2021	Peninsula near Homestead lot	0.1411		Public Recreation	Subdivision. Balance as 1 Os.
0			141716			0.4704		Cash-in-lieu payment	Cash-in-lieu payment area equivalent
	•		TOTAL P	OS AREA	CEDED & CASH IN LIEU TO DATE	10.0935	3.0935		
Р						0.4258		Zoned Recreation - LPS 3	Area zoned Recreation in LPS 3
Q						1.096		Recreation	Nature park
R						1.005		Recreation	Rear of R20 lots
S						0.2741		Recreation	Combined Pocket Parks
Т							0.2549	Drainage	Swale along Peninsula Lakes Drive
	TOTAL POS AREA WITH CASH-IN-LIEU PAYMENT				12.8944	3.3484			



APPENDIX D | LANDGATE ENQUIRIES

Reserve Details Report -45333

Reserve	45333	Legal Area (ha)	0.4169
Name	LUSITANO PARK	Status	CURRENT
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION
File Number	2632-1997		
Notes	N/A		
Additional Reserve Information	N/A		

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	18/10/2010

Management Order	Document Number
VEST: SHIRE OF DARDANUP	G812382

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3035/309	Lot 5820 On Plan 22133	1 Shetland Place, EATON 6232	2632/1997.	1202324	4169

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
L454282	15/10/2010	Current Name	LUSITANO PARK
G812381	05/06/1998	Current Area	0.4169
G812381	05/06/1998	Current Purpose	PUBLIC RECREATION
G812381	05/06/1998	Correspondence File Number	2632-1997
G812381	05/06/1998	Location	WELLINGTON LOCATION 5820
G812381	05/06/1998	Public Plan	BG 30 (2) 06.34
G812381	05/06/1998	Street Name	LUSITANO AVENUE

Document Number/Gazette Page	Date	Туре	Text
G812381	05/06/1998	Survey Number	LTO:PLAN 22133
G812382	05/06/1998	Current Vesting	VEST: SHIRE OF DARDANUP
N/A	05/06/1998	Class	С

date: May 5, 2022, 8:49:16 AM

Reserve Details Report -44580

Reserve	44580	Legal Area (ha)	1.6975	
Name	SINDHI PARK	Status	CURRENT	
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION	
File Number	2004/1996			
Notes	N/A	N/A		
Additional Reserve Information	N/A			

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	18/10/2010

Management Order	Document Number
VEST:SHIRE OF DARDANUP	N/A

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3107/846	Lot 5767 On Plan 21400	3 Sindhi Close, EATON 6232	2004/996.	1168879	16976.968

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
L454302	15/10/2010	Current Name	SINDHI PARK
109	10/01/1997	Current Vesting	VEST:SHIRE OF DARDANUP
111	10/01/1997	Current Area	1.6975
111	10/01/1997	Class	С
111	10/01/1997	Current Purpose	PUBLIC RECREATION
111	10/01/1997	Formerly	LOT 128 ON PLAN 21400
111	10/01/1997	Correspondence File Number	2004/1996

Document Number/Gazette Page	Date	Туре	Text
111	10/01/1997	Location	WELLINGTON LOC 5767
111	10/01/1997	Original Gazettal and page	ORIGINAL GAZETTE
111	10/01/1997	Public Plan	BG30 (2) 06.34
111	10/01/1997	Street Name	EATON DRIVE

date: May 5, 2022, 8:54:11 AM

Reserve Details Report -45531

Reserve	45531	Legal Area (ha)	0.9729
Name	N/A	Status	CURRENT
Туре	N/A	Current Purpose	PUBLIC RECREATION
File Number 01775-1998-01RO Notes N/A Additional Reserve Information N/A		01RO	

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	03/03/1999

Management Order	Document Number
VEST: SHIRE OF DARDANUP	H031386

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3021/721	Lot 4 On Diagram 91019	109 Eaton Drive, EATON 6232	1775/1998.	1168922	9731.638

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
H031385	19/02/1999	Current Area	0.9729
H031385	19/02/1999	Current Purpose	PUBLIC RECREATION
H031385	19/02/1999	Correspondence File Number	01775-1998-01RO
H031385	19/02/1999	Lot/Town Lot	EATON LOT 4
H031385	19/02/1999	Public Plan	BG30(2)06.33
H031385	19/02/1999	Street Name	EATON DRIVE
H031385	19/02/1999	Survey Number	L.T.O. DIAGRAM 91019

Document Number/Gazette Page	Date	Туре	Text
H031386	19/02/1999	Current Vesting	VEST: SHIRE OF DARDANUP
N/A	19/02/1999	Class	С

date: May 4, 2022, 10:16:13 AM

Reserve Details Report -45358

Reserve	45358	Legal Area (ha)	2.9057
Name	N/A	Status	CURRENT
Туре	N/A	Current Purpose	PUBLIC RECREATION
File Number	408-1998-01F	RO	
Notes N/A Additional Reserve Information N/A			

Class Responsible Agency		Date of Last Change	
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	18/09/2004	

Management Order	Document Number	
VEST: SHIRE OF DARDANUP	G811898	

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3133/938	Lot 19 On Deposited Plan 41075	18 Recreation Drive, EATON 6232	00408-1998- 01RO	11267585	29057

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
1909203	04/06/2004	Current Area	2.9057 HA
1909203	04/06/2004	Lot/Town Lot	LOT 19 ON DP41075
1909203	04/06/2004	Survey Number	DP41075
G811897	05/06/1998	Current Purpose	PUBLIC RECREATION
G811897	05/06/1998	Historical Area	2.5744
G811897	05/06/1998	Previous Lot/Locations	WELLINGTON LOC 5822
G811897	05/06/1998	Public Plan	BG30 (2) 06.33

Document Number/Gazette Page	Date	Туре	Text
G811897	05/06/1998	Street Name	RECREATION DRIVE
G811898	05/06/1998	Current Vesting	VEST: SHIRE OF DARDANUP
N/A	05/06/1998	Class	С
N/A	05/06/1998	Correspondence File Number	408-1998-01RO

date: May 5, 2022, 9:01:51 AM

Reserve Details Report -46255

Reserve	46255	Legal Area (ha)	0.1936	
Name	N/A	Status	CURRENT	
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION	
File Number	01656-2000-01RO			
Notes	N/A			
Additional Reserve Information	RESERVE COMPRISES LOT 6060 ON P23651 & LOT 878 ON DP52369 (K95603)			

Class Responsible Agency		Date of Last Change	
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	12/04/2007	

Management Order	Document Number	
VEST: SHIRE OF DARDANUP	H637894	

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3120/919	Lot 6060 On Plan 23651	173 Eaton Drive, EATON 6232	01656-2000- 01RO.	1293633	1663.619
LR3140/742	Lot 878 On Deposited Plan 52369	27 Ballarat Court, EATON 6232	01656-2000- 01RO	11619383	270

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
K095603	20/02/2007	Current Area	0.1936
H637893	05/01/2001	Current Purpose	PUBLIC RECREATION
H637893	05/01/2001	Correspondence File Number	01656-2000-01RO
H637893	05/01/2001	Historical Area	0.1666
H637893	05/01/2001	Location	WELLINGTON LOCATION 6060

Document Number/Gazette Page	Date	Туре	Text
H637893	05/01/2001	Lot/Town Lot	FORMERLEY LOT 843
H637893	05/01/2001	Public Plan	BG30 (02)6.34
H637893	05/01/2001	Street Name	EATON DRIVE
H637893	05/01/2001	Survey Number	LTO: PLAN 23651
H637894	05/01/2001	Current Vesting	VEST: SHIRE OF DARDANUP
N/A	05/01/2001	Class	С

date: May 5, 2022, 9:05:12 AM

Reserve Details Report -48392

Reserve	48392	Legal Area (ha)	3.0935	
Name	N/A	Status	CURRENT	
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION	
File Number	N/A			
Notes	N/A	N/A		
Additional Reserve Information	RESERVE COMPRISES LOT 1028 ON DP24719 & LOT 300 ON DP47211 (K603456)			

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	17/06/2008

Management Order	Document Number
N/A	N/A

Land Use

PUBLIC RECREATION

Local Government Authority

SHIRE OF DARDANUP

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3000/557	Lot 300 On Deposited Plan 47211	No Street Address Information Available	50969-2005- 01RO	11542811	3310
LR3137/30	Lot 1028 On Deposited Plan 24719	No Street Address Information Available	50969-2005- 01RO	1344540	27625

Previous Certificates of Title	Status

Document Number/Gazette Page	Date	Туре	Text
K603456	22/05/2008	Current Area	3.0935
J522150	24/11/2005	Class	С
J522150	24/11/2005	Current Purpose	PUBLIC RECREATION
J522150	24/11/2005	Historical Area	2.7625

date: May 4, 2022, 10:51:39 AM

Reserve Details Report -50572

Reserve	50572	Legal Area (ha)	0.3506	
Name	N/A	Status	CURRENT	
Туре	Subject to 20A	Subject to 20A Current Purpose PUBLIC RECREA		
File Number	N/A	N/A		
Notes	N/A	N/A		
Additional Reserve Information	RESERVE COMPRISES LOTS 437 & 438 ON DP42392 (L316647)			

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	05/08/2010

Management Order	Document Number
SHIRE OF DARDANUP	L382185

Land Use

PUBLIC RECREATION

Local Government Authority

SHIRE OF DARDANUP

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3159/261	Lot 437 On Deposited Plan 42392	No Street Address Information Available	00805-2009- 01RO	11377056	2025
LR3159/262	Lot 438 On Deposited Plan 42392	No Street Address Information Available	00805-2009- 01RO	11377080	1481

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
L382185	23/07/2010	Current Vesting	MANAGEMENT ORDER SHIRE OF DARDANUP
L316647	17/05/2010	Current Area	0.3506
L316647	17/05/2010	Class	С
L316647	17/05/2010	Current Purpose	PUBLIC RECREATION

date: May 5, 2022, 9:26:41 AM

Reserve Details Report -48364

Reserve	48364 Legal Area (ha)		0.0739	
Name	N/A Status		CURRENT	
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION	
File Number	N/A			
Notes	N/A			
Additional Reserve Information	RESERVE COMPRISES LOT 890 ON DP42393 (J484603)			

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	30/01/2006

Management Order	Document Number
SHIRE OF DARDANUP	J533642

Land Use

PUBLIC RECREATION

Local Government Authority

SHIRE OF DARDANUP

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3136/807	Lot 890 On Deposited Plan 42393	31 Cleveland Bay Avenue, EATON 6232	50898-2005- 01RO	11480585	739

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
J533642	02/12/2005	Current Vesting	MANAGEMENT ORDER SHIRE OF DARDANUP
J484602	26/10/2005	Current Area	0.0739
J484603	26/10/2005	Class	С
J484603	26/10/2005	Current Purpose	PUBLIC RECREATION
J484603	26/10/2005	Historical Area	0.0890

date: May 5, 2022, 9:32:16 AM

Reserve Details Report -48933

Reserve	48933	Legal Area (ha)	2.3695	
Name	PENINSULA LAKES PARK	Status	CURRENT	
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION	
File Number	N/A			
Notes	N/A	N/A		
Additional Reserve Information	RESERVE COMPRISES LOT 874 ON DP48838 (J999440)			

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	18/10/2010

Management Order	Document Number
SHIRE OF DARDANUP	J999441

PUBLIC RECREATION

Local Government Authority

SHIRE OF DARDANUP

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3140/137	Lot 874 On Deposited Plan 48838	No Street Address Information Available	50414-2006- 01RO	11514267	23695

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
L454296	15/10/2010	Current Name	PENINSULA LAKES PARK
J999440	24/11/2006	Current Area	2.3695
J999440	24/11/2006	Class	С
J999440	24/11/2006	Current Purpose	PUBLIC RECREATION
J999441	24/11/2006	Current Vesting	MANAGEMENT ORDER SHIRE OF DARDANUP

date: May 4, 2022, 2:17:58 PM

Reserve Details Report -48870

Reserve	48870	Legal Area (ha)	0.1451	
Name	N/A	Status	CURRENT	
Туре	N/A	Current Purpose	PUBLIC RECREATION	
File Number	N/A			
Notes	N/A			
Additional Reserve Information RESERVE COMPRISES LOT 875 ON DP50198 (J938466)		(J938466)		

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	09/07/2007

Management Order	Document Number
SHIRE OF DARDANUP	J938467

Land Use

PUBLIC RECREATION

Local Government Authority

SHIRE OF DARDANUP

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3139/203	Lot 875 On Deposited Plan 50198	1 Peninsula Lakes Drive, EATON 6232	50951-2006- 01RO	11561844	1451

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
J938466	04/10/2006	Current Area	0.1451
J938466	04/10/2006	Class	С
J938466	04/10/2006	Current Purpose	PUBLIC RECREATION
J938467	04/10/2006	Current Vesting	MANAGEMENT ORDER SHIRE OF DARDANUP

date: May 5, 2022, 9:50:59 AM

Reserve Details Report -46255

Reserve	46255	Legal Area (ha)	0.1936	
Name	N/A	Status	CURRENT	
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION	
File Number	01656-2000-01RO			
Notes	N/A			
Additional Reserve Information	RESERVE COMPRISES LOT 6060 ON P23651 & LOT 878 ON DP52369 (K95603)			

Class Responsible Agency		Date of Last Change	
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	12/04/2007	

Management Order	Document Number
VEST: SHIRE OF DARDANUP	H637894

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3120/919	Lot 6060 On Plan 23651	173 Eaton Drive, EATON 6232	01656-2000- 01RO.	1293633	1663.619
LR3140/742	Lot 878 On Deposited Plan 52369	27 Ballarat Court, EATON 6232	01656-2000- 01RO	11619383	270

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
K095603	20/02/2007	Current Area	0.1936
H637893	05/01/2001	Current Purpose	PUBLIC RECREATION
H637893	05/01/2001	Correspondence File Number	01656-2000-01RO
H637893	05/01/2001	Historical Area	0.1666
H637893	05/01/2001	Location	WELLINGTON LOCATION 6060

Document Number/Gazette Page	Date	Туре	Text
H637893	05/01/2001	Lot/Town Lot	FORMERLEY LOT 843
H637893	05/01/2001	Public Plan	BG30 (02)6.34
H637893	05/01/2001	Street Name	EATON DRIVE
H637893	05/01/2001	Survey Number	LTO: PLAN 23651
H637894	05/01/2001	Current Vesting	VEST: SHIRE OF DARDANUP
N/A	05/01/2001	Class	С

date: May 5, 2022, 11:12:33 AM

Reserve Details Report -43641

Reserve	43641	Legal Area (ha)	44.2311
Name	LEICESTER RESERVE	Status	CURRENT
Туре	Subject to 20A	Current Purpose	PUBLIC RECREATION, FORESHORE MANAGEMENT AND DRAINAGE
File Number	405/1995		
Notes	N/A		
Additional Reserve Information	N/A		

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	29/10/2010

Management Order	Document Number
VEST: SHIRE OF DARDANUP	N/A

Land Use
DRAINAGE
PUBLIC RECREATION
FORESHORE PROTECTION

Local Government Authority	
SHIRE OF DARDANUP	

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3104/781	Lot 5679 On Plan 19531	49 Leake Street, EATON 6232	405/1995.	1093320	442311

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
L464997	28/10/2010	Current Name	LEICESTER RESERVE
6249	29/12/1995	Vesting Revoked	REVOKED (ORDER DATED 11/07/1995)
6251	29/12/1995	Current Vesting	VEST: SHIRE OF DARDANUP

(Appendix ORD: 12.2.1C) **Document Number/Gazette** Text Date Type Page PUBLIC RECREATION, **FORESHORE** 6260 29/12/1995 **Current Purpose** MANAGEMENT & DRAINAGE **VEST:SHIRE OF** 2918 11/07/1995 Historical Vesting DARDANUP 11/07/1995 **Current Area** 2924 44.2311 2924 11/07/1995 Class С 2924 LOT 5 ON PLAN 19531 11/07/1995 Formerly Correspondence File 2924 11/07/1995 405/1995 Number PUBLIC RECREATION 2924 11/07/1995 **Historical Purposes** WELLINGTON LOC 2924 11/07/1995 Location 5679 Original Gazettal and 2924 11/07/1995 ORIGINAL GAZETTE page

Public Plan

Street Name

11/07/1995

11/07/1995

BG30 (2) 06.34, 06.35

AND 06.36

LEAKE STREET

date: May 5, 2022, 11:32:30 AM

2924

2924

Reserve Details Report -53879

Reserve	53879	Legal Area (ha)	0.1411
Name	N/A	Status	CURRENT
Туре	N/A	Current Purpose	PUBLIC RECREATION
File Number	N/A		
Notes	N/A		
Additional Reserve Information	RESERVE COMPRISES LOT 8001 ON DP420816 (O900416)		

Class	Responsible Agency	Date of Last Change
С	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)	23/12/2021

Management Order	Document Number
SHIRE OF DARDANUP	O900417

Land Use

PUBLIC RECREATION

Local Government Authority

CLT Number	Parcel Identifier	Street Address, Suburb	File Number	PIN	Area (m²)
LR3173/33	Lot 8001 On Deposited Plan 420816	No Street Address Information Available	00123-2021- 01RO	12485735	1411

Previous Certificates of Title	Status
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Document Number/Gazette Page	Date	Туре	Text
O900416	08/10/2021	Current Area	0.1411
O900416	08/10/2021	Class	С
O900416	08/10/2021	Current Purpose	PUBLIC RECREATION
O900416	08/10/2021	Land Use	7610
O900416	08/10/2021	Responsible Agency	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)
O900417	08/10/2021	Current Vesting	MANAGEMENT ORDER SHIRE OF DARDANUP



APPENDIX E | GREY LEWIS AUDIT



PUBLIC OPEN SPACE INFORMATION

FOR

PARKRIDGE GROUP PTY LTD

June 2014

Document	Version	Date
POS Report Nov 2013	3	15 November 2013
POS Report June 2014	4	17 June 2014

HISTORY OF WAPC APPROVALS

1.0 Introduction

This report examines the history of existing subdivision approvals for Parkridge Estate and scenarios for public open space.

Gray & Lewis has been provided with a chronology of subdivision approvals from Cornerstone Legal received on the 16 August 2013. The approvals have been numbered consecutively as summarised in Attachment 1.

Copies of the approvals referred to in this report which relate to public open space provision are included as attachments and numbered consecutively.

A plan showing the history of WAPC approvals is included as Figure 1. An overall audit plan has been included as Figure 2.

All reserves and open space areas have been labelled A – N throughout this report consistent with Figure 2.

2.0 Reserve 45333 (A) and Reserve 44580 (B)

The Western Australian Planning Commission (WAPC) issued approval on the 27 August 1993 for subdivision of original superlot 2. The WAPC reference was 89548 - Attachment 2.

The subdivision plan showed three public open space reservations including the wetland in Reserve 48392. The wetland was created under a separate future subdivision approval.

Condition 17 of the approval required 'the proposed reserves shown on the plan submitted by the applicant being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act (as amended), such land to be ceded free of cost and without any payment of compensation by the crown'.

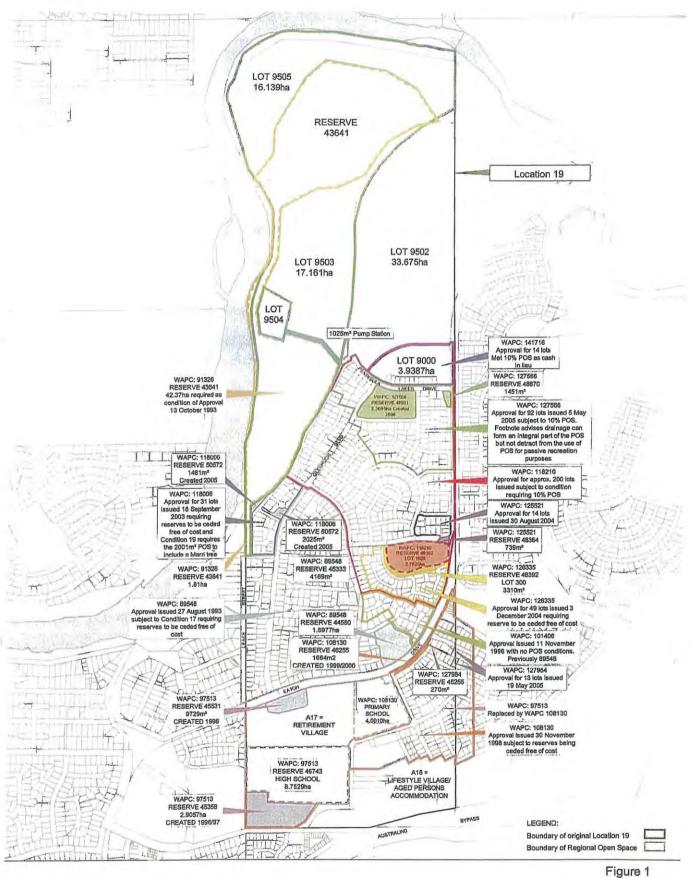
The WAPC Policy DC 2.2 requires that 10% of the subdivisible area to be ceded as public open space. The Policy is generally applied for subdivisions creating 5 or more lots.

Under the Policy DC2.2 the Commission may require that the public open space for the whole of a parcel of land be met entirely from the first stage of subdivision, or from any succeeding stage, if it considers desirable.

The subdivision area was approximately 49.2 hectares therefore the 10% public open space requirement consisted of 4.92 hectares.

Two reserves were created under this approval being Reserve 45333 and Reserve 44580. This report refers to them as 'A' and 'B' in Figure 2.

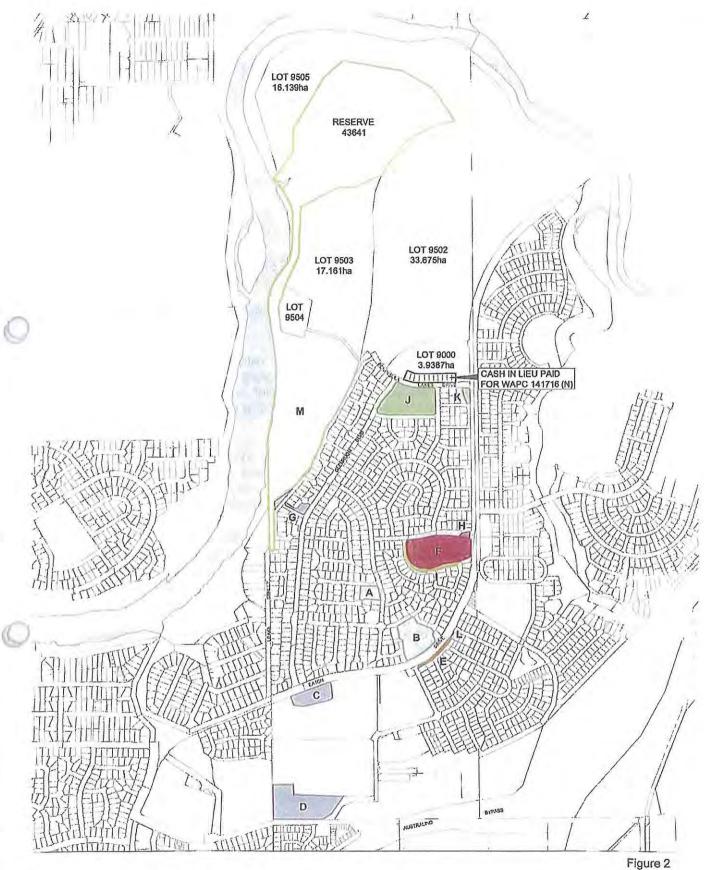
There is no indication in the approval that the reserves were required for any drainage or that there was any requirement for cash in lieu of open space.



OVERALL POS AUDIT PLAN Península Precinct - Parkridge Estate EATON







OVERALL POS AUDIT PLAN Península Precinct - Parkridge Estate





Reserve 45333 is located on the corner of Shetland Place and Lusitano Avenue. It is grassed and contains a playground. The full area of 4169m² as public open space, as it clearly functions as a local park. It has a Management Order (G812382) to Shire of Dardanup for Public Recreation, and the Shire of Dardanup confirmed the reserve was included as public open space in their audit dated 30 May 2002.

Reserve 44580 is known as Sindhi Park and contains grassed areas, vegetation areas and pathways. The full area of 1.6977 hectares is credited as public open space as it has clearly been developed as a local park.

3.0 Reserve 45531 (C) and Reserve 97513 (D)

The Western Australian Planning Commission (WAPC) issued another approval on the 24 August 1995. The WAPC reference was 97513 - Attachment 3.

The subdivision plan showed three reserves for recreation, a high school, a primary school and residential lots.

Condition 19 of the approval required 'the proposed reserves shown on the plan submitted by the applicant being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act (as amended), such land to be ceded free of cost and without any payment of compensation by the crown'.

A footnote on the planning approval stated "In respect to Condition 19, there appears to be a discrepancy over the actual size of the subject lot. Prior to submitting Diagrams of Survey to the Commission the subdivider is requested to provide to the Commission a public open space schedule for the whole subdivision area."

Reserve 45531 and Reserve 45358 were created under this subdivision. As the subdivision was cleared it has been assumed that the reserves for recreation were accepted as being sufficient for public open space. It has also been assumed that the WAPC checked the public open space provision at clearance stage due to the footnote advice indicating that there was a discrepancy over the lot size.

Reserve 45531 has an area of 9729m² is grassed, landscaped, contains pathways and a water body (with fountain).

Under Liveable Neighbourhoods permanent drainage detention areas are normally excluded from open space calculations.

The Commission can allow urban water management areas such as detention areas to be included as 'restricted open space' where 'the area is not subject to inundation more frequently than a one year average reoccurrence interval rainfall event and does not present a safety hazard' and 'the area of the swale is contoured, unfenced and grassed and / or landscaped'; and 'the area forms part of an appropriate management plan'.

It is understood that no drainage was required within Reserve 45531 as part of the developers subdivision, and therefore it has been assumed that it was ceded in it's entirety as unrestricted public open space.

It is also understood that the local government required drainage within the reserve some years after the open space was created. The developer should not be penalised by drainage developed in the reserve which is not required for the subdivision. Any drainage works installed after subdivision does not negate the fact that the land was ceded for the purpose of public open space.

Engineering advice indicates that the basin in Reserve 45531 was constructed after subdivision occurred to compensate upstream flows from Murdoch Drive to the south, before discharge down Eaton Drive and eventually the Collie River – Attachment 4.

If the basin was constructed to cater for drainage of land to the south of Parkridge Estate, then it does not mitigate that the reserve was ceded as open space at the time of subdivision.

Reserve 45531 is vested to the Shire of Dardanup with a Management Order for Public Recreation.

Reserve 45358 on Recreation Drive has an area of 2.907 hectares. The land was ceded as open space by the developer however the local government has developed it with the Eaton Recreation Centre and carparking.

The fact that the local government has developed the Reserve does not negate that the land has been ceded for public open space. The entire area has been included in public open space calculations.

Under R27 of Element 4 of Liveable Neighbourhoods, the WAPC can agree to community purpose sites being provided as part of the overall public open space provision, in consultation with the local government. It is not known if the local government consulted the WAPC prior to developing the open space for community purposes.

It is noted that there is a water body on this reserve however it is not known if it was provided by the local government as part of the recreation centre development which incorporates new hardstand areas requiring drainage. It has been assumed it was not drainage provided by the subdivider and the land was ceded as unrestricted open space.

There is a management order for Reserve 45358 to the Shire of Dardanup for Public Recreation.

The Western Australian Planning Commission issued an approval on the 11 November 1996 for approximately 30 lots. The WAPC reference was 101406.

Although the subdivision created more than 5 lots the approval did not require any public open space to be ceded or any cash in lieu of open space.

This indicates that the WAPC had not identified any shortfall of open space at that time and was satisfied with the public open space provided in the previous 1993 and 1996 approvals. Alternatively the WAPC would have been satisfied that additional open space would be provided as part of future subdivision.

The approval did not include any footnote advice requesting a public open space audit. This indicates that the WAPC was satisfied public open space provision was sufficient at this time and had no ongoing concerns over public open space provision.

4.0 Reserve 46255 (E)

The Western Australian Planning Commission issued an approval on the 30 November 1998 for lots in the south east portion of original Location 19. The WAPC reference was 108130 - Attachment 5.

The subdivision plan showed a small Reserve for Recreation parallel to Eaton Drive.

Condition 16 of the approval requires that 'the proposed reserves shown on the plan submitted by the applicant being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act (as amended), such land to be ceded free of cost and without any payment of compensation by the crown'.

The area has been included as open space as it has been ceded free of cost, and is not required for drainage. The area is landscaped.

It is noted that the Reserve forms part of the 10% public open space contribution as the local government advised other subdividers have given up small areas of open space along Eaton Drive - Attachment 6.

There is a Management Order for the Reserve to the Shire of Dardanup for the purpose of Public Recreation.

5.0 Reserve 48392 - Wetland: Lot 1028 (F)

The Western Australian Planning Commission (WAPC) issued approval on the 20 May 2002. The WAPC reference was 118210 - Attachment 7.

The subdivision plan showed three reserves for recreation including Reserve 48933, Reserve 48870 and the wetland on Reserve 48392. Only the wetland Reserve 48392 was created under this approval in 2005.

Condition 12 of the approval required '10% of the subdivisible land, in a position to be agreed between the subdivider and the local government, being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the crown'.

A footnote on the planning approval stated "In respect to Condition 12, it is recommended that a public open space audit be undertaken to ascertain the amount of public open space provided by the subdivider for the estate."

Another footnote also advised that arrangements could be made for payment of cash in lieu of open space.

As the local government and WAPC cleared Condition 12, this report concludes that it has been accepted that the subdivision area complied with the 10% POS requirement. The WAPC has certified compliance with Condition 12 at clearance stage. This report assumes no cash in lieu was paid.

Under Liveable Neighbourhoods the WAPC can accept eight percent of open space for active and passive recreation where the remaining two percent is allocated for restricted public open space such as 'natural wetlands'.

R33 of Liveable Neighbourhoods supports this and allows 'a resource enhancement wetland, multiple use wetland, or wetland of a similar environmental value' to be included as restricted open space 'provided that the area included as open space is useable for recreation purposes and there is an agreement with the local government (or other management authority), referral agencies and the WAPC on a management plan that enhances the wetland'.

The complication in considering the wetland under Liveable Neighbourhoods is that the wetland is a conservation category wetland and not a resource enhancement or multiple use wetland. A conservation category wetland has a higher management category than resource enhancement or multiple use wetlands.

A management plan must have been agreed to by the local government and the then Waters and Rivers Commission as Condition 20 of the approval was cleared.

Condition 20 required 'the subdivider making arrangements satisfactory to the Western Australian Planning Commission for preparation and implementation of a Foreshore Management Plan'.

The Management Plan was required to address drainage, vegetation rehabilitation works, weed management, provision of a dual use path and uniform fencing according to footnote (vii) on the approval. Footnote (vii) also cites that the foreshore area was to be maintained for a two year period.

The inclusion of the wetland may be disputed by the WAPC as R11 in Element 4 of Liveable Neighbourhoods states that 'An Environmental Policy Wetland, conservation category wetland, or wetland of a similar environmental value shall be ceded to the Crown free of cost and without payment of compensation by the crown in addition to the 10 per cent public open space contribution. The area of the wetland should not be included in the gross subdivisible area on which the public open space contribution is determined.'

The wetland is described as a 'Conservation Category' or 'Environmental Protection Policy' in the WAPC approval dated 3 December 2004 issued for the wetland foreshore created separately - Attachment 11.

There are mitigating factors that may make it difficult for the WAPC to dispute that the wetland should be excluded as:

- (a) There was no condition specifying that the wetland should be ceded free of cost without payment of compensation so the wetland had to be ceded as open space in accordance with Condition 12 therefore formed part of the 10% open space requirement.
- (b) There was a management plan approved in line with Liveable Neighbourhoods.
- (c) There was no payment of cash in lieu indicating that the wetland was accepted as meeting the 10% POS condition.
- (d) Although R11 in Liveable Neighbourhoods discusses ceding Conservation Category wetlands free of cost, the fact that a management plan was agreed to indicates it may have been accepted as open space.

The Department of Planning advised in correspondence dated 5 June 2007 that an area of 0.4939 hectares could be credited as open space associated with Lot 1028 within Reserve 48392, excluding the EPP Lake. It is not clear on which basis the

Department has accepted that only some of the reserve can be accredited given that the only condition imposed required 10% public open space – Attachment 8.

6.0 Reserve 50572 (G)

The Western Australian Planning Commission (WAPC) issued approval on the 18 September 2003 for 31 lots. The WAPC reference was 118006 - Attachment 9.

Condition 12 of the approval requires 'the proposed public open space shown on the plan submitted by the applicant being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the crown'.

The subdivision plan cites a total subdivisible area of 3.4902 hectares and the combined open space area of 3482m² equates to exactly 10% of the subdivisible area.

There is no cash in lieu advice or footnote that indicates any shortfall of open space.

There is a management order for the reserve to the Shire of Dardanup for the purpose of public recreation (LR382185).

Liveable Neighbourhoods states in R14 of Element 4 that local parks can include small parks and be responsive to specific site requirements (eg tree retention and significant landscape features).

The western portion of Reserve 50572 contains native vegetation and the eastern portion included a Marri tree to be protected so are consistent with Liveable Neighbourhoods.

7.0 Reserve 125521 (H)

The Western Australian Planning Commission (WAPC) issued approval on the 30 August 2004 for 14 lots. The WAPC reference was 125521 - Attachment 10.

The subdivision plan showed one public open space reservation of 730m².

Condition 11 of the approval required 'the proposed reserves shown on the plan submitted by the applicant being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act (as amended), such land to be ceded free of cost and without any payment of compensation by the crown'.

It appears that the WAPC was satisfied that the subdivision met the 10% public open space requirement based on the proposed 730m2 reserve, and as this land was previously included in subdivision WAPC 118210 where the 10% public open space requirement had already been cleared.

There was no requirement for payment of cash in of open space even though the subdivision created more than 5 lots.

8.0 Reserve 48392 (I)

The Western Australian Planning Commission (WAPC) issued approval on the 3 December 2004 for 49 lots. The WAPC reference was 126335 - Attachment 11.

The subdivision plan showed one public open space reservation of 3310m² to the south of the wetland on Reserve 48392. The land was required as foreshore to the wetland created as Lot 1028 to the north.

Condition 24 of the approval required 'the proposed foreshore reserves shown on the plan submitted by the applicant being shown on the Diagram or Plan of Survey as Pubic Open space and vested in the crown under Section 20A of the Town Planning and Development Act (as amended), such land to be ceded free of cost and without any payment of compensation by the crown'.

Public open space credit can be allocated for the wetland buffer in accordance with Liveable Neighbourhoods. Section R33 of Element 4 in Liveable Neighbourhoods allows the WAPC to include buffers to an Environmental Protection Policy / Conservation Category wetland in restricted open space provided the area is useable for recreational purposes and there is agreement on a management plan that enhances the wetland.

The accreditation of the foreshore as open space is reinforced by footnote (xi) of the approval which states 'the subdivider is required to revegetate the 3354m² of public open space to facilitate the use of the public open space for recreation and drainage. The works will be subject of a 2 year maintenance period.'

The subdivider had to provide a foreshore management plan for the wetland (Condition 20 of WAPC 118210) and rehabilitate the wetland. In addition, a management plan for the wetland buffer was required as a footnote to this 2004 approval.

9.0 Reserves 127566 (J) and Reserve 48870 (K)

The Western Australian Planning Commission (WAPC) issued approval on the 5 May 2005 for 92 lots. The WAPC reference was 127566 - Attachment 12.

The subdivision plan showed two public open space reservations of 2.3695ha and 1451m². These were created as Reserves 127566 and Reserve 48870.

Condition 12 of the approval required '10% of the subdivisible land, in a position to be agreed between the subdivider and the local government, being shown on the Diagram or Plan of Survey as a Reserve for recreation and vested in the crown under Section 20A of the Town Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the crown'

The approval included footnotes recommending a public open space audit and advice that cash in lieu of open space was available subject to Commission approval. This report assumes no cash in lieu was paid.

The local government and WAPC have cleared Condition 12 therefore they have certified that this subdivision has met the 10 public open space requirement. Given that Condition 12 has been cleared the Commission must have been satisfied with the public open space provision.

It is noted that there is a water body in Reserve 48933 (area J), however there is engineering advice indicating that the existing water body does not appear to receive stormwater from the drainage network of Parkridge Estate and has no drainage function – Attachment 4.

There is correspondence between TME and the Shire of Dardanup relating to clearance of the subdivision conditions, which also confirms that 'the POS area does not accept stormwater runoff from the surrounding roads or property connections. A high lake level control outlet (as detailed on drawing 04055E-03-C300) connects to the pipe infrastructure to ensure the lake does not rise above RL 4.10 during a major rainfall event. Therefore there is no drainage impediment on the central lake area..' — Attachment 13.

It is reasonable to assume that the Shire and WAPC were satisfied that the no drainage detracted 'from the use of the public open space for passive recreational purposes' in accordance with footnote (vii) of the approval.

10.0 Reserve 46255 (L)

The Western Australian Planning Commission (WAPC) issued approval on the 19 May 2005 for 13 lots. The WAPC reference was 127984 - Attachment 14.

The subdivision plan showed one public open space reservation of 275m². This was created as Reserve 46255 and was adjacent to other public open space parallel to Eaton Drive.

The Reserve is small however it has been landscaped and has visual aesthetic qualities.

The local government advised other subdividers have given up small areas of open space along Eaton Drive indicating that the Reserve forms part of the 10% public open space contribution - Attachment 6.

There is a Management Order for the Reserve to the Shire of Dardanup for the purpose of Public Recreation.

11.0 Reserve 43641 (M)

Reserve 43641 located adjacent to Collier River has a total area of 44.231 hectares.

Only a 42.37 hectare portion of Reserve 43641 was required to be ceded as a 'Reserve for Recreation, Foreshore Management and Drainage' in Condition 1 of a superlot subdivision approval issued on the 13 October 1993 by the WAPC - Attachment 15.

The excess area of 1.861 hectares can be accredited as open space as it was provided in addition to the required 42.37 hectares.

12.0 Lot 9000 - Formerly known as Lot 9501 (N)

The WAPC issued conditional approval for 14 lots on the 13 May 2010 (WAPC Reference: 141716) – Attachment 16.

Condition 8 of the approval required 'An area(s) of land equal to 10% of the subject lot in area, in a position to be agreed with the WAPC, being shown on the Deposited Plan as a Reserve for Recreation 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.'

Footnote iv) of the approval grants approval of a cash in lieu contribution with regard to condition 8.

As open space for Lot 9501 has already been provided in the form of a cash in lieu payment, 10% of area of Lot 9501 (4704m²) can be accredited as public open space.

Payment of \$150,000 as cash of lieu to meet condition 8 was recorded in the minutes of the Council meeting held by the Shire of Dardanup on the 23 November 2011 - Attachment 17.

13.0 Public Open Space Provision:

13.1 Department of Planning Position:

In 2009, the Department of Planning (DoP) has advised that based on their calculation the original Location 19 has a Gross Subdivisible Area of 132.5135 hectares with deductions for schools, the EPP wetland, floodways and drainage basins - Attachment 18. The required open space would be 13.2513ha.

If the DoP calculation of the Gross Subdivisible Area is accepted, then only a portion of the wetland and wetland foreshore can be considered as public open space. The table below is based on the DoP audit so represents the DoP's position. For the reasons noted, it is maintained that the DoP's position is flawed and not accepted by the landowner.

N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Gross Subdivisible Area				
18 19	Current Audit	Notes:			
Total Area of Parkridge estate	234.1918	Based on 2009 DoP audit – Attachment 18.			
Deductions:					
- High School	-8.7529ha	Based on 2009 DoP audit			
- Primary School	-4.0010ha	Based on 2009 DoP audit			
- Roads	-5.1 Eaton Drive	Based on 2009 DoP audit			
Floodway / Regional Open Space	-79.7319ha	Based on 2009 DoP audit			
Pump station	- 1025m ²	Based on 2009 DoP audit			
EPP Wetland	- 2.5996ha	Based on 2009 DoP audit			
Drainage basin Lot 438 Reserve 50572 (Area G)	- 0.0250ha	Based on 2009 DoP audit			
Drainage basin Reserve 45531 (Area C)	3904ha See note ¹	Based on 2009 DoP audit This water body was deducted from the gross subdivisible area in the DoP audit however engineering advice indicates drainage was installed after subdivision as required by a			

		Shire drainage report (Attachment 4).
Drainage basin Reserve 48933 (Area J)	7500ha See note ²	² This water body was deducted from the gross subdivisible area in the DoP audit however engineering advice indicates it has no drainage function (Attachment 4 and 13).
Total deductions	- 101.4533	The 2009 DoP audit calculated deductions = 101.6783 ha (included drainage in area C, G& J). The audit calculation was incorrect and is actually 101.4533.
Gross Subdivisible Area	132.7385 ha	DoP audit = 132.5135ha The 2009 DoP audit calculated the GSA as 132.5135ha. The audit calculation was incorrect and is actually 132.7385 ha
10% public open space required:	13.27385 ha	DoP audit = 13.2513ha The 2009 DoP audit calculated the POS requirement as 132.5135ha. The audit calculation was incorrect and is actually 132.7385 ha

The DoP audit excluded 0.3904ha for drainage within Reserve 45531, and 0.7500ha for drainage within Reserve 48933, so these areas are not included as open space in the table below.

	WAPC:	Reserve No.	2009 DoP Audit Area	Comment
Α	89548	45333	4169m ²	As per DoP audit
В	89548	44580	1.6977ha	As per DoP audit
С	95713	45531	5825m² (total area 9729 m² – 3904m² drainage = 5825)	The DoP audit allocated 5524m² as POS however the figure is incorrect and should be 5825m²
D	95713	45358	2.9057ha	As per DoP audit
E	108130	46255 – Lot 6060	1664 m²	As per DoP audit.
F	118210	48392 – Lot 1028 (excluding EPP lake)	4939 m²	As per DoP audit.
G	118006	50572 - Lot 437	2025m ²	As per DoP audit (used 0.20253)
G	118006	50572 – Lot 438	1231m² (total area 1481 m² – 250m² drainage = 1231)	The DoP audit allocated 0.12306m² as POS (excluding 0.025ha drainage) however the figure is incorrect and should be 1231m²
Н	125521	48364		Not included by DoP
I	Included as F as per DoP calculation	-		
J	127566	48933	1.6195 ha (total area 2.3695 ha – 7500)	As per DoP audit which excluded 7500m ² for drainage
K	127566	48870	1451m²	Agreed DoP audit
L	46255	46225 – Lot 878	270m²	Agreed DoP audit
M	91326	43641	-	Not included by DoP
N	141716	Cash in lieu of open space (\$150,000)	-	Not included by DoP

13.2 Parkridge Group Pty Ltd

Scenario 1:

Scenario 1 assumes that no open space has been approved for use as drainage by the subdivider and that no cash in lieu has been paid for any subdivision with the exception of WAPC 141716 (Attachment 16).

It assumes that the wetland and wetland buffer are open space so the Gross Subdivisible Area has been re-calculated using the DoP deduction table in Attachment 18 as a base.

This scenario concludes that there is already an over provision of POS by 8,500m² taking into account the entire subdivisible area. If this scenario is accepted no further provision of POS would technically be required for the subdivision of the balance land holding.

	Gross Subdivisible Area			
J. 189 - 1 186;	Current Audit	Notes:		
Total Area of Parkridge estate	234.1918	Based on DoP audit		
Deductions:				
- High School	-8.7529ha	Based on DoP audit and checked cadasta		
- Primary School	-4.0010ha	Based on DoP audit		
- Roads	-5.1 Eaton Drive	Based on DoP audit		
Floodway / Regional Open Space	-79.7319	Based on DoP audit		
Pump station	- 1025m²	Based on DoP audit and checked cadasta		
Total deductions	- 97.68	DoP deductions = 101.67ha (included drainage)		
Gross Subdivisible Area	136.51 ha	DoP audit = 132.5135ha		
10% public open space required:	13.65 ha	DoP audit = 13.2513ha		

Vac.	Open Space Provision				
	WAPC:	Reserve No.	Area:		
Α	89548	45333	4169m ²		
В	89548	44580	1.6977ha Note 1		
C	95713	45531	9729 m ^{2 Note 1}		
D	95713	45358	2.9057ha Note 1		
E	108130	46255 - Lot 6060	1664 m ²		
F	118210	48392 - Lot 1028	2.7625m ²		
G	118006	50572 - Lot 437	2025m ²		
G	118006	50572 - Lot 438	1481m ²		
Н	125521	48364	739m²		
1	126335	48392 - Lot 300	3310m ²		

	WAPC:	Reserve No.	Area:
J	127566	48933	2.3695 ha
K	127566	48870	1451m ²
L	46255	46225 – Lot 878	270m ²
M	91326	43641	1.81ha
N	141716	Cash in lieu of open space (\$150,000)	4704m ²
	Sub Tot	al 14.5	0 ha (overprovision 8500m²)

Note 1: The Shire of Dardanup agreed that Areas B and C form part of the public open space provisions for Parkridge Estate. The Shire accepted that a 2.6744ha portion of Area D formed part of POS. The Shire POS audit was conducted in 2002 therefore only examines early stages of subdivision – Attachment 6.

Scenario 2:

This scenario assumes that no open space has been approved for use as drainage by the subdivider and that no cash in lieu has been paid for any subdivision with the exception of WAPC 141716 (Attachment 16). It deducts the EPP wetland lake from the Gross Subdivisible Area and only includes a portion of the wetland and its buffer as open space. It credits all drainage basins as open space.

Under scenario 2, there is a shortfall of POS of 1.49ha. If scenario 2 is agreed, the 1.49ha shortfall in POS may be made up in the subdivision of the balance portion of the land holding.

La Trigge annoughour	Gross Subdivisit	ole Area
Mark Black State	Current Audit	Notes:
Total Area of Location 19	234.1918	Based on DoP audit
Deductions:		
- Wetland Lake Lot 1028	-2.5996ha	Based on DoP audit Note: Portion and wetland buffer credited as open space
- High School	-8.7529ha	Based on DoP audit and checked cadasta
- Primary School	-4.0010ha	Based on DoP audit
- Roads	-5.1 Eaton Drive	Based on DoP audit
Floodway / Regional Open Space	-79.7319	Based on DoP audit
Pump station	- 1025m²	Based on DoP audit and checked cadasta
Total deductions	- 100.28ha	DoP deductions = 101.42 ha (included drainage basins)
Gross Subdivisible Area	133.91 ha	DoP = 132.7635ha
10% public open space required:	13.39 ha	DoP audit = 13.2763

L by		Open Space Provision	The state of the s
p I	WAPC:	Reserve No.	Area:
A	89548	45333	4169m ²
В	89548	44580	1.6977ha Note 1
C	95713	45531	9729 m ^{2 Note 1}
D	95713	45358	2.9057ha Note 1
E	108130	46255 - Lot 6060	1664 m ²
F	118210	48392 - Lot 1028 (excluding EPP lake)	4939 m² (as per DoP audit)
G	118006	50572 - Lot 437	2025m ²
G	118006	50572 - Lot 438	1481m ²
H	125521	48364	739m²
T	126335	48392 - included in F (wetland buffer)	
J	127566	48933	2.3695 ha
K	127566	48870	1451m ²
L	46255	46225 - Lot 878	270m ²
M	91326	43641	1.81ha
N	141716	Cash in lieu of open space (\$150,000)	4704m ²
	Sub To		ha (shortfall 1.49ha)

Note 1 - The Shire of Dardanup agreed that Areas B and C form part of the public open space provisions for Parkridge Estate. The Shire accepted that a 2.6744ha portion of Area D formed part of POS. The Shire POS audit was conducted in 2002 therefore only examines early stages of subdivision - Attachment 6.

14.0 Additional planned open space

The Western Australian Planning Commission issued approval on the 12 December 2011 for Lots 9501 and 9502 (WAPC Reference: 144999) - Attachment 19. The plan proposed two areas of public open space totalling 9380m². Following Review at SAT these two areas of POS and some lots were removed from the approval area.

15.0 Assessment - Liveable Neighbourhoods

The Department of Planning (DoP) audit conducted in 2007 has been outlined in this report. The DoP audit in 2007 was flawed as it did not have regard for Liveable Neighbourhoods.

The Department of Planning advised in correspondence dated 11 May 2009 that 'the POS was based on the WAPC Policy DC 2.3 and not the Liveable Neighbourhoods Policy as the subdivision applications were not requested to be determined under the Liveable Neighbourhoods Policy" – Attachment 18.

Any audit of open space has to have regard for Liveable Neighbourhoods which is an operational policy of the Western Australian Planning Commission used to assess structure plans and subdivision. The Department of planning website acknowledges that 'in general, Liveable Neighbourhoods replaces current WAPC development control policies. Where there is conflict with existing policies, liveable neighbourhoods will prevail...' - Attachment 20.

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ATTACHMENT 1

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ATTACHMENT 1

PARKRIDGE ESTATE CHRONOLOGY OF THE HISTORY OF THE STRUCTURE PLANNING, REZONING AND SUBDIVISION OF PARKRIDGE ESTATE

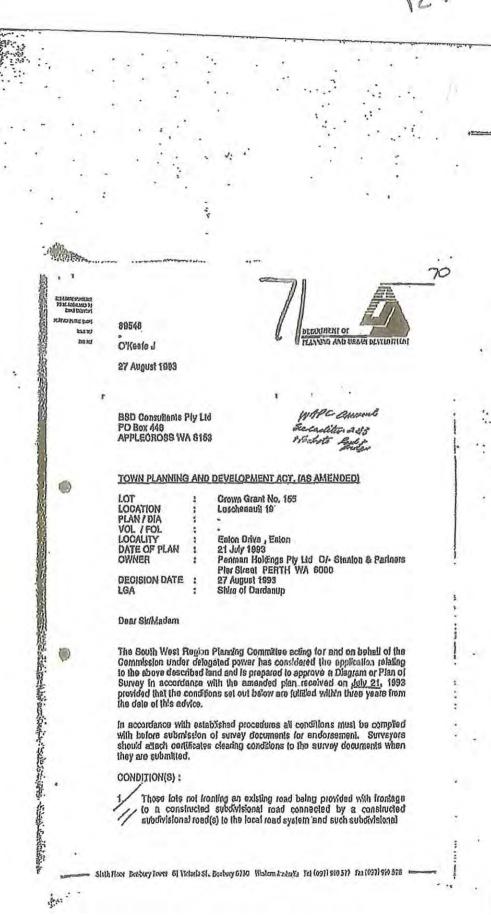
Date	Event	Document Reference	Page	Ref
December 1991	Shire of Dardanup resolved to initiate Amendment 47 to TP3: Location 19 was rezoned to Residential, Residential Development Area and Recreation	WAPC Document (pages 98-157) Report and Amendment to Shire of Dardanup Town Planning Scheme 3 Amendment 47	1	W1
February 1993	Shire of Dardanup adopt final approval and Parkridge Estate rezoning residential R15 and Recreation	WAPC Document (pages 98-157 Report and Amendment to Shire of Dardanup Town Planning Scheme 3 Amendment 47	1	W1
July 1992	EPA Advice re: Amendment 47 of Shire of Dardanup Town Planning scheme 3 And Copy of Structure Plan 9	WAPC Document (Arbitration)	2	ARB 1
June 1993	Shire of Dardanup Fax Correspondence to BSD Consultants And Plan of Subdivision	Parkridge Document Fax Correspondence dated 25 June 1993	3	P1
July 1993	Final rezoning approval endorsed by the Minister of Planning	WAPC Document Shire of Dardanup Town Planning Scheme No3 amendment 47. (SSO Bundle Item 13)	1	W1
August 1993	Department of Planning and Urban Development (DPUD) approval to subdivide land Into four super lots DPUD approval 89547	WAPC Document (Arbitration) DPUD approval 89547 Date: 27 August 1993	4	ARB 2
August 1993	Plan of four Super Lot Sub - Division	Parkridge Document Prepared by John bullock and Ass. Consulting Land Surveyors	5	Ρ2
Jul - Aug 1993	Parkridge (Penman Holdings Pty Ltd) appeal to Minister of Planning re conditions of	WAPC Document (Arbitration) Appeal Document.	6	ARB 3

	WAPC 89547	(Prepared by BSD Consultants.)		
		The document assist in providing the historical background to the position of the parties in regards to the POS and other matters in 1993		
September 1993	BSD Consultant's letter to Department of Planning and Urban Development	WAPC Document (Arbitration) Confirmation of meeting with Larry Guise and reference to agreements to changes and deletions of Conditions to DPUD approval 89547	7	ARB 4
October 1993	South West planning Committee resolved to endorse Department of Planning approving the agreements of September 1993 and modified super lot subdivision. Resolved and Recorded 21 October 1993	WAPC Document (Arbitration) SW Planning Committee documents. Date Title: D11 200310 New condition approval. Job No: 1426 File No: 91326	8	ARB 5
October 1993	Department of Planning and Urban Development (DPUD) approval to subdivide land into six super lots DPUD Approval 91326	WAPC Document (Arbitration) DPUD Approval 91326 Date: October 1993	9	ARB 6
October 1993	Completion of survey of super lots as per DPUD approval 91326	Parkridge Document John Bullock & Ass. Surveyors Letter and attached surveyor Plan of Super lots	10	P2
November 1993	Eaton Developments Pty Ltd (Parkridge) Undertaking to Shire of Dardanup And Shire of Dardanup clearance Document	Parkridge Document Documents that satisfied "POS Undertaking" condition in DPUD Approval 91326	11	РЗ
August 1993	Subdivision Approval of Super Lot 2	WAPC Document (Arbitration) DPUD Approval: 89548. Date: 27 August 1993.	12	ARB 7
August 1993	Location of subdivision Approval 89548 in Parkridge Estate	Parkridge Document	13	P4

August 1995	Subdivision Approval Lot 7(originally Super Lot 1) and Part Lot 2 Plus plan of proposed subdivision	WAPC Document WAPC Approval: 97513 Dated: 24 August 1995	14	W 2
August 1993	Location of Sub division Approval 97513 in Parkridge Estate	Parkridge Document	15	P5
August 1995	Lots 1001 High School site created and sold to Education Dept. And Lot 1000 being an area of 2,5744 hectares created as vested as POS in accordance with WAPC Approval: 97513	WAPC Document Office of Tittles Diagram 90100	16	W 3
October 1995	Lots 1006 being 9729 square meters created as vested as POS in accordance with WAPC Approval: 97513	WAPC Document Office of Tittles Diagram 91019	17	W4
November 1996	Subdivision approval of part of land approved in DPUD approval 89548	WAPC Document WAPC Approval 101406 Dated: November 1996	18	W5
November 1996	Location of Subdivision Approval 101406 in Parkridge Estate	Parkridge Document	18	P6
January 1997	Dept of Planning advice to the Shire of Dardanup Requesting Eaton structure Plan review	WAPC Document Correspondence; Ministry of Planning to CEO Shire of Dardanup, Attention Mr Joe O'Keefe	19	W6
November 1998	Subdivision approval of portion of land approved in August 1995 WAPC 97513. Owner Nix Pty Ltd WAPC Approval 108130 with attached Sub division Plan	Dated: 24 January 1997. WAPC Document WAPC Approval 108130 Dated: November 1998	20	W7

November 1998	Location of Sub division Approval 101406 in Parkridge Estate	Parkridge Document	20	P7
March 1999	Subdivision approval for approximately 200 lots. Being Lots2, 3, 4 and 6. Together with Subdivision Plan WAPC Approval 108764	WAPC Document WAPC Approval 108764 Dated: March 1999	21	W8
March 1999	Location of Sub division Approval 108764 in Parkridge Estate	Parkridge Document	21	P8
May 2002	Subdivision Of Part Lot 3, 4 and 6. (Approval 108764 expired.) Advice Note: Public Open space audit be undertaken to determine the amount of POS vested to date.	WAPC Document WAPC Approval 118210 May 2002	22	W9
May 2002	Location of Sub division Approval 118210 in Parkridge Estate	Parkridge Document	22	P9
May 2002	Shire of Dardanup Public Open Space Audit as requested by Parkridge in keeping with Advice note in WAPC Approval 118210	Parkridge Document Facsimile Correspondence: Shire of Dardanup to Gray and Lewis (Parkridge Planners) together with relevant schedules.	23	P10
September 2003	Subdivision approval WAPC 118006 Together with plan of subdivision	WAPC Document WAPC Approval 118006 September 3003	24	W10
September 2003	Location of Sub division Approval 11806 in Parkridge Estate	Parkridge Document	24	P11
August 2004	Subdivision approval of small portion of land and the approval to close access to Eaton Drive. Portion of land was included in WAPC approval 118210	WAPC Document WAPC approval 125521 Date: August 2004	25	W11
August 2004	Location of Sub division Approval 118210 in Parkridge Estate	Parkridge Document	25	P12
December 2004	Subdivision approval 126335 together with plan of proposed subdivision	WAPC Document WAPC Approval 126335 Date: December 2004	26	W12

ATTACHMENT 2



umpundaat TATHATATA WAYA GAY DEGIVERAL The applicant is further advised that the Eocal Authority requires a minimulm width for road reserves of (6 metres, with a 6 metre carriageway, while laneways with a minimum road reserve of 10 metres and a 3 metro carriageway can be provided where such laneways serve a maximum of 4 The applicant & Council are further advised that the Environmental Protection Authority has recommended that stormwater drainage be contained on-site and has advised that it is not appropriate for the compansation/nutrient stripping basins to be placed within the flood prone Yours faithfully CAROL ANDERSON SECRETARY SOUTH WEST REGION PLANNING COMMITTEE FOOTNOTE TO COUNCIL: Council is also advised to lists with the Emironmental Protection Authority regarding measures to be used for dust control during the development stage. 0 Council is further advised that the Committee is concerned with the potential visual impact of uninterrupted uniform tending along the length of Hands Avenue. It is recommended that varying treatments be considered to amellorate the impact. & Ali chin. such floor bushing from all kinds St. Bricky GLA Federal Andread to 10001 910 sty. Included St.

PLANNING AND TERM DIVILOPHIAL

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road(s) being constructed and drained at the subdivider's cost to the repedications and satisfaction of the Local Authority. As an alternative, the Committee is prepared to accept the subdivider paying to the Local Authority the cost of each works as estimated by the Local Authority subject to the Local Authority subject to the Local Authority giving an assurance to the Committee that the works will be completed within a reasonable period acceptable to the Committee. (LAY

(

Salisfactory arrangements being made with the Local Authority for assistance in the construction of the Corijo River Bridge linking Estim and Austraind via Hands Avenue. (LA)

Hands Avenue being constructed and drained at the subdivider's cost, to the specifications and satisfaction of the Lecal Authority. (LA)

Street corners within the subdivision being truncated to the standard truncation of 8.5 metres.

The culde-see heads being designed to the satisfaction and specifications of the Local Authority. (LA)

Cul-de-sac head treatment to be to the satisfaction and specifications of the Local Authority. The linkages between cut-de-sac heads and accessways or laneways between cut-de-sac heads shall be designed to provide a high standard of residential amenty and a plan of development shall be submillied to Council for its approval that addresses paving, manoeuvring spaces, lighting, fearing, planting and construction of crossovers. (LA)

The pedestrian access-way(s) within the subdivision being shown on the Diagram or Plan of Survey as such, and vested in the Crown under Section 20A of the Town Planning and Development Act (as amended), such land to be caded free of cost and without any payment of compensation by the Crown.

The pedactrian accessway(s) within the subdivision being constructed and drained at the subdividor's cost to the specifications of the Local Authority. (LA)

A 0.1 metre vide pedesiden accessway being provided along Hands Avenue in order to prevent access onto Hands Avenue. Such land to be shown on the Diagram or Plan of Survey as a pedesiden accessway, vested in the Crown under Socilon 20A of the Town Planning and Development Act (as amended) and caded free of cost and without any payment of compensation by the Crown.

Sith flow Berkey Touri 61 Victor St. Tentroy 6710 Web m trained Tel 1997 510311 Tou 10371 510315 =

野野ない。 baki PLANACIG AND UZBAJI DIVELOPSINI 3 Oyclaways, dual use paths and foolpaths being constructed at the subdivider's cost to the specifications and satisfaction of the Local Authority. As an alternative, the Committee is prepared to accept the subdivider paying to the Local Authority the cost of such works as estimated by the Local Authority, subject to the Local Authority giving an assurance to the Committee that the works will be completed within a reasonable period acceptable to the Committee. (LA) The land being graded, and stebilised at the subdivider's cost to the specification and satisfaction of the Local Authority. 0 The land being filled and/or drained at the subdivider's cost to the sals/faction and specifications of the Local Authority, and any easements and/or teserves necessary for the implementation thereof, being provided tree of cost to the Council and in accordance with its requirements. (LA) The subdivider preparing an Overall Draknage Plan plan for the Salon Structure Plan area, to the satisfaction of the Local Authority and at the cost of the applicant. [LA] All stormwater to be contained on-site, to the specifications and satisfaction of the Local Authority and the Leschenaul Inlet Management Authority. [LALIMA] Confilication from the Water Authority that arrangements have been made with that body so that connection to an adequate water service (1) will be available to the love proposed by this application. (WA) Gerification from the Water Authority that arrengements have been made with that body so that connection to an adequate sewerage service will be available to the let(s) proposed by this application and such easements as may be required by the Water Authority being greated free of cost to that Authority. (WAY The average of the election of the plant submitted \$\forall \). The split submitted \$\forall \forall \) is a submitted \$\forall \forall \) is a submitted \$\forall \forall \) is a submitted \$\forall \forall \] is a submitted \$\forall \forall \fora

Uniform fending along the boundaries of all of the proposed lots abuilting Hands Avenue to be constructed to the specifications and self-standion of the Local Authority. (LA)

Salbfles BudgyTour Glifclalest: Beday 6190 bishandasado tell@71610511 Indoctions555 -

· BONTONIA. 67 namena nat DEPARTMENT OF מאג האותאניו MANTON THE PASKE The ballleaxo access leg(s) being constructed and defined at the subdivider's cost to the specification and satisfaction of the Local Authority. (LATA) Selislactory arrangements being made with the Ministry of Education, to ensure the transfer of primary school sites to the Ministry in due course. (EDD) Such padmount sites as may be required by the State Energy Commission being transferred free of cost to the Commission, with the locallons of the sites being to the satisfaction of the Local Authority. (SEG) (LA) Certification from the State Energy Commission that linancial and other requirements have been satisfied for the provision of underground placificity to the lots approved under this application. Carification from the State Energy Commission of WA that financial and other requirements have been satisfied for the removal and colocation of State Energy Commission plant or equipment incated on or near the proposed subdivision. (SEC) Certification from the State Energy Commission that satisfactory arrangements have been made for the provision of desembnis for State Energy Commission existing or future equipment. いないかないとうかいないし かったからなしょうこう The subdivider making arrangements setislactory to Council to undertake measures to control dust during site preparation and constaution, (LA) Measures being taken to the satisfaction of the Local Authority to ensure identification and profection of any vegetation on the site which Council considers worthy of retention prior to commencement of site works. (LA) The applicant is advised that the Committee edvises that Condition No.2 should not be interpreted to longly that it requires the construction to be at the subdivider's cost but this is a metter for negotiation between the subdivider and the Local Authority. The applicant is elso advised that no Diagrams of Survey will be endorsed until such time as the State Planning Commission has endoused Diagrams of Survey for DPUD Ref:89547 and the Office of Titles has issued Cortificates of Title for the approved fots accordingly. 13 Shia Heat Brain Town of Which Sh. Heatury 2219 House Amin's realizations in the town 910 579

174,88 ha FITT

Subdivision Date: August 1993

DPUD Reference: 89548 (Refer item 4 SSO Bundle 4859 -11)

ATTACHMENT 3

AVESTEEN AUSTRALIAN TRANSPORTE CONVESSOR



24 Appul 199.

Civiliacs Pry 13d 8/10 Walder Road

TOWN PLANNING AND DEVELOPMENT ACT. (AS AMENDED)

OCATION I

OLUME/FOLIO 2018/419/2018/4 OCALLEY Eulon Dry Eulon

DATE OF PLAN

Ellor Development Psy Ltd. C/: Sunniff really, Woodyale

1) Woodvale Shopping Centre Woodvale Brulevard

DECISION DATE 2 Avguar 1995 LOA Shire of Dandana

Dear Sh/Midan

The Computation has considered the application relating to the above described land and its prepared to approve a Disgram or Plan of Suprey in accombace with the amended plan received on 9/August, 1995 who who conducts set out below have been fulfilled. This decision is valid for three years from the date of this navice.

In abcordance, van cambiland procedures all conditions must be compiled with before submitted on paying documents for endoments. Surveyors should attach certificates eleging

The abovey allown in briggets adelity, the unitority of avery, personable for advance the Commission of personal decisions. The averaged allowed the cylin the promined authority of the Explication because to authority and obtain advice from the authority that the enditions have been incomplete thould be allowaged with the Plants. Diagram of Surger.

It is adviced that applied the applicant to agreeved by this decision there is a right of appears to the provisions of Section 26 of the Thompson Plants.

It is gothed that should the applicant to agenered by this decision there is a right of appeal product to the provisions of Section 26 of the Abyar Planning and Development Act 1928 (as amended). Such an appeal must be abbrilled in Accordance with Part V of the Act which 60 days of the dag of this decision. When an application is approved subject to a condition(a) the applicant should this evint a committed multiplies by a permitted for advising the Committee of the Condition as soon as possible to establish any detailed regularized to be condition and in order to include a possible to establish any detailed regularized the condition and in order to include a possible to establish any detailed regularized the condition and in order to include a tight of appeal in the event this applicant considers has requirements are operator.

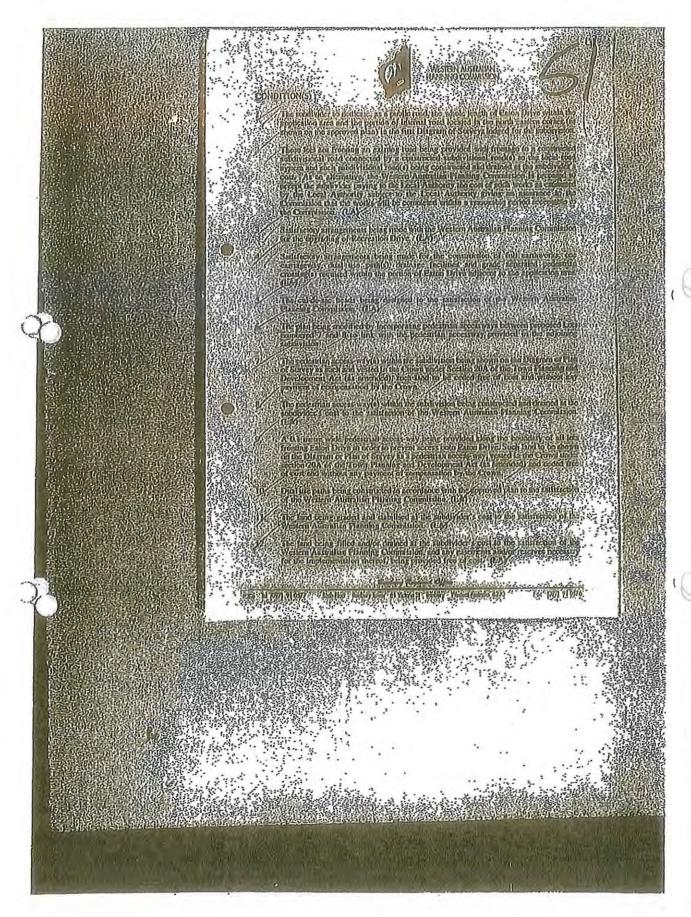
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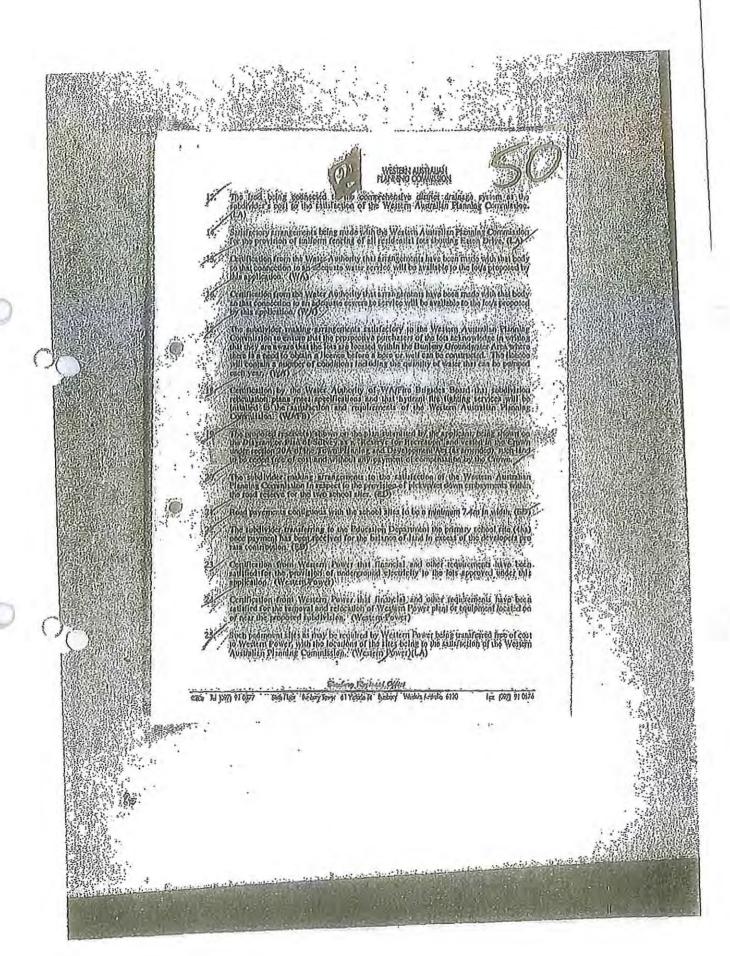
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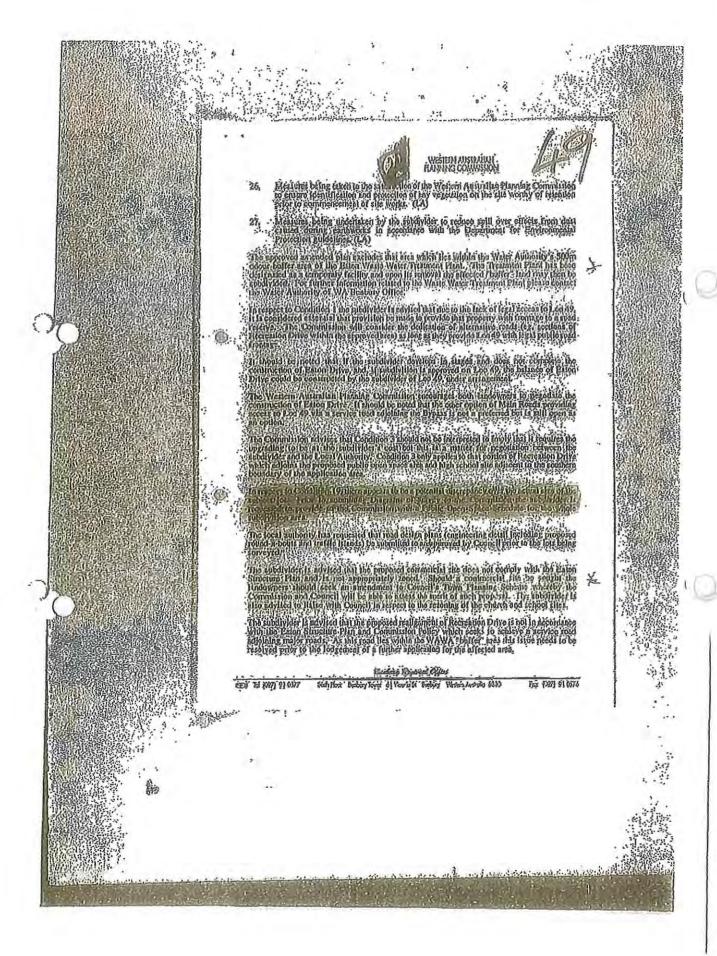
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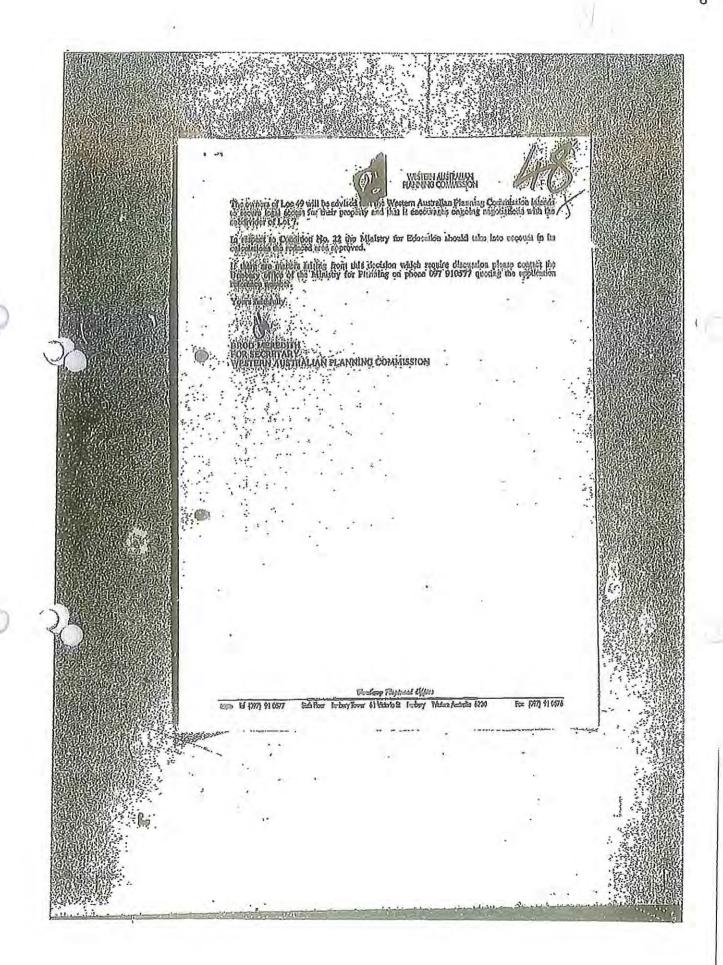
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ATTACHMENT 4

(Appendix ORD: 1212g1C)c2

Gray Lewis

From: To:

"Craig Pippin" < Craig@mpmdc.com.au> "Gray Lewis" <perth@graylewis.com.au>

Sent:

Tuesday, 12 November 2013 2:24 PM

Subject:

RE: Parkridge estate - drainage and open space

Hi Liz,

In regards to Area C, I am unsure of the original purpose of this parcel of land or what designation it was given when it was given up by Parkridge. However, I do recall a drainage study that was completed by TME in about 2002/2003 for the Shire of Dardanup that showed this site for a drainage basin.

Subsequently when I designed the Bethanie Fields retirement village (the land parcel around Area C) Bethanie constructed the drainage basin for the Shire, in accordance with this drainage study. So yes the basin was constructed after the land around it was subdivided. It was constructed to compensate upstream flows from Murdoch Drive etc to the south, before they discharged down Eaton drive and eventually to the Collie river.

With regards to area J, again I am unsure I was not the engineer for the Estate at the time. However, I have noted previously that the existing water body within this area does not appear to receive stormwater from the drainage network of the Estate. There is an outlet pipe that is noted on the previous design drawings as being a high level outlet pipe. Unfortunately the Shire have never been able to provide me with a drainage study for this area so I cannot confirm if the water body was existing and had to be kept or was constructed. Based on just looking at the existing drainage pipework in the area it doesn't look like the water body performs a drainage function.

Regards

Craig Pippin

Senior Engineer / Director

MPM Development Consultants

107 Beach Road, Bunbury WA 6230 PO BOX 2035, Bunbury WA 6231 08 9721 4777 / 0488 910 222 mailto:craig@mpmdc.com.au

www.mpmdc.com.au

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From: Gray Lewis [mailto:perth@graylewis.com.au]

Sent: Tuesday, 12 November 2013 1:48 PM

To: Craig Pippin

Subject: Parkridge estate - drainage and open space

Hi Craig,

We are looking at all of the POS provided in Parkridge Estate and part of that means looking at areas for drainage. The Department for Planning have excluded areas for drainage within Reserve 45531 (marked as

ATTACHMENT 5

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288 107

30 November 1998

Civil Technology PO Box 1504

Our Ref

Your Ref Esquiries

CAMMING VALE WA 6970

: 108130 : IMC KELLAR : Kim Muste

TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT ...
LOCATION
PLANDIAGRAM
YOLUME/FOLIO
LOCALITY
DATE PLAN REC
OVAJER Wellington 19 21399/-2077/279

207/12/9 Eafon Drive, Ealon 05 August 1993 Nex Estate Pey Ltd Cr- Civillech P/L 11/22 Pany Avenue DATEMAN WA 6155. 27 November 1998 Shire of Dardenup OWNER

DECISION DATE

Dear SinMadam

- @

The Commission has considered the application relating to the above described lend and is prepared to approve a Diagram or Plan of Survey in accordance with the plan submitted once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice.

In accordance with established procedures, all conditions must be complied with before submission of survey of documents for endorsement. Surveyors should allash certificates clearing conditions to the survey documents when they are submitted.

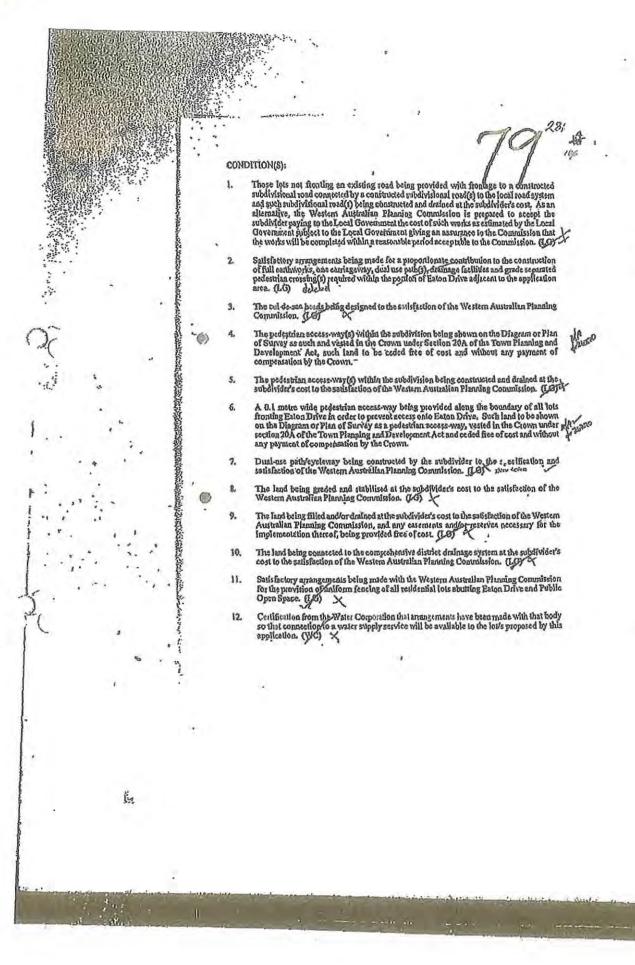
The abbreviations in brackets identify the authority or agency responsible for advising the Commitselon on clearance of conditions. The subdivider about links with the nominated authority on the requirements necessary to cathly the condition and obtain sovice from that authority that the conditions have been met, which should be submitted with the Plan or Diagram of Survey.

It is advised that should the applicant be aggrieved by this decision there is a right of appeal pursuant to the provisions of Section 26 of the Town Planning and Development Act 1928. Such an appeal must be automitted in accordance with Part V of the Act within 60 days of the date of this decision. When an application is approved subject to a condition(s), the applicant should listle with a nominated subvicity (8) responsible for advising the Commission on the clearance of the condition as a non-marked and the condition are applicant to retain a right of appeal in the event the applicant considers the requirements are onerous.

ATTACHMENT 3

E.





Uso

Confilination from the Water Corporation that arrangements have been made with that body so that connection and serverage supply service will be available to the lov's proposed by this application. (WC)

14. The subdivider making arrangements satisfactory to the Western Australian Planning Commission to ensure that the prospective purchasers of the lost acknowledge in writing that the yere aware that the lost are lorated within the Bunbury Groundwater Area where three is a need to obtain a licence before a bore or well can be constructed. The licence will contain a number of conditions including the quantity of water that can be pumped each year. (WARC)

 Certification by the Bush Fires Services that subdivision reticulation plans meet specifications and that hydrent fire lighting services will be installed to the satisfaction of the Western Australian Planning Commission. (BESWA)

The proposed extension has months plan submitted by the applicant being shown on the applicant which who have the continuent a configuration of the continuent as a configuration of the continuent as a configuration of the continuent of the contin

- 17. The modified medical arrangements to the foots faction of the Western Australian Pluming Commission in respect to the provision of pick up (set down embayments within the road reserve for the school site. (ED, LS) pickel (5.745)
- 18. The subdivider transferring to the Education department the primary school site (4ha) once payment has been received for the balance of land in excess of the developers pio rata contribution. (ED) (01/2)
- Cértification from Western Power that financial and other requirements have been satisfied for the provision of underground electricity to the lots approved under this application. (Western Power)
- Certification from Western Power that financial and other requirements have been retisfied
 for the removal and relocation of Western Power plant or equipment located on or near the
 proposed subdivision. (Western Power) (Miskel)
- Such padmount sitts as may be required by Western Power being transferred free of cost to Western Power, with the locations of the sites being to the satisfaction of the Western Australian Planning Commission. (Western Power) (193)
- Measures being taken to the satisfaction of the Western Australian Plenning Commission to ensure identification and protection of any vegetation on the site worthy of retention prior to commencement of site works. (165)
- 23. Measures being undertaken by the subdivider to the satisfaction of the Western Australian Planning Commission to reduce spill over effects from dust caused during earthwights in accordance with the Department of Environmental Protection guidelines.
- 24. The applicant obtaining development approval for the development of a house (s) on the lots view and less than 350m2 in accordance with Clause 2.5 of the Residential Planning Codes, (LS)
- 25. Such easements as may be required by the Water Corporation being granted free of cost to that Corporation. (Water Corporation)

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26. Sadisfactory arrangements being made with the Western Australian Planning Commission to ensure "R30" lots proposed are consistent with that depicted in the Town Planning Scheme for the area. (LG) (LG) (A)

ADVICE:

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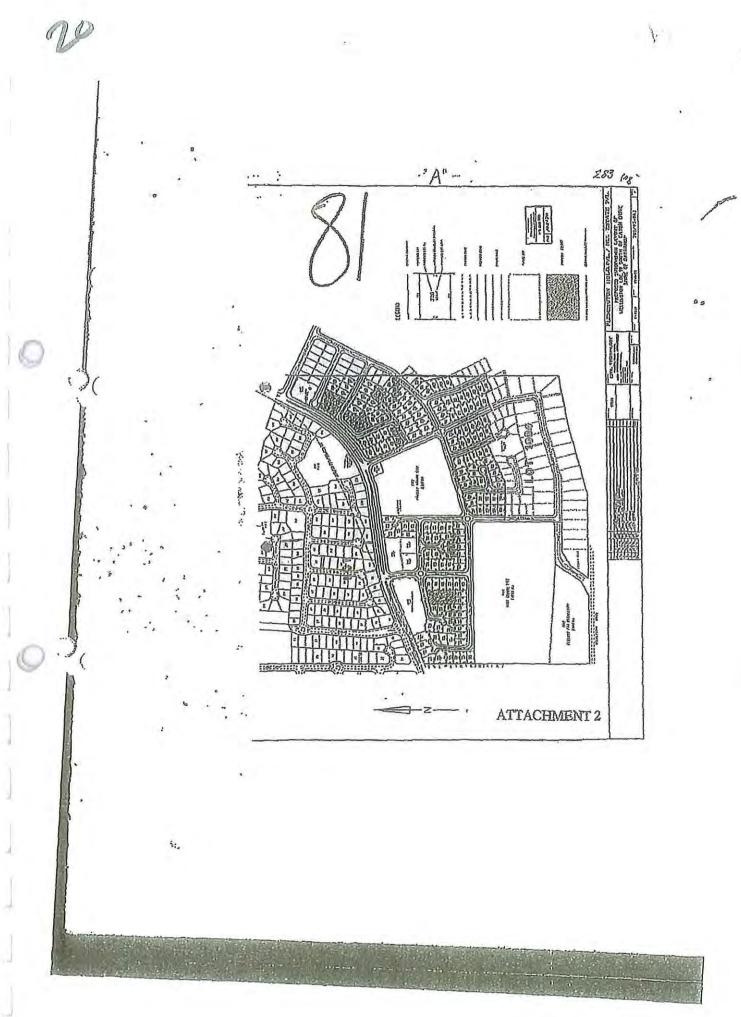
- i) In relation to Condition 1 it is suggested the subdivider diseuss rold reserve widths with the Sittle of Dardunyp and the Education Department. This is to cast that drop off and pick-up areas are appropriately located and the subdivider and landowners of the proposed school site provide equitable land areas.
- ii) The Shire of Dardenep advise that should proposed Lot 347 be proposed for a commercial site in accordance with previous subdivision approved MIP ref: 97513 it would not comply with the Esten Structure Plan and would not be appropriately zoned. In this regard the Council advises that it does not support the initiation of such an amendment.
- iii) The subdivider is also advised that the northern lots nominated as "proposed R30 Lots" on the submitted plan do not reflect the crea of land zoned "Residential R30" under councils Town Planning Scheme. Proposed R30 lots need to reflect that depicted in the Scheme.
- Teletra nause that if timely telephone services are to be provided on demand to finure purchasets provision of nenches should be as per Teletra Estate Policy.
- The Local Government advises the proposed roundshout adjoining the school site should be
 of a suitable design to accommodate his movements.
- vi) The Local Government requests that road design plans (engineering detail including proposed roundabouts and traffic islands) be submitted and approved by Council prior to the lots being surveyed.

Yours falthfully

OAmoleo Brod Meredith For Secretary

WESTERN AUSTRALIAN PLANNING COMMISSION

5.



ATTACHMENT 6

23

38-MAY-2002 14:35 FROM:GRAY & LEWIS PLANNIN 9474 1172

TO: 97251010

P. 2

P.BI

36-YAY-2002 13:02

DARD. SHIRE TECH/DEV. SUCES

03 97240092



Shire of Dardanup FACSIMILIE

PO Box 7016 1 Council Drive Eaton WA 6232 APA: 97 805 829 659 Phone: (08) 9724 0095 Fau: (08) 9724 0091 email: markj@dardanup.wa.gov.au

Our Ref.		Your Ref:			
To: Gray & Lewis.	Attention: Geoff Lewis	Fax No: 9474 1172			
CC:					
From: Mark Jones	Date: 30 May 2002	Pages (Incl. cover)			

RE: PUBLIC OPEN SPACE AUDIT EATON DEVELOPMENTS / PARKRIDGE ESTATE

As requested, please find attached a table indicating the provision of FOS given up in previous stages.

The first stage of the NIX subdivision (Superlot 1003) gave up 1566m² for POS along Eaton Drive and also made contributions to existing POS (Shindi Park). The subdivision reference 108130 copy of conditions are attached.

Pat Luca purchased the remainder of Lot 1003. He was required to obtain a new approval for the stage 4 abutting Eaton Drive (WAPC Ref. 113765) and a 10% POS condition has been imposed. Copy of subdivision plan attached.

In regard to Lot 1004, I recommend that the revised design and supporting information be referred to the Council advisory committee for discussion and endorsement prior to formally lodging. I will call you to discuss further.

Regards

Mark Jones

Principal Town Planner

LANY Democrati Marty Francis

23

39-MAY-2002 14:35 FROM: GRAY & LEWIS PLANNIN 9474 1172

TO: 97251010

P:3

38-MAY-2002 13:02

DARD. SHIRE TECH/DEV. SUCES

68 97246592 P.82

EATON POS PROVISION FOR EATON DEVELOPMENTS / PARKREDGE ESTATES

Under Western Australian Planning Commission policy manual;

- 10% of the gross subdivisional area is required to be given up free of cost.
- This excludes area for schools, major regional roads, public willty sites.
- Foreshore reserves to be given up as a condition of subdivision are also deducted from the gross orea and are not considered as part of the contribution is 10% separate requirement exists also
- · Up to 20% of the 10% provision may be allocated as cash-in-lieu

Subdivision no	Previous let no	Lot orea (ho)	Subdivided into	Provision of POS (ha)	New stracts	File ref
101406	Pi lot 1009 of Well Loc 19	4,9820	43 lets, 2 PAW POS	0.4169	Shetland Avenue Shetland place Breton Way Arabian Gardens	8
101406	Pt lot 1008 of Well Loc 19	1.0671	10 lats	Nil	Salers close Lusitano Avenus	15
101406	Pt lot 1008 of Well Loc 19	1.0184	9 lets	Nil	Sindhi Close Hereford Place	16
101406	Pt lot 1008 of Well Les 19	1.1774	lilots	Nil	Hereford Place	17
101406 89548	of Well Les 19	0.3869	3 lots	MI	Lauitano Avenue	16
89548	Pt lot 2 of Well Lac 19	1.9096	16 lots 1 PAW	Nil	Pinto Close Clydeadule Drive	19
89548	Pt lot 2 of Well Loc 19	1.3419	15 loss	Nil	Jersey Place Leake Street	20
89548	Pt lot 2 of - Well Loc 19	1,0490	13 lots	Nil	Morgan Court	21
69548	Pt lot 2 & 7 of Well Loc 19	1.7458	12lots	Nil	Gienhuon beuleverd	22
89548	Pt lot 2 of Well Loc 19	1,3061	13 lots	Nii	Glenhuon boulavard	53
85548	Pt lot 2 of Well Loc 19	1.2791	14 lots	Mil	Glydesdols drive Morgan court	24

73

3D-MAY-2002 14:35 FROM: GRAY & LEWIS FLANNIN 9474 1172

TD: 97251010

P:4

38-1494-2002 13103

DARD. SHIRE TECHNOEU. SUCES

28 97242292 P. 23

Subdividien no	Prévious let na	Lot area (ha)	Subdivided into	Provision of POS (ha)	New streets	Title file ref
19548	ft lot 1008 of Well Loc 19	4,9173	25 lots, PAW, POS	1.6975ha	Palomino close Clydesdale driva Lusitano Avenue Sindhi Close	25
89548	Pt lot 1008 of Well Loc 19	0.2444	3 lota	Nil .	Sinehi Cloue	26
89548	Prior 1008 of Wall Lee 19	1.3104	13 late	Mil	Appaloosa Ceury Clydasdale Drive	27
101406	Pt for 1016 of Well Loc 19	1,9132	15 lots	Nil	Chavle? Way, Glenhuon Boulevard	60
101406	Of Well Lac 19	2.4609	24 lors, ROW	NII	Bradford Loop Cheviot Way	69
101406	Pt lot 1016 of Well Loc 19	8,3398	27 lots. one PAW	Nil	Bradferd Loop	70
101406	Pt let 1016 of Well Lec 19	1.3427	19 less ROW	MII	Lusitano Avenua	76
101405	Pr let 150 of Well Loc 19	1,8107	18 lots one PAW	Nil	Mustang Loop Leake Street awned by NTC	77
101406	Pt lot 150 of Well Loc 19	0.0895	1 lot	Nil	Glenhuon Boulevord owned by NTC	78
108764	Prior 2 of Well Loc 19	0.2980	4 lots	Nil	Lusitono Avenue	88
108764	Pt lot 2 of Well Loc 19	4,1927	47 lots	Nil	Lusitano Avenue Perendale Loop Simford Avenue Limausin Turn	89
101406	Pt lot 150 of Well Loc 19	0.4224	5 lots	Nil	Mustang Loep Leeke Street owned by NTC	99
114700	Pt lot 1016 of Well Los 19	£1537	10 lete	MI	Glenhuan Baulevard	125

23 . . 30-MAY-2002 14:36 FROM: GRAY & LEWIS PLANNIN 9474 1172

TO: 97251919

DARD. SHIRE TECH/DEV. SUCES

68 97248692 P.04

Subdivision no	Previous lat	area (ha)	Subdivided Inte	Provision of POS (ha)	New streets	File ref
108764	Prior 1021 of Well Loc 19	4.7690	49 lets	Nil	Cleveland Bay Avanue Falabella Cres Charbrey Way	126
108764	Pt lots 600 & 1019 of Well Los 19	2,6471	26 lots	Nil	Leicester Ramble	127
108764	Pt lots 6, 600, 1014, 1016 & 1019 of Well Loc 19	1.9986	15 lots	Nil	Leicester Remble Corno Court Glenhuon Boulevard	128
108764	Pt for 3 of Well Loc 19	Ð,1109	2 le?	Nij	Glenhuon Boulevard	129
108764	Pt lets 600 & 1019 of Well Loc 19	0.1404	2 lots	Nil	Glenhuen Bouleverd Lusitano Avenue	129
111155	of Well Los	0,1970	2 lots	Nil	Appaloosa Court	131
97513	Pt lot 7 of Well Loc 19	3,0567	2 1098	2,6744	Accreation Unive 9.0846ha High School site	SL4
97513	Pt lot 7 of Well Loc 19	23,220	3 lots	Nil	Ecton Drive Recreation Drive 4.00the Primary School site 11.84ha owned by Nin & Luca	SLÓ
97613	Pt lot 7 of Well Loc 19	9.0144	3 lois	0.9729	Eaton Drive Lots 1005 & 1007 now owned by Churches of Christ Homes	51.7
108764	Priote 2 & 7 of Well Loc 13	7,2834	2 lois	2.7625	Eaton Drive Lot 1027 now owned by Flemington Holdings	
TOTAL		*****		- 12-2		
		92.1084	1	8.4242		

ATTACHMENT 7

21-MAY-2002 11:20 FROM: GRAY & LEWIS PLENNIN 9474 1172

TO: 97251010

Your Ref Enquiries : 118210 : 97042 : Shane Kirk

WESTERN AUSTRALIAN PLANNING COMMISSION

20 May 2002

Gray & Lewis Planning Consultants Suite 5/2 Hardy Street SOUTH PERTH WA 6151

TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

PL3, 4&6 Wellington 19

LOCATION PLANIDIAGRAM VOLUME/FOLIO

1953 1/-1974/481, 482, 483

LOCALITY

Clenbuck Boulevard, Eston

DATE PLAN

02 January 2002

OWNER

Parkridge Group Pty Ltd Cl- Suite 9, The Gateway Joondalup Drive

EDGEWATER WA 6027

DECISION DATE

20 May 2002 Shire of Dardanup

Dear Sir/Madam

LGA

The Commission has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the amended plan received on 2 April, 2002 (attached) once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice, which includes the lodgement of the Diagram or Plan of Survey within this period.

In accordance with established procedures all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach condicates clearing conditions to the survey documents when they are submitted.

The abbreviations in brackets identify the authority or agency responsible for advising the Commission on clearance of conditions. If there are no abbreviations, the Commission will clear the condition. Prior to the commencement on site of any works or the implementation of any condition in any other way the subdivider should liaise with the nominated authority on the requirements it considers necessary to satisfy the condition. Advice should be obtained from the relevant authorities that the conditions have been met and a copy of that advice should be submitted with the Plan or Diagram of

The applicant is further advised that under \$24(5) of the Town Planning and Development Act, the amplicant may, within 28 days of being notified of a decision of the Commission to impose a condition(s) on a subdivision approval, make a written request to the Commission to reconsider its condition(s). One of the matters which the Commission will have regard to in reconsidering a condition(s) is whether there is compelling evidence by way of additional information or justification from the applicant to warrant a reconsideration of a condition(s),



South West Office, Sixth Floor, bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230 Tel: [08] 9791 0577; Fax: [08] 9791 0576; TTY: [08] 9264 7535; Infoline: 1910 626 477 e-mall: corporate@plannlvg.wa.gov.au; web address: http://www.planning.wa.gov.au ABH 35 482 341 493

P:3

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Should the applicant be aggreed by this decision there is a right of appeal under Section 26 of the Town Planning and Development Act 1928. The appeal must be submitted in accordance with Part V of the Act within 60 days of the date of this decision. When an application is approved subject to a condition(s), the applicant should liaise with a nominated authority(s) responsible for advising the Commission on the currence of the condition as soon as possible to establish any detailed requirements of the condition and in order to retain a right of appeal in the event you consider the requirements are operous.

CONDITION(S):

- I. Those lots not fronting an existing road being provided with frontage to a constructed subdivisional road connected by a constructed subdivisional road(s) to the local road system and such subdivisional road(s) being constructed and drained at the subdivider's cost. As an alternative, the Western Australian Planning Commission is prepared to accept the subdivider paying to the Local Government the cost of such works as estimated by the Local Government subject to the Local Government giving an assurance to the Commission that the works will be completed within a reasonable period acceptable to the Commission. (LG)
- Street corners within the subdivision being truncated to the standard truncation of 8.5 metres.
 (LG)
- The battleaxe access leg(s) being constructed and drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 4. A 0.1 metre wide pedestrian access-way being provided along Eaton Drive in order to prevent access onto Eaton Drive and Glenhuon Boulevard. Such land to be shown on the Diagram or Plan of Survey as a pedestrian access-way, vested in the Crown under section 20A of the Town Planning and Development Act and ceded free of cost and without any payment of compensation by the Crown. (LG)
- 5 A. dual use nath/evel-man system being constructed in accordance with the nonnead cycle
- The land being graded and stabilised at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- The land being filled and drained at the subdividor's cost to the satisfaction of the Western Australian Planning Commission, and any casements and/or reserves necessary for the implementation thereof, being provided free of cost. (LG)
- Certification from the Water Corporation that arrangements have been made with that body so
 that connection to a water supply service will be available to the lot's proposed by this
 application. (WC)
- Certification from the Water Corporation that arrangements have been made with that body so
 that connection to a sewerage supply service will be available to the lot/s proposed by this
 application. (WC)
- Such easements as may be required by the Water Corporation being granted free of cost to that Corporation. (WC)



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21-MAY-2002 11:20 FROM: GRAY & LEWIS PLANNIN 9474 1172

TO: 97251010

P:

- The land being connected to the comprehensive district drainage system at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 12. 10% of the subdivisible land, in a position to be agreed between the subdivider and the Local Government, being shown on the Diagram or Plan of Survey as a "Reserve for Recreation" and vested in the Crown under section 20A of the Town Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the Crown. (LG)
- The applicant providing a pre and post geolechnical report certifying that the land is physically
 capable of development to the satisfaction of the Western Australian Planning Commission.
 (LG)
- Arrangements being made for the provision of underground electricity to the lots approved under this application to the satisfaction of the Western Australian Planning Commission. (Western Power)
- 15. The transfer free of cost of transformer and high voltage switchgear sites to the Western Power Corporation, with the locations of the sites being to the satisfaction of the Western Australian Planning Commission on the advice of the local government and Western Power Corporation. (Western Power)(Local Government)
- Arrangements for the removal and relocation of power supply plant or equipment located on or near the lots approved under this application to the satisfaction of the Western Australian Planning Commission. (Western Power)
- Certification by the Fire and Emergency Services Authority of WA that subdivision reticulation plans meet specifications and that hydrant fire fighting services will be installed or the satisfaction of the Western Australian Planning Commission. (FESA)
- 18. Uniform fencing to be constructed along proposed Lots 467 472, 817, 806, 794, 783, 771, 760, 743 and 733 to the specification of the Shire of Dardanup and to the satisfaction of the Western Australian Planning Commission. (LG)
 - Satisfactory arrangements being made with the Western Australian Planning Commission for assistance in the construction of Eaton Drive and the Collie River Bridge linking Eaton and Australiand via Eaton Drive. (LG)
 - The subdivider making arrangements satisfactory to the Westign Australian Planning Commission for the preparation and implementation of a Foreshore Management Plan. (LG, WRC)
 - The subdivider to prepare a drainage/public open space management plan to the specification of the Shire of Dardanup and to the satisfaction of the Western Australian Planning Commission (LG)
 - 22. The subdivider making satisfactory arrangements with the Western Australian Planning Commission and at the subdivider's expense for the rehabilitation of the portion of land immediately south, being the earthworks associated with Cleveland Bay Road which has impacted upon the EPP wetland to the specification of the Water and Rivers Commission. (WRC)

21-MAY-2002 11:21 FROM: GRAY & LEWIS PLANNIN 9474 1172

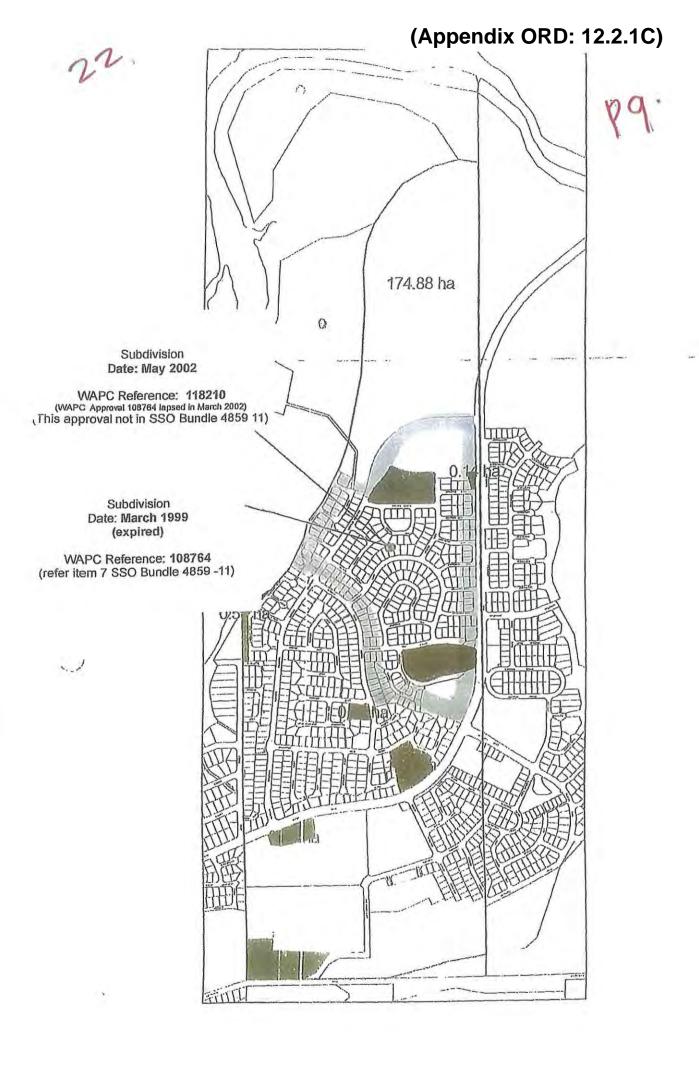
TO: 97251010

P:5

ADVICE:

- i) Construction should not commence until Council has approved detailed origineering plans and specifications of the works, including carthworks, roads and paths, drainage, cleaning, landscaping/rehabilitation and soil stabilisation measures, both during and after construction.
- ii) The Commission's approval should not be construed as an approval to development on my of the lots proposed.
- iii) In respect of Conditions-8 and 9, the service is to be consistent with the current policy and practice of the Water Corporation for the locality and may involve the provision of land (for plant and works) easements and the paymont of financial contributions towards infrastructure. You are advised to contact the Water Corporation at 61 Victoria Street, Bunbury on Telephone (08) 9791 0400 for further information.
- iv) The applicant's attention is drawn to the provisions of Section 20C of the Town Planning and Development Act, 1928 whereby arrangements can be made, subject to further approval of the Commission, for a cash-in-lieu contribution by the applicant to the Local Government, in respect of Condition 12 of this approval.
- In relation to Condition 12, it is recommended that a public open space audit be undertaken to
 ascertain the amount of public open space provided by the subdivider for the Estate.
- vi) In regard to Condition 17, FESA advise that hydrants will need to be installed along all water mains at a ratio of one per 200m and are to be identified by standard road and pole markings.
- in relation to Condition 19, the anticipated gazettal of the Draft Shire of Harvey/Dardanup Joint Guided Development Scheme is early 2002 and will provide guidance on any contributions for Eason Drive and the Collie River Bridge construction. If clearance of Condition 19 is sought prior to the gazettal of the Draft Scheme, the subdivider is to liaise with the Shire of Dardanup in regard to extering into a Deed of Agreement where there should be arrangements to contribute additional costs if there is a shortfall or to receive a reimbursement if appropriate in accordance with the Shire of Harvey/Dardanup Joint Guided Development Scheme No. 1.
- viii) In relation to Condition 20, the Foreshore Management Plan is to address the following:
 - a) drainage
 - b) drainage manugement and associated vegetation rehabilitation works;
 - c) weed management;
 - d) provision of a dual use path(s); and
 - e) uniform fencing.

The scope of the Management Plan, and works to be undertaken by the subdivider, are directly related to matters arising as a direct result of the subdivision of the subject land. In this regard, more comprehensive works beyond these specified above that have been indicated in previous management plans are not considered to be the responsibility of the subdivider. In order to ensure that there is no ambiguity in regard to the subdivider's responsibilities it is recommended that discussions be held with Wuter and Rivers Commission and the Shire of Dardanup to prepare an agreed schedule of works to be implemented. The works undertaken in the foreshore area will be subject to a 2 year maintenance period.



ATTACHMENT 8



Department for Planning and Infrastructure Government of Western Australia

South West Region

Your ref:

Our ref:

402/6/9/1PV2

Enquiries:

Mr Frank Scibilla

5 June 2007

Parkridge Group Pty Ltd PO Box 1684 WANGARA WA 6947

Attention: Mr Thurston Saulsman

Dear Mr Saulsman

PUBLIC OPEN SPACE AUDIT - PARKRIDGE ESTATE, EATON

I refer to your letter dated 12 March 2007 and background information concerning whether Parkridge Estate has to provide the 10 percent public open space (POS) on the balance of land now under structure planning.

According to the Department's calculations, the subject land (which includes previously subdivided land on Location 19, the undeveloped lots of Lot 9501, 9502 and 9504 and excludes the land provided for schools) requires 13.27 ha of POS. Approximately 8 ha of POS has been previously provided and this means there is a shortfall in POS of approximately 5.25 ha. The DPI's calculation is based on Commission Policy DC 2.3 'Public Open Space on Residential Land' in terms of the usability of areas for land-based recreational pursuits. This means that the provision of permanently inundated drainage basins and Environmental Protection Policy (EPP) Lakes on POS lots are excluded as POS areas. A table of calculations is attached for you information

Please be further advised that the Commission would consider the provision of open space for all-year round active recreational pursuits on land which lies above the Floodway line, such as on Lot 9502, which would be highly desirable, given a dearth of such facilities in the locality. The Commission has indicated an interest in purchasing Regional Open Space on Lot 9503 and issues which relate to flooding and the development of recreational activities will be addressed at that stage for district purposes as distinct from local purposes. The latter process will require consultation with the appropriate agencies on the merit of developing district fields.

In your letter you place emphasis on previous calculations and previous agreements made with the Shire to justify adequate open space. It is not clear that the previous arrangements with the Shire comply with Commission Policy requirements and, furthermore, the Commission and the Department were not party to the aforesaid agreements.

It should be emphasised that the concept plans prepared at the rezoning stages did not conclusively address the suitability of the proposed open space areas for recreational pursuits. The Commission uses the structure plans to provide the framework for detailed planning to occur at the subdivision stage, in particular when noting that drainage and urban design standards change overtime.

Please do not hesitate to contact me or Mr Frank Scibilia of this office if you have any further queries.

Yours sincerely

MICHAEL SCHRAMM

DIRECTOR, SOUTH WEST PLANNING

cc Mr Robert Quinn, Shire of Dardanup

enc POS Calculation

POS AUDIT PARKRIDGE ESTATE, EATON

16 APRIL 2007

DC.2.3 Formula

1. Total Area:	Area
i)The parent lot	255,20 ha
ii) Lot 9504 - (Owned by a Parkridge company)	2.2261 ha
iii) Lot 9509 (all Floodway)	16.1388 ha
iv) Lof 9503 (All Floodway)	17.16 ha
v) Lot 9502 (3.050 ha Floodway)	33,6749 ha
vi) Lot 9501	4.7047 ha
vii) Lot 5679 (previously Lot 5) (43.3831 ha Floodway)	44.2311 ha
viii) Lot 1004 (Not owned by Parkridge)	9.864 ha
ix) Lot 7000 Retirement Village (Not owned by Parkridge)	
x) Lot 999 (Was sold by Parkridge as a residential lot)	0.2476 ha
ix) Lot 9002 (Not owned by Parkridge)	2.2962 ha .
x) Subdivided land	116,069 ha
Total Area of Parkridge Estate:	(234.1918 ha)
2. Deductions from land owned by Parkridge Estate and Foreshore reserves	
i) Primary School Area	4.001 ha
ii) High School Area	8.7529 ha
iii) EPP wetland - Lot 1028 (Reserve 48392)	2.5996 ha
iv) Floodways (Foreshore areas mentioned in iii) - vii) of Total Area which includes dedicated drainage areas but not POS areas)	79.7319 ha
v) Drainage Basin - Lot 4 (Reserve 45531)	0.3904 ha
vi))Drainage Basin - Lot 874 (Reserve 48933)	0.7500 ha ===
vii) Pump Station - Lot 873 (Reserve 49042)	0.1025 ha
viii) Eaton Drive	5.1 ha
Total Deductions:	101.4283
3. Gross Subdivisible Area:	132.7635ha
4. 10 percent POS requirement	13.2763 ha
	8% as land contribution = 10.6210 ha 2% as cash-in-lieu contribution = 2.6553 ha

13

5.Public Open Space - Existing and Proposed on Structure Plan as agreed by the Shire and the Commission (including agreed credits to non- gross subdivisible areas)	
l) Lot 874 (Reserve 48933) excluding drainage basin/lake	1.6195 ha
ii) Lot 1028 (Reserve 48392) excluding EPP lake	0.4939 ha =
ili) Lot 4 (Reserve 45531) excluding drainage basin/lake	0.5524 ha
lv) Lot 5820 (Reserve 45333) Shetland Place	0.4169 ha
v) Lot 5786 (Reserve 44580)Sindhi Close	1.6977 ha
vi) Lot 19 (Reserve 45358) Recreation Drive	2.9057 ha
vii) Lot 875 (Reserve 48870) Peninsula Rd	0.1451
viii) Lot 6060 (Reserve 46255) Eaton Drive verge area	0.1936 ha
6.Total POS provided	8.0248 ha
7.0verall shortfall in POS	5.2515 ha

indertis while begins

ATTACHMENT 9

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Mo

Our Ref

: 118006

Your Ref

Enquiries

: Shane Kirk

18 September 2003

Thompson Mc Robert Edgeloe Pty Ltd. P O Box 733 BUNBURY WA 6231

TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

Pt 6 & 1014

LOCATION

Wellington 19

PLAN/DIAGRAM

19531, 95181/-

VOLUME/FOLIO

1974/483, 2212/391

LOCALITY

Glenhuon Bouleyard, Eaton

DATEPLAN REC

30 August 2003

OWNER

Parkridge Group Pty Ltd. C/- Suite 9-The Gateway Joondalup Drive

EDGEWATER WA 6027

DECISION DATE

17 September 2003

LGA

Shire of Dardanup

Dear Sir/Madam

The Commission has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the amended plan received on 30 August 2003 (copy attached) once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice, which includes the lodgement of the Diagram or Plan of Survey within this period.



In accordance with established procedures all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted.

The abbreviations in brackets identify the authority or agency responsible for advising the Commission on clearance of conditions. If there are no abbreviations, the Commission will clear the condition. Prior to the commencement on site of any works or the implementation of any condition in any other way the subdivider should liaise with the nominated authority on the requirements it considers necessary to satisfy the condition. Advice should be obtained from the relevant authorities that the conditions have been met and a copy of that advice should be submitted with the Plan or Diagram of Survey.

The applicant is further advised that under s24(5) of the Town Planning and Development Act, the applicant may, within 28 days of being notified of a decision of the Commission to impose a condition(s) on a subdivision approval, make a written request to the Commission to reconsider its condition(s). One of the matters which the Commission will have regard to in reconsidering a condition(s) is whether there is compelling evidence by way of additional information or justification from the applicant to warrant a reconsideration of a condition(s).

South West Office, Sixth Floor, Bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230

Tel: (08) 9791 0577; Fax: (08) 9791 0576; TTY: (08) 9264 7535; Infoline: 1800 626 477

e-mail: corporate@wapc.wa.gov.au; Web address: http://www.wapc.wa.gov.au

ABN 35 482 341 493

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(125)

- 11. Satisfactory arrangement being made with the Western Australian Planning Commission for assistance in the construction of Eaton Drive and the Collie River Bridge Jinking Eaton and Australiand via Baton Drive. (LG)
- [12] The proposed public open space shown on the planenbuilted by the applicant, being shown on the Diagram; or Rhm of Shiweyas a Reserve top Regrestion and vestor in the Crown under section 20A of the hown Plaining and Development Act, such land to be seeded free of cost and willion any physical of compensation by the Grown.
- 13. Uniform fencing along the boundaries of all the proposed lois abutting Glenhuon Boulevard, Dare Cove, Collie River Foreshore Reserve, public open space and the pedestrian access way to be constructed to the satisfaction of the Western Australian Planning Commission. (LG)
- 14. The battleaxe access leg(s) being constructed and drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 15. The applicant providing a pre and post geotechnical report certifying that the land is physically capable of development to the satisfaction of the Western Australian Planning Commission, (LG)
- 16. The subdivider making arrangements to the satisfaction of the Western Australian Planning Commission for the preparation and implementation of a Foreshore Management Plan. (LG, WRC)
- 17. Certification by the Fire and Emergency Services Authority of WA that subdivision reticulation plans meet specifications and that hydrant fire fighting services will be installed to the satisfaction of the Western Australian Planning Commission. (FESA)
- 18. A restrictive covenant being registered on the certificate of title, to the benefit of the Shire of Dardanup at the subdividers expense, prohibiting vehicular access onto Glenhuon Boulevard and Dare Cove from the respective proposed lots which abut those road reserves, pursuant to Section 129BA of the Transfer of Land Act (as amended). (LG)
- 19. Satisfactory arrangements being made with the Western Australian Planning Commission to ensure that the proposed 2001m² public open space lot is of sufficient size and shape to encompass the large Marri Tree 'Glenhuon Tree' so that no branches overhang adjacent lots. (LG)
- 20. The subdivider shall prepare a horticultural assessment of the 'Glenhuon Tree' within the proposed public open space and implement any recommendations to minimise any risk to the community and the Shire of Dardanup to the satisfaction of the Western Australian Planning Commission, (LG)
- 21. Arrangements being made for the provision of underground electricity to the lots approved under this application to the satisfaction of the Western Australian Planning Commission. (Western Power)
- 22. The transfer free of cost of transformer and high voltage switchgear sites to the Western Power Corporation, with the locations of the sites being to the satisfaction of the Western Australian Planning Commission on the advice of the local government and Western Power Corporation.





- The provision of easements for existing or future power supply infrastructure to the satisfaction of the Western Australian Planning Commission. (Western Power)
- Reciprocal rights of access over the two 3m wide battleaxe legs or else battleaxe legs being widened to 4m as per Commission policy

ADVICE:

- i) Construction should not commence until Council has approved detailed engineering plans and specifications of the works, including earthworks, roads and paths, drainage, clearing, landscaping/rebabilitation and soil stabilisation measures, both during and after construction.
- ii) In relation to Condition 6, the Shire of Dardanup advise that retaining walls in various locations will be required and are to be designed to the satisfaction of Council. All retaining walls are to be designed as load bearing in accordance with Council Policy.
- iii) In respect of Conditions 7 and 8, the service is to be consistent with the current policy and practice of the Water Corporation for the locality and may involve the provision of land (for plant and works) easements and the payment of financial contributions towards infrastructure. You are advised to contact the Water Corporation at 61 Victoria Street, Bunbury on Telephone (08) 9791 0400 for further information.
- iv) In relation to Condition 11, the Shire of Dardanup advise that the anticipated gazettal of the Draft Shire of Harvey/Dardanup Joint Guided Development Scheme is late 2003 and will provide guidance on any contributions for Baton Drive and the Coilie Rive Bridge Construction. If clearance of Condition 11 is sought prior to the gazettal of the Draft Scheme, the subdivider is advised to liaise with the Shire of Dardanup in regard to entering into a Deed of Agreement where there should be arrangements to contribute additional costs if there is a shortfall or to receive a reimbursement if appropriate in accordance with the Shire of Harvey/Dardanup Joint Guide Development Scheme No. 1.
- v) The Shire of Dardanup advise that the pre and post geotechnical report required by Condition 15 has been imposed as cut and fill is required on the site and high ground water is common within Eaton.
- vi) In relation to Condition 16, the Foreshore Management Plan shall include the design and schedule of works by the subdivider for provision of community access, walk trails, fencing, removal of declared weeds and revegetation.
- vii) In regard to Condition 17, FESA advise that hydrants will need to be installed along all water mains at a ratio of one per 200m and are to be identified by standard road and pole markings.
- viii) In relation to Condition 20, the Shire of Dardanup advise a qualified horticulturalist shall determine if any branches of the large Marri Tree should be lopped and if the area surrounding the three should be fenced to restrict public access. The cubby house shall also removed from the tree.





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- ix) The Water and Rivers Commission advise of the following:
 - * weed control is to be undertaken within the foreshore areas prior to the comment of any works.
 - * all large woody debris from the felled trees to be placed on the open upper slope areas of the foreshore as brushing to provide habitat and weed suppression value. This debris should not be allowed to fall down to the lower slopes or adverse existing native vegetation. As a consequence, trees should not be felled directly into the foreshore, and may require to be cut to size.
 - * that access to the areas nominated as 'Conservation' wetland and foreshore be restricted.
 - * during construction the foreshore reserve should not be damaged by any works including placement of fill, rubble, rubbish or any other material on the reserve, or the removal, clearing or damage of any vegetation within the foreshore reserve.
 - * the proposed development to incorporate the principles and best management practices detailed in the *Planning and Management Guidelines for Water Sensitive Urban Design* (State Planning Commission, 1994) and the *Manual for Managing Urban Stormwater Quality in Western Australia* (Water and Rivers Commission, 1998).

Yours faithfully

(a. Miller 15,

for P M Melbin Secretary

Western Australian Planning Commission

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(Appendix ORD: 12.2.1C) 714 70 PROJOSED TREATMENT OF TREES ON EDGE OF FORESHORE RESERVE No fill will occur into foreshore Foreshore Reserve Wat recess to preserve been 892m² reserve T VERGE O ROAD 791m² SERVICES 820m LOTS Foreshore Vegetation 792m2 ORIGINAL AREAS 767m² 3,4902ha Pt. Lot 1014 Existing 0,1364ha Pt. Lot 6 726m2 Total Area 3,6266ba Sewer 772m² Line No. of existing lots -2 No. of proposed lots -: 31 838m² Basement over 769m² existing sewer Trees to be retained 5/721m² Trees to be removed 729m² 720m² 853m² 17.5 778m2 822m2 41.9 · 819m² 22,8 811m² 754m² 38,9 36,1 23.6 718m² SCOUT 36.1 Im mihimum separation 893m² HALL from concrete pad of Telstra site 740m² 722m2 20 20 36.1 Drain to be relocated to the PAW 0 8.2 Superceties plan date stamped 30 /6/03 774m2 705m² 30.2 23.8 PAW CHEVIOT WAY 23.8 4.617.4 20.0 20.0 748m² 30 37 764m² 740m² 715m2 764m² SCALE 20.0 1:1000 AUGUST 2003 Corre MANNE. DARE --BF-BOW 03090P-05 ≥ 13 AUG £003 FILE 118006 PROPOSED SUBDIVISION PART LOT 1014 AND 6 FLENHUON BOULEVARD, EATON

ATTACHMENT 10

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372 30

Our Ref

: 125521

Your Ref

: 04129P

Enquiries

: Shane Kirk

30 August 2004

Thompson Mc Robert Edgeloe Pty Ltd P O Box 733

BUNBURY WA 6231

TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

9001

LOCATION

PLAN/DIAGRAM

32495/-

VOLUME/FOLIO

2529/617

LOCALITY

Eaton Drive, Eaton

DATE PLAN REC

27 August 2004

OWNER

Parkridge Group Pty Ltd C/- PO Box 1684 WANGARA WA 6947

DECISION DATE

27 August 2004

LGA

Shire of Dardanup

Dear Sir/Madam

The Commission has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey (Deposited Plan) in accordance with the amended plan received on 27 August 2004 (attached) once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice, which includes the lodgement of the Diagram or Plan of Survey (Deposited Plan) within this period.

In accordance with established procedures all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted.

The abbreviations in brackets identify the authority or agency responsible for advising the Commission on clearance of conditions. If there are no abbreviations, the Commission will clear the condition. Prior to the commencement on site of any works or the implementation of any condition in any other way the subdivider should liaise with the nominated authority on the requirements it considers necessary to satisfy the condition. Advice should be obtained from the relevant authorities that the conditions have been met and a copy of that advice should be submitted with the Plan or Diagram of Survey (Deposited Plan).

The applicant is further advised that under s24(5) of the Town Planning and Development Act, the applicant may, within 28 days of being notified of a decision of the Commission to impose a condition(s) on a subdivision approval; make a written request to the Commission to reconsider its condition(s). One of the matters which the Commission will have regard to in reconsidering a condition(s) is whether there is compelling evidence by way of additional information or justification from the applicant to warrant a reconsideration of a condition(s).



South West Office, Sixth Floor, Bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230
Tel: (08) 9791 0577; Fax: (08) 9791 0576; TTY: (08) 9791 0576; TTY: (08) 9791 0577; e-mail: corporate@wapc.wa.gov.au; web addi







Should the applicant be aggrieved by this decision there is a right of appeal under Section 26 of the Town Planning and Development Act 1928. The appeal must be submitted in accordance with Part V of the Act within 60 days of the date of this decision to the Town Planning Appeal Tribunal, 12 St George's Terrace, Perth. When an application is approved subject to a condition(s), the applicant should liaise with a nominated authority(s) responsible for advising the Commission on the clearance of the condition as soon as possible to establish any detailed requirements of the condition and in order to retain a right of appeal in the event you consider the requirements are onerous.

CONDITION(S):

- Those lots not fronting an existing road being provided with frontage to a constructed subdivisional road connected by a constructed subdivisional road(s) to the local road system and such subdivisional road(s) being constructed and drained at the subdivider's cost. As an alternative, the Western Australian Planning Commission is prepared to accept the subdivider paying to the Local Government the cost of such works as estimated by the Local Government subject to the Local Government giving an assurance to the Commission that the works will be completed within a reasonable period acceptable to the Commission. (LG)
- Street corners within the subdivision being truncated to the standard truncation of 8.5 metres.
 (LG)
- 3. The cul-de-sac heads being designed to the satisfaction of the Western Australian Planning Commission. (LG)
- The land being graded and stabilised at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 5. The land being filled and/or drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission, and any easements and/or reserves necessary for the implementation thereof, being provided free of cost, (LG)
- The subdivider to prepare an overall drainage plan for the subject land to the satisfaction of the Western Australian Planning Commission. (LG)
- The applicant providing a pre and post geotechnical report certifying that the land is physically capable of development to the satisfaction of the Western Australian Planning Commission. (LG)
- Certification from the Water Corporation that arrangements have been made with that body so
 that connection to a water supply service will be available to the lot/s proposed by this
 application. (WC)
- Certification from the Water Corporation that arrangements have been made with that body so
 that connection to a sewerage supply service will be available to the lot/s proposed by this
 application. (WC)
- Such easements as may be required by the Water Corporation being granted free of cost to that Corporation. (WC)

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- II ... The proposed reserve(s) shown on the plan submitted by the applicant, being shown on the Danish by the applicant, being shown on the Danish Reserve for Recreation! and seed a partie if Crown under section 20A of the Town Planning and Development Act, such land to be reded of received of cost and without any payment of compensation by the Grown.
 - 12. Uniform fencing along the boundaries of all the proposed lots abutting Eaton Drive and proposed public open space to be constructed to the satisfaction of the Western Australian Planning Commission. (LG)
- 13. A restrictive covenant being registered on the certificate of title, to the benefit of the Shire of Dardanup and at the subdivider's expense, prohibiting vehicular access onto Baton Drive from proposed Lots 6 and 7, pursuant to section 129BA of the Transfer of Land Act (as amended). (LG)
- 14. The transfer free of cost of transformer and high voltage switchgear sites to the Western Power Corporation, with the locations of the sites being to the satisfaction of the Western Australian Planning Commission on the advice of the local government and Western Power Corporation. (Western Power)(Local Government)
- Arrangements being made for the provision of underground electricity to the lots approved under this application to the satisfaction of the Western Australian Planning Commission, (Western Power)
- Dual use path(s) being provided at the subdivider's cost as per the Shire of Dardanup Bike Plan
 to the satisfaction of the Western Australian Planning Commission. (LG)
- Bollards or barriers being installed across the proposed area of public open space to prevent vehicle access onto the public open space and wetland to the south to the satisfaction of the Western Australian Planning Commission. (LG)
- 18. The subdivider making arrangements to the satisfaction of the Western Australian Planning Commission to contribute towards works associated with the proposed Collie River Bridge, Eaton Drive (district distributor toad reserve) and associated administrative costs in accordance with the Shires of Dardanup and Harvey Joint Town Planning Scheme No. 1. (LG)
- Certification by the Fire and Emergency Services Authority of WA that subdivision reticulation plans meet specifications and that hydrant fire fighting services will be installed to the satisfaction of the Western Australian Planning Commission. (PESA)
- The battleaxe access leg(s) being constructed and drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 21. The subdivider making satisfactory arrangements with the Western Australian Planning Commission at the subdivider's expense for the rehabilitation of the portion of land immediately south, being the earthworks associated with Cleveland Bay Road which has impacted upon the EPP wetland. (DoE)

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ADVICE:

- i) Construction should not commence until Council has approved detailed engineering plans and specifications of the works, including earthworks, roads and paths, drainage, clearing, landscaping/rehabilitation and soil stabilisation measures, both during and after construction.
- ii) In relation to Condition 3, Shire of Dardanup advise that the head of the proposed cul-de-sac is to be constructed at a distance close enough to Lot 7 to avoid a shared crossover with Lot 8.
- iii) In relation to Condition 5, the Shire of Dardanup advise that any retaining walls are to be designed and constructed as load bearing in accordance with Council Policy.
- iv) In relation to Condition 7, the Shire of Dardanup advise that a pre and post geotechnical report is required as high ground water is common within Baton.
- In relation to Condition 15, Western Power advise that it provides only one point of supply per green title lot and any existing overhead service must be converted to underground.
- vi) In relation to Condition 16, the Shire of Dardanup advise that a dual use path is required along Cleveland Bay Avenue through the proposed public open space and connect with the existing dual use path on Eaton Drive.
- vii) In regard to Condition 19, FESA advise that hydrants will need to be installed along all water mains at a ratio of one per 200m and are to be identified by standard road and pole markings.
- viii) In relation to Condition 20, the construction of the battleaxe access leg(s) is to include the vehicle crossover. The subdivider is also advised that the construction of the vehicle crossover to proposed Lot 8 is also required.
- ix) In relation to Condition 21, the Department of Environment advise that a rehabilitation management plan demonstrating the revegetation program shall be submitted to and approved by the Department of Environment. Advice on species local to the wetland and its buffer can be sought from local native nurseries, local Regional Herbaria, the Western Australian Herbarium (Department of Conservation and Land Management), or environmental consultants with experience in rehabilitation. For further information, contact Mike McKenna from the Bunbury Office of the Department of Environment on (08) 9726 4111.
- π) The Department of Environment advise that:
 - a) The proposed development is to incorporate the principles and best management practices detailed in the Planning and Management Guidelines for Water Sensitive Urban Design (State Planning Commission, 1994) and the Manual for Managing Urban Stormwater Quality in Western Australia (Water and Rivers Commission, 1998). The subdivider is to liaise with the Department of Environment in relation to this,
 - b) The subject land is within an area that has been recognised as posing a low risk acid sulfate soils risk at depths less than 3 metres and moderate to high risk at depths greater than 3 metres. Proposals that may lead to the disturbance of acid sulfate soils should be planned and managed to avoid adverse affects on the natural and built environment, including human health and activities. Therefore, the Department of



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Environment and Environmental Protection Authority guidance on managing acid sulfate soils including its supporting documents should be adhered to. These documents can be found at www.environ.wa.gov.au under Contaminated Sites.

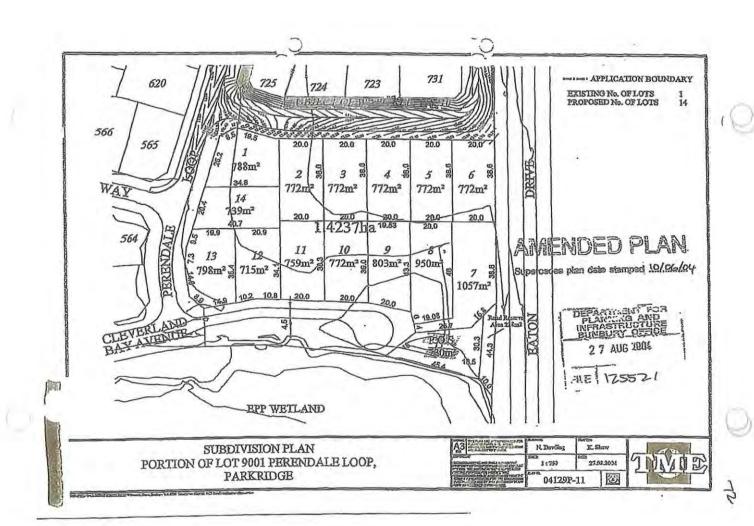
- c) The developer is to inform all contractors working on this subdivision that it is an offence to dewater without a dewatering licence from the Department of Environment under the Rights in Water and Irrigation Act 1914.
- d) The proposed subdivision is located within the proclaimed Bunbury Goundwater Area where there is a requirement to obtain a Groundwater licence for the use of groundwater (including soak excavations). The issue of a licence is not guaranteed but if issued will contain a number of conditions including the quantity of water that can be pumped each year.
- e) The Department of Environment recommends that to prevent the contamination of water resources, the emergency overflow from reticulated sewerage systems should not be connected to stormwater drainage pathways, if applicable. Connection to a bunded swale arrangement is more appropriate for retention and disposal of sewerage overflows.
- f) The subject land lies adjacent to lakes that are protected under the Environment Protection (Swan Coastal Plain Lakes) Policy 1992. Wetlands identified under this Policy are protected from land uses that will impact on their environmental values. The lakes EPP prohibits the filling, excavation and mining; discharging or disposal of effluent; alterations to water levels of drainage of additional water into or out of these lakes. It is expected that any development should provide for the protection of these lakes. No use or development of the proposed lots, which may have adverse effect on the lake should be permitted or undertaken.

Yours faithfully

for Ian Patterson

Secretary

Western Australian Planning Commission



ATTACHMENT 11



Our Ref

: 126335

Your Ref

Enquiries : Peter Malavisi

03 December 2004

BUNBURY WA

1= -

Civil Technology Ply Ltd POBox 1504 CANNING VALE WA 6970

TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

1027

LOCATION

PLAN/DIAGRAM

24719/-

VOLUMB/FOLIO

2212/321

LOCALITY

Eaton Drive, Eaton

DATE PLAN REC

12 November 2004

Plemmington Holdings Pty Ltd P O Box 1319

OWNER

6230

DECISION DATE

02 December 2004

LGA

Shire of Dardanup

Dear Sir/Madam

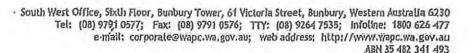
The Commission has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the amended plan received on 12 November 2004 (attached) once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice, which includes the lodgement of the Diagram or Plan of Survey within this period.

In accordance with established procedures all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted,

The abbreviations in brackets identify the authority or agency responsible for advising the Commission on clearance of conditions. If there are no abbreviations, the Commission will clear the condition. Prior to the commencement on site of any works or the implementation of any condition in any other way the subdivider should liaise with the nominated authority on the requirements it considers necessary to satisfy the condition. Advice should be obtained from the relevant authorities that the conditions have been met and a copy of that advice should be submitted with the Plan or Diagram of Survey.

The applicant is further advised that under s24(5) of the Town Planning and Development Act, the applicant may, within 28 days of being notified of a decision of the Commission to impose a condition(s) on a subdivision approval, make a written request to the Commission to reconsider its condition(s). One of the matters which the Commission will have regard to in reconsidering a condition(s) is whether there is compelling evidence by way of additional information or justification from the applicant to warrant a reconsideration of a condition(s).







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Should the applicant be aggrieved by this decision there is a right of appeal under Section 26 of the Town Planning and Development Act 1928. The appeal must be submitted in accordance with Part V of the Act within 60 days of the date of this decision to the Town Planning Appeal Tribunal, 12 St George's Terrace, Perth. When an application is approved subject to a condition(s), the applicant should liaise with a nominated authority(s) responsible for advising the Commission on the clearance of the condition as soon as possible to establish any detailed requirements of the condition and in order to retain a right of appeal in the event you consider the requirements are operous.

CONDITION(S):

DP 51577

Those lots not fronting an existing road being provided with frontage to a constructed subdivisional road connected by a constructed subdivisional road(s) to the local road system and such subdivisional road(s) being constructed and drained at the subdivider's cost. As an alternative, the Western Australian Planning Commission is prepared to accept the subdivider paying to the Local Government the cost of such works as estimated by the Local Government subject to the Local Government giving an assurance to the Commission that the works will be completed within a reasonable period acceptable to the Commission. (LG)

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- 2./ Street corners within the subdivision being truncated to the standard truncation of 8.5 metres. (LG)
- 3./ The cul-de-sac heads being designed to the satisfaction of the Western Australian Planning Commission. (LG) /
- 4./ Satisfactory arrangements being made with the Western Australian Planning Commission to ensure that a footpath/dual use path is provided through the portion of Public Open Space abutting proposed Lots 551, 545, 543 and 542 to enable pedestrian access around the public open space from Cleveland Bay Avenue to Baton Drive. (LG)
- A restrictive covenant being registered on the certificate of title of proposed Lots 534-542 (inc), to the benefit of the Shire of Dardanup and at the subdivider's expense, restricting vehicular access onto Baton Drive from Lots 531-539, pursuant to section 129BA of the Transfer of Land Act (as amended). (LG)

- 6\sqrt{ The land being graded and stabilised at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 7./ The land being filled and/or drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission, and any easements and/or reserves necessary for the implementation thereof, being provided free of cost. (LG) /
- 8. Certification from the Water Corporation that arrangements have been made with that body so that connection to a water supply service will be available to the lot/s proposed by this application. (WC)
- 9./ Certification from the Water Corporation that arrangements have been made with that body so that connection to a sewerage supply service will be available to the lot/s proposed by this application. (WC)
- 10. Such easements as may be required by the Water Corporation being granted free of cost to that Corporation. (WC)

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- 11.// The subdivider to prepare an overall drainage plan for the subject land to the satisfaction of Western Australian Planning Commission. (LG, DOB)
- 12. The land being connected to the comprehensive district drainage system at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. If stormwater from the subject land cannot be discharged into an existing system, it will be required to be treated within the confines of the subdivision. (LG, DOF)
- 13./ Satisfactory arrangements being made with the Western Australian Planning Commission for contribution towards the construction of the Eaton Drive and the Collie River Bridge linking Eaton and Australiand via Eaton Drive. (LG)
- 14/ Certification by the Fire and Bruergency Services Authority of WA that subdivision reticulation plans meet specifications and that hydrant fire fighting services will be installed to the satisfaction of the Western Australian Planning Commission. (FESA)
- The applicant providing a geotechnical report certifying that the land is physically capable of development, to the satisfaction of the Western Australian Planning Commission. (LG)
 - 16./ Uniform fencing to be constructed at all proposed Lots abutting Baton Drive (Lots 534 to 542 inc) and the rear boundary of Lots 552 to 556 (inc) to constructed to the satisfaction of the Western Australian Planning Commission. (LG)
 - 17. Uniform permeable fencing to be constructed to the satisfaction of the Western Australian Planning Commission to delineate the boundary between proposed Lots 551, 545, 543, and 542 and the Public Open Space. (LG).
 - 18./ The battleaxe access leg(s) being constructed and drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)/
 - Arrangements being made for the provision of underground electricity to the lots approved under this application to the satisfaction of the Western Australian Planning Commission. (Western Power)
 - 20.// The transfer free of cost of transformer and high voltage switchgear sites to the Western Power Corporation, with the locations of the sites being to the satisfaction of the Western Australian Planning Commission on the advice of the Local Government and Western Power Corporation. (Western Power, LG)
 - Arrangements for the removal and relocation of power supply plant or equipment located on or near the lots approved under this application to the satisfaction of the Western Australian Planning Commission. (Western Power)
 - The provision of easements for existing or future power supply infrastructure to the satisfaction of the Western Australian Planning Commission. (Western Power)
 - 23. Satisfactory arrangements being made with the Western Australian Planning Commission to ensure that any trees overhanging the roadway and lot boundaries are made safe. (LG & DOB)

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- vii) In relation to Condition 13, the Shire of Dardanup advise that the Draft Shire of Harvey/Dardanup Joint Guided Development Scheme will provide guidance on any contributions for Eaton Drive and the Collie River Bridge construction. If clearance of Condition 13 is sought prior to the gazettal of the Draft Scheme, the subdivider is advised to liaise with the Shire of Dardanup in regard to entering into a Deed of Agreement where there should be arrangements to contribute additional costs if there is a shortfall or to receive reimbursement if appropriate in accordance with the Shire of Harvey/Dardanup Joint Guided Development Scheme No.1.
- viii) In regard to Condition 14, FESA advise that hydrants will need to be installed along all water mains at a ratio of one per 200m and are to be identified by standard road and pole markings.
- ix) In relation to Condition 23, the Shire of Dardanup advise that Council will require certification from a qualified horticulturalist.
- x) Further to Condition 23, the Water and Rivers Commission advise that the pruning of trees will only be supported to include limbs that are determined to have no habitat or ecological value.
- xi) In relation to Condition 25, the Wetland/Foreshore Management Plan in respect of the proposed 3354m² of public open space is to include, but not be limited to, weed control, rubbish removal, revegetation and rehabilitation of the proposed 3354m² of public open space. The subdivider is required to revegetate the 3554m² of public open space to facilitate the use of the public open space for recipration and drainage. The works undertaken will be subject of a 2 year maintenance period.

In respect of the adjoining Lot 1028, the subdivider is required to undertake foreshore works where the subdivision directly impacts upon the wetland through construction works or through drainage. The works will be subject of a 2 year maintenance period. It is recommended that you liaise with the subdivider to the north of Lot 1028 with regard to the joint preparation and implementation of the plan as a similar condition has been imposed on their subdivision.

- xii) You are advised that no discharge of drainage is to occur into the adjoining wetland. The wetland is listed under the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992. The Water and Rivers Commission advise that all stormwater drainage from the subdivision is to be connected to the existing drainage system along Cleveland Bay Avenue.
- xiii) The applicant is advised that the Department of Bnvironmental Protection has prepared dust control guidelines for development sites, which inter alia, outline the procedures for the preparation of Dust Management Plans for development sites. Further information on the guidelines can be obtained from the Department or the Local Government.
- xiv) Telstra advise that if timely telephone services are to be provided on demand to future purchasers provision of trenches should be as per Telstra Estate Policy.
- xv) The proposed development is to incorporate the principles and best management practices detailed in the Planning and Management Guidelines for Water Sensitive Urban Design (State Planning Commission, 1994) and the Manual for Managing Urban Stormwater Quality in Western Australia (Water and Rivers Commission, 1998).

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- xvi) You are advised to advise all subdivision contractors of their legal obligations with respect to the Aboriginal Heritage Act of WA (1972) during construction work. The subdivider is advised to contact the Aboriginal Affairs Department (Bunbury Office) for further information.
- xvii) In relation to Condition 24, the ceding of this land does not exclude the subdivider from responsibilities associated with a Foreshore Management Plan for the subdivision. This boundary has been previously negotiated with the proponents representative with the consent of Gary Williams of the former Department of Environmental Protection. (LG)

Yours faithfully

for Ian Patterson

Secretary

Western Australian Planning Commission

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- The proposed foreshore reserve(s) showm on the plan submitted by the applicant being shown on the Diagram of Plant of Survey as a Public Open Space, and vested in the Grown under section 20A of the Toyth Planning and Development Act, such land to be ceded free of cost and without any payment of compensation by the Grown AA.
- 25.// The subdivider to prepare and implement a Wetland/Foreshore Management Plan to the satisfaction of the Western Australian Planning Commission for the proposed 3354m² of public open space and for adjoining lot 1028. (LG/DOE)
- 26./ The proposed 0.1m wide Pedestrian Access Ways abutting Baton Drive and on the southern boundary of proposed lots 552-556 being deleted. (LG)

ADVICE:

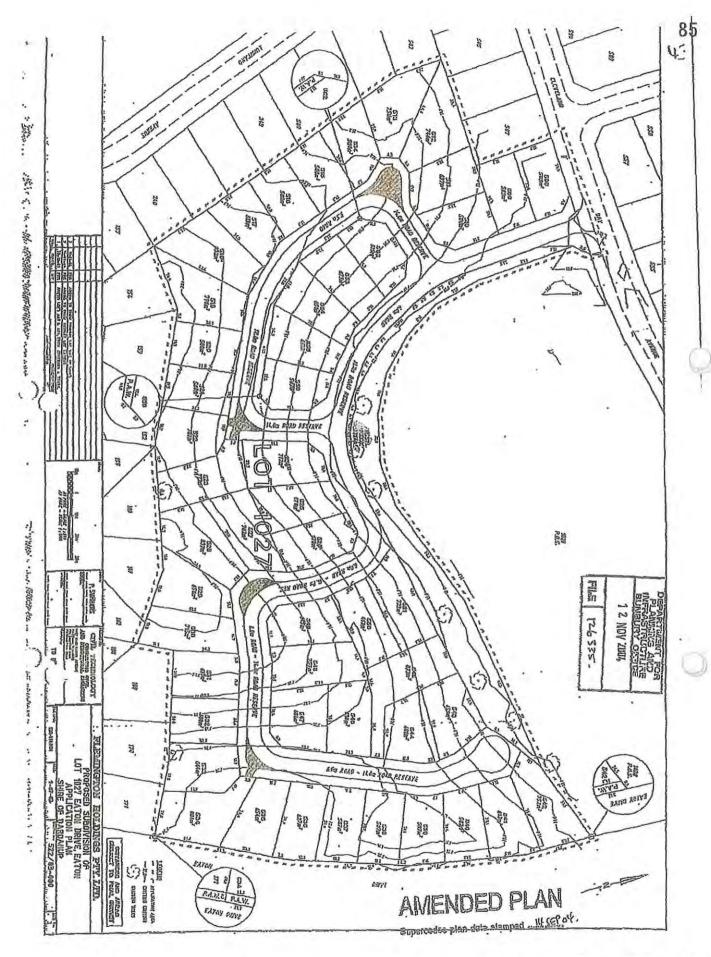
i) Construction should not commence until Council has approved detailed engineering plans and specifications of the works, including earthworks, roads and paths, drainage, clearing, landscaping/rehabilitation and soil stabilisation measures, both during and after construction.

Approved plans are those which have been considered by Council and duly amended to meet its requirements and approval,

Council may, subject to satisfactory planning, design and specifications having taken place, approve early commencement of works for a stage of the subdivision, following application in writing to do so.

- ii) In relation to Condition 1, the Water and Rivers Commission advise that no further development or associated works is to impinge further toward the wetland than the inner edge of the existing dirt track that exists on site, which represents the furthest extent of the road batter or reserve towards the wetland. The inner track edge represents the margin of the batter associated with the proposed road.
- iii) In relation to Condition 1, the Shire of Dardanup advise that the bends in Polwarth Circuit and Romney Way are to be treated to the satisfaction of the Shire of Dardanup.
- iv) In relation to Condition 4, the Shire of Dardanup advise that the footpath may be of a limestone standard that is sensitive to the EPP wetland and buffer requirements.
- v) In relation to Condition 6, the Shire of Dardanup advise that Council will require engineering certificates for the construction of land retaining walls and construction levels are to be provided upon completion.
- vi) In relation to Conditions 11 and 12, the Department of Environment strongly advise that Stormwater should not be connected to 'Conservation' Category or Environmental Protection Policy (EPP) Wetlands, Low/flow bypass is strongly recommended for implementation if connected to existing infrastructure. If connected to the existing Parkridge infrastructure, a contribution to stormwater basin maintenance and works may need to be negotiated.

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ATTACHMENT 12

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W13

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Our Ref Your Ref

: 127566 : 05027P

Enquiries : Peter Malavisi

05 May 2005

Thompson Mc Robert Edgeloe Pty Ltd P O Box 733 BUNBURY WA 6231

TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

9001 & 9003

LOCATION

LOCALITY

10

PLAN/DIAGRAM VOLUME/FOLIO

32495/-, 41718/-2529/617, 2573/948 Baton Drive, Eaton

DATE PLAN REC

08 February 2005

OWNER DATE

Parkridge Group Pty Ltd P O Box 1684 WANGARA WA 6030 03 May 2005

DECISION DATE LGA

Shire of Dardanup

Dear Sir/Madam

The Commission has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the amended plan received on 8 February 2005 once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice, which includes the lodgement of the Diagram or Plan of Survey within this period.

In accordance with established procedures all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted.

The abbreviations in brackets identify the authority or agency responsible for advising the Commission on clearance of conditions. If there are no abbreviations, the Commission will clear the condition. Prior to the commencement on site of any works or the implementation of any condition in any other way the subdivider should liaise with the nominated authority on the requirements it considers necessary to satisfy the condition. Advice should be obtained from the relevant authorities that the conditions have been met and a copy of that advice should be submitted with the Plan or Diagram of Survey.

The applicant is further advised that under s24(5) of the Town Planning and Development Act, the applicant may, within 28 days of being notified of a decision of the Commission to impose a condition(s) on a subdivision approval, make a written request to the Commission to reconsider its condition(s). One of the matters which the Commission will have regard to in reconsidering a condition(s) is whether there is compelling evidence by way of additional information or justification from the applicant to warrant a reconsideration of a condition(s).



South West Office, Sixth Floor, Bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230
Tel: (08) 9791 0577; Fax: (08) 9791 0576; TTY: (08) 9264 7535; Infoline: 1800 626 477
e-mail: corporate@wapc.wa.gov.au; web address: http://www.wapc.wa.gov.au
ABN 35 482 341 493

Should the applicant be aggrieved by this decision there is a right for a review under Section 26 of the Town Planning and Development Act 1928. The application for review must be submitted in accordance with Part V of the Act and should be lodged within 28 days of the date of this decision to the State Administrative Appeal Tribunal (SAT), 12 St George's Terrace, Perth. It is recommended that you contact the SAT for further details (telephone 9219 3111), or go to its website: http://www.sat.justice.wa.gov.au/.

When an application is approved subject to condition(s), the applicant should liaise with a nominated authority(s) responsible for advising the Commission on the clearance of the condition and in order to retain a right of review in the event you consider the requirements are onerous.

CONDITIONS 50/98

- 1. Those lots not fronting an existing road being provided with frontage to a constructed subdivisional road connected by a constructed subdivisional road(s) to the local road system and such subdivisional road(s) being constructed and drained at the subdivider's cost. As an alternative, the Western Australian Planning Commission is prepared to accept the subdivider paying to the Local Government the cost of such works as estimated by the Local Government subject to the Local Government giving an assurance to the Commission that the works will be completed within a reasonable period acceptable to the Commission. (LG)
- 2. Street corners within the subdivision being truncated to the standard truncation of 8.5 metres, (LG)
- 3, The cul-de-sac heads being designed to the satisfaction of the Western Australian Planning Commission. (LG)
- 4. A dual use path/cycleway system being constructed in accordance with the dual use path on the attached plan, to the satisfaction of the Western Australian Planning Commission. (LG)
- Notification in the form of a restrictive covenant to be placed on the Certificates of Title of all lots which abut the Eaton Drive Road Reserve advising the existence of a restriction on the use of the land, in accordance with section 129BA of the Transfer of Land Act 1893, and notice of this restriction to be included on the Diagram or Plan of Survey (Deposit Plan), to the satisfaction of the Commission at the applicant's cost. (WAPC) was 4883& see, omai/

The restrictive covenant to state as follows:

All vehicular access to Eaton Drive is restricted.

- The land being graded and stabilised at the subdivider's cost to the satisfaction of the Western
 Australian Planning Commission. (LG)
- 7. The land being filled and/or drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 8. Certification from the Water Corporation that arrangements have been made with that body so that connection to a water supply service will be available to the lot/s proposed by this application. (WC)

- Certification from the Water Corporation that arrangements have been made with that body so
 that connection to a sewerage supply service will be available to the lot/s proposed by this
 application. (WC)
- 10. Such easements as may be required by the Water Corporation being granted free of cost to that Corporation. (WC)
- 11. The land being connected to the comprehensive district drainage system at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG, DoB)
- 19: 10% of the subdivisible land, in a position to be agreed between the subdivider and the Local Government, being shown on the Diagram or Plan of Shivey as a "Resurve for Recreation! and yested in the Crown or the section 20% of the Town Planning and Development Act, such lands to be ceded free of cost and without any payment of compensation by the Crown. (LC)
- 13. The applicant providing a pre and post geotechnical report certifying that the land is physically capable of development to the satisfaction of the Western Australian Planning Commission.
 (LG)
- Arrangements being made for the provision of underground electricity to the lots approved under this application to the satisfaction of the Western Australian Planning Commission. (Western Power)
- The transfer free of cost of transformer and high voltage switchgear sites to the Western Power Corporation, with the locations of the sites being to the satisfaction of the Western Australian Planning Commission on the advice of the local government and Western Power Corporation. (Western Power)(Local Government).
- 16. Certification by the Fire and Emergency Services Authority of WA that subdivision reticulation plans meet specifications and that hydrant fire fighting services will be installed to the satisfaction of the Western Australian Planning Commission. (FESA)
- 17. Uniform fencing to be constructed along the boundaries of lots 838 and 835 where abutting POS and for all lots abutting Eaton Drive to the specification of the Shire of Dardanup and to the satisfaction of the Western Australian Planning Commission. (LG)
- Satisfactory arrangements being made with the Western Australian Planning Commission for assistance in the construction of Eaton Drive and the Collie River Bridge linking Eaton and Australiand via Eaton Drive. (LG)
- 19. The subdivider making arrangements satisfactory to the Western Australian Planning Commission for the preparation and implementation of a Foreshore Management Plan prepared for the Collie River Foreshore Reserve. (LG, DoE)
- 20. The subdivider to prepare a drainage/public open space management plan to the specification of the Shire of Dardanup and to the satisfaction of the Western Australian Planning Commission. (LG)
- 21. Lot 873, shown on the plan submitted as a 'pump station site' and the adjoining 188m² area of public open space, being shown on the Diagram or Plan of Survey as a "Reserve for Public Utilities" and vested in the Crown under Section 20A of the Town Planning and Development

100

Act, 1928 such land to be ceded free of cost and without any payment of compensation by the Crown. (LG)

- 22. Satisfactory arrangements being made with the Western Australian Planning Commission whereby the subdivider makes pro-rata contributions to a school site within the subdivision locality. (Department of Education & Training)
- Notification in the form of a memorial to be placed on the Certificates of Title of all lots within the area advising the existence of a hazard or other factor, in accordance with section 12A of the Town Planning and Development Act 1928 to the satisfaction of the Commission and at the applicant's cost. (WAPC)

The memorial to state as follows:

"This lot is within close proximity of areas which are subject to mosquito activity at various times of the year. In consequence it is within the flight range of adult mosquitos and there may be some potential for transmission of Ross River Virus and other mosquito borne viral diseases. Further information in this regard can be obtained from the Shire of Busselton and the Department of Health."

ADVICE:

- i) Construction should not commence until Council has approved detailed engineering plans and specifications of the works, including earthworks, roads and paths, drainage, clearing, landscaping/rehabilitation and soil stabilisation measures, both during and after construction.
- ii) In relation to Condition 11, the Department of Bnvironment advise that an integrated urban water management plan for the entirety of the 'The Peninsula' Estate should be prepared and implemented. The integrated urban water management plan should be consistent with the catchment/precinct stormwater management plan and Draft Liveable Neighbourhoods, Edition 3, 2004. The stormwater management plan or strategy for the area/subdivisional stage to be prepared and implemented incorporating the principles and best management practices detailed in the 'Planning and Management Guidelines for Water Sensitive Urban Design' (State Planning Commission, 1994) and the 'Stormwater Management Manual for Western Australia' (Department of Environment, 2004). The application of these principles is designed to protect the water quality and ecology of the downstream surface and groundwater-receiving environment. Stormwater should not be connected to 'Conservation' Category or Environmental Protection Policy (EPP) Wetlands.
- iii) The applicant's attention is drawn to the provisions of Section 20C of the Town Planning and Development Act, 1928 whereby arrangements can be made, subject to further approval of the Commission, for a cash-in-lieu contribution by the applicant to the Local Government, in respect of Condition 12 of this approval.
- iv) In relation to Condition 12, it is recommended that a public open space audit be undertaken to ascertain the amount of public open space provided by the subdivider for the Estate.
- v) In regard to Condition 16, FESA advise that hydrants will need to be installed along all water mains at a ratio of one per 200m and are to be identified by standard road and pole markings.

W13

- b) that where reticulated sewerage be implemented, to prevent the contamination of water resources, the standard Water Corporation emergency 6hr overflow from reticulated sewerage systems is considered insufficient and should not be connected to stormwater drainage pathways. Connection to a bunded swale arrangement is more appropriate for retention and disposal of sewerage overflows as it provides a contained storage overflow that can be easily managed by pumping out. All new pump station proposals must be submitted in writing to EPA for approval prior to commencing works.
- c) that the developer informs all contractors working on the subdivision that it is an offence to dewater without a dewatering licence from the Department of Environment under the Rights in Water and Irrigation Act 1914. All contractors working on the development are requested to recycle wastewater on site by dewatering into a nominated swale or conical pit, which promotes infiltration of water into the soil to groundwater. All dewatering must have regard for the presence of Acid Sulphate Soils as per WAPC Planning Bulletin # 64.
- d) that no activity being undertaken that will interfere, alter or pollute any wetland, watercourse, surface water expression or ground water in the area, or alter the water quality of such waters.
- e) Portions of the subject land are contained within land identified as flood prone under a 1:100 flood event. The minimum habitable floor level of all subject lots within this area should be at least 0.5m above the 1:100 flood level of 3.56m AHD.

Yours faithfully

for R N Stokes

Acting Secretary

Western Australian Planning Commission

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- vi) In relation to Condition 19, the Foreshore Management Plan is to address the following:
 - a) drainage;
 - drainage management and associated vegetation rehabilitation works;
 - c) weed management;
 - d) provision of a dual use path(s); and
 - e) uniform fencing.

The scope of the Management Plan, and works to be undertaken by the subdivider, are directly related to matters arising as a direct result of the subdivision of the subject land. In this regard, more comprehensive works beyond these specified above that have been indicated in previous management plans are not considered to be the responsibility of the subdivider. In order to ensure that there is no ambiguity in regard to the subdivider's responsibilities it is recommended that discussions be held with Water and Rivers Commission and the Shire of Dardanup to prepare an agreed schedule of works to be implemented. The works undertaken in the foreshore area will be subject to a 2 year maintenance period.



The Shire of Dardanup advises that Condition 20 has been imposed to ensure that drainage works form an integral part of the public open space, but do not detract from the use of the public open space for passive recreational purposes.

- viii) The subdivider is advised that Condition 21 has been imposed to ensure that Lot 873 is not sold and developed for residential purposes at a later date.
- ix) AlintaGas advises that:
 - a) all work carried out on AlintaGas's existing network to accommodate the proposed subdivision will be at the proponent's expense; and
 - b) one month's notice is required with that body prior to the commencement of site works. Notice should be given to the Project Coordinator at AlintaGas Networks on Telephone (08) 9486 3766.
- x) The applicant is advised that the Department of Environmental Protection has prepared dust control guidelines for development sites, which inter alia, outline the procedures for the preparation of Dust Management Plans for development sites. Further information on the guidelines can be obtained from the Department or the local government.
- xi) The Department of Environment advises that:
 - a) the subject property is located within the Bunbury Groundwater Area as proclaimed under the Rights in Water and Inigation Act 1914. Any groundwater abstraction in this proclaimed area is subject to licensing by the Department of Environment. The issuing of a groundwater licence is not guaranteed but if issued will contain a number of conditions that are binding upon the landowners. The proponent should contact the Department of Environment to ensure that sustainable groundwater allocation limits have not been reached for the area. While there is no guarantee of supply, where the groundwater area is found to be fully allocated, the proponent will need to attain water from alternative sources and make prospective purchases aware of any such restriction.



ATTACHMENT 13

THOMPSON McROBERT EDGELOE A.B.N. 80 064 199 015

Our Ref: 04055E

Shire of Dardanup 1 Council Drive Eaton W.A. 6232

Attention: Laurie Blurton

Dear Laurie

RE: The Peninsula Stage 1 WAPC No: 127566

The following meetings and correspondence refer:

The meeting of 4 November 2005 at the Dardanup Shire Offices (present: Laurie Blurton, Domenic Vener, Mark Jones and Ian Cocker)

Practical Completion Inspection held on 16 November 2005 (present were Domenic Vener, Ian Cocker, Shane Farrell (APH) and Dwayne Day (APH))

Emails (copies attached) dated 16 and 17 November 2005.

Practical Completion has now been achieved and comment is offered on the Planning Conditions in order to effect clearance for Peninsula Stage 1 as follows:

Condition 1. Refer to minor works list below.

Condition 4. (refer to attached plan 05027P-02). Dual Use Paths for Stage 1 are currently under construction and will be completed within 1 week (see minor items list below). These works consist of Eaton Drive to Road 2; Road 2 to Lot 74 (lake POS); Holstein Drive to Lot 74 (including 20m of DUP from Stage 2). It is therefore considered unnecessary to bond these works. The DUP on Glen Huon Bvd (61m in length as detailed on dwg 04055E-01-C300) will be constructed as part of Stage 4 works as Glen Huon Bvd is currently under construction. Also attached please find a plan detailing proposed DUPs

BUNBURY OFFICE:
26 WITTENOOM STREET,
BUNBURY.
POSTAL ADDRESS:
P.O. BOX 733.
BUNBURY, W.A. 6231
PHONE: (08) 9791 4411
FAX: (08) 9791 4412
EMAIL:
britoology@gradeleu

MARGARET RIVER OFFICE:
UNIT 1/34 STATION ROAD,
MARGARET RIVER.
POSTAL ADDRESS:
P.O. BOX 875.
MARGARET RIVER, W.A. 6285
PHONE: (08) 9757 3258
FAX: (08) 8757 3932
EMAIL:
Industribles actau

Great Southern Office:

Fostal address:
P.O. Box 114,
WOODANILLING, W.A. 6316
PHONE: 0418 954 873
FAX: (08) 9823 1009
EMAIL:
geofficial cactalu



within the POS (Lot 874) to replace DUPs on Glen Huon Bvd (north of Ryeland Avenue, Ryeland Avenue, Holstein Dve north of Ryland Avenue and Road 2. These proposed DUPs provide not only connectivity as intended in the DUP plan, but also integration with the POS. The Developer has requested that the proposed POS DUP be bonded (as set out below).

 Condition 6. No hydromulching is required as topsoil was placed early enough to provide germination and reasonable vegetation cover.

 Condition 13. APH are currently preparing a geotechnical report on the lots, This will be forwarded to you shortly.

 Condition 17. Uniform fencing for lots abutting POS (Lot 835), Eaton Drive (Lot 822) and bollards between Eaton Drive and Galloway Bend are outstanding and will be bonded (as set out below).

 Condition 18. As part of Stage 1 works the western carriageway of Eaton Drive was constructed up to Road 2. The Developer will contact you directly regarding the associated costs.

 Condition 19. The Foreshore Management Plan for the Collie River Foreshore Reserve was previously submitted, approved and bonded. This Plan does however not pertain to Stage 1.

 Condition 20. Drainage/public Open Space Management Plan. Advice note seven (vii) states that this condition was imposed to ensure that drainage works form an integral part of the public open space, but does not detract from the use of the public open space for recreational purposes.

Comment

The POS area does not accept stormwater runoff from the surrounding roads or property connections. A high lake level control outlet (as detailed on dwg 04055E-03-C300) connects to the pipe infrastructure to ensure the lake does not rise above RL 4.10 during a major rainfall event. Therefore there is no drainage impediment on the central lake area and we request that the proposed Management Plan be deleted from clearance requirements.

Minor Works List

The following items were noted for repair/completion:

- 1. Street signs (Currently being installed)
- 2. CSEP 21 (Ryeland Road) requires step Irons
- 3. Fill behind kerbs to be completed (awaiting Western Power jointing)
- 4. Dual Use Paths to be completed by 25.11.05.
- Intersection at Road 2 paving repairs to lose bricks (to be relayed)
- 6. Paving to Road 2 intersection median (awaiting installation of street
- 7. Road 2 median planting (TME to discuss with Client)

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Bond Amounts

 Dual Use Paths (within POS 874) 690m
 \$48,300

 Uniform fencing to Lots 835 and 838
 \$8,755

 Bollards
 \$3,675

 Subtotal:
 \$60,730

 30% loading
 \$18,219

 Total bond (Excl GST)
 \$78,949

We look forward to receiving clearance on Peninsula Stage 1 at your earliest convenience.

Should you have any queries please contact lan Cocker on 9791 4411.

Yours faithfully

THOMPSON MCROBERT EDGELOE

IAN COCKER TMIEAust SENIOR PROFESSIONAL

23 November 2005

Copy emailed to Parkridge Group

Page 1 or z

Ø 005

Ian Cocker

From:

Laurie Blurton [laurie@dardanup.wa.gov.au]

Sent:

Thursday, 17 November 2005 10:57 AM

To:

"Mark Jones"@dardanup.wa.gov.au

Cc:

lan Cocker

Subject: RE: Parkridge Clearances

Mark,

The land does not need hydomulching as the grass has taken on the top soil and there is no evidence of sand blow.

I will forward this to Ian Cocker at TME

Laurie

--- Original Message-

From: Mark Jones

Sent: Thursday, 17 November 2005 8:51 AM

To: Laurie Blurton

Cc: Tan (E-mail)'; Thurston Saulsman (realexec@servcom.net.au)

Subject: RE: Parkridge Clearances

Laurie,

Some other conditions for the subdivision at 'The Peninsula' (WAPC Ref. 127566) that need to be satisfied include:

- 6. Land being graded and stabilised, is the land going to be hydro mulched?
- 12. Public Open Space. Advice note recommends a public open space audit be undertaken.
- 17. Uniform fencing required for lot boundaries that abut Eaton Drive and POS. Bollards also required for road reserves that abut Eaton Drive as part of road condition 1,
- 18. Eaton Drive and Collie River Bridge. Eaton Drive to be calculated as a credit, but contribution for bridge and administration fee to be paid. Require deposited plan to calculate areas and contribution / credit.
- 19. Foreshore Management Plan. How is the implementation of the adopted plan progressing?
- Drainage / Public Open Space management plan to be prepared.

Other.

- a) Need written request to name the new road off Eaton Drive. Thurston called me a few weeks ago wanting it named Peninsula Lakes Drive. The name needs to be approved by Council and the Geographic Names Committee.
- b) Clearance fee when deposited plan lodged. \$50 per lot for first 5 lots and \$25 per lot thereafter.

Regards Mark Jones Principal Town Planner Shire of Dardanup Ph: 9724 0086 Fax: 9724 0091

are 2 of 2

Page 2 of 2

From: Laurie Blurton

Sent: Wednesday, 16 November 2005 4:01 PM

To: Mark Jones Co: Ian (E-mail)

Subject: Parkridge Clearances

Mark.

Thurston wants to clear the lots and the only outstanding items that i can see are

Payment of Engineering Fees and the 12 months Maintenance Bond

Bond the unfinished works as in footpaths, signs and lan will supply figure for this plus 30%

Geotechnical Report

We need to calculate the credits for Eaton Drive

Laurie

Thurston Saulsman

From: To:

"Angela Jones" <realexec@servcom.net.au> "Thurston Saulsman" <tjs@bigpond.net.au>

Sent:

Thursday, November 17, 2005 10:06 AM

Subject:

Fw: Parkridge Clearances

Original Message ----

From: Mark Jones

To: "Laurie Blurton"@dardanup.wa.gov.au Cc: 'lan (E-mail)'; Thurston Saulsman Sent: Thursday, November 17, 2005 8:51 AM Subject: RE: Parkridge Clearances

Laurie,

Some other conditions for the subdivision at 'The Peninsula' (WAPC Ref: 127566) that need to be satisfied

6. Land being graded and stabilised. Is the land going to be hydro mulched?

This was doe in and and undertaken. Land expressed

12. Public Open Space. Advice note recommends a public open space audit be undertaken.

17. Uniform fencing required for lot boundaries that abut Eaton Drive and POS. Bollards also required for road

- 18. Eaton Drive and Collie River Bridge. Eaton Drive to be calculated as a credit, but contribution for bridge and administration fee to be paid. Require deposited plan to calculate areas and contribution / credit.
- 19. Foreshore Management Plan. How is the implementation of the adopted plan progressing?
- 20. Drainage / Public Open Space management plan to be prepared.

reserves that abut Eaton Drive as part of road condition 1.

Other:

- a) Need written request to name the new road off Eaton Drive. Thurston called me a few weeks ago wanting it named Peninsula Lakes Drive. The name needs to be approved by Council and the Geographic Names Committee.
- b) Clearance fee when deposited plan lodged. \$50 per lot for first 5 lots and \$25 per lot thereafter.

Regards Mark Jones Principal Town Planner Shire of Dardanup Ph: 9724 0086 Fax: 9724 0091

From: Laurie Blurton

Sent: Wednesday, 16 November 2005 4:01 PM

To: Mark Jones Cc: Tan (E-mail)

Subject: Parkridge Clearances

11/22/2005

Mark,

Thurston wants to clear the lots and the only outstanding items that i can see are

Payment of Engineering Fees and the 12 months Maintenance Bond

Bond the unfinished works as in footpaths, signs and Ian will supply figure for this plus 30%

Geotechnical Report

We need to calculate the credits for Eaton Drive

Laurie

ATTACHMENT 14

Western Australian PLANNING COMMISSION

Our Ref

: 127984

Your Ref

Enquiries

: Matthew Cuthbert

B W Garvey POBox 7006 EATON WA 6232

TOWN PLANNING AND DEVELOPMENT ACT. (AS AMENDED)

LOT

9000

LOCATION

PLAN/DIAGRAM

39882/-

VOLUME/FOLIO

2226/610

LOCALITY

Murdoch Crescent/Eaton Drive, Eaton

DATE PLAN REC

01 April 2005

OWNER

Luca Investments Ptv Ltd. 18 Jardine Street STIRLING WA 6021 C/- 18 Jardine Street

and New Style Constructions Pty Ltd

STIRLING WA 6021

DECISION DATE

19 May 2005

LGA

Shire of Dardanup

Dear Sir/Madam

The Commission has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the plan submitted once the conditions set out below have been fulfilled. This decision is valid for three years from the date of this advice, which includes the lodgement of the Diagram or Plan of Survey within this period.

In accordance with established procedures, all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted,

The abbreviations in brackets identify the authority or agency responsible for advising the Commission. on clearance of conditions. If there are no abbreviations, the Commission will clear the condition. Prior to the commencement on site of any works or the implementation of any condition in any other. way the subdivider should liaise with the nominated authority on the requirements it considers necessary to satisfy the condition. Advice should be obtained from the relevant authorities that the conditions have been met and a copy of that advice should be submitted with the Plan or Diagram of Survey.

The applicant is further advised that under s24(5) of the Town Planning and Development Act, the applicant may, within 28 days of being notified of a decision of the Commission to impose a condition(s) on a subdivision approval, make a written request to the Commission to reconsider its condition(s). One of the matters which the Commission will have regard to in reconsidering a condition(s) is whether there is compelling evidence by way of additional information or justification from the applicant to warrant a reconsideration of a condition(s).



South West Office, Sixth Floor, Bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230 Tel: (08) 9791 0577; Fax: (08) 9791 0576; TTY: (08) 9264 7535; Infoline: 1800 626 477 e-mail: corporate@wapc.wa.gov.au; web address: http://www.wapc.wa.gov.au ABN 35 482 341 493

Should the applicant be aggrieved by this decision there is a right for a review under Section 26 of the Town Planning and Development Act 1928. The application for review must be submitted in accordance with Part V of the Act and should be lodged within 28 days of the date of this decision to the State Administrative Appeal Tribunal (SAT), 12 St George's Tenace, Perth. It is recommended that you contact the SAT for further details (telephone 9219 3111), or go to its website: http://www.sat.justice.wa.gov.au/.

When an application is approved subject to a condition(s), the applicant should liaise with a nominated authority(s) responsible for advising the Commission on the clearance of the condition as soon as possible to establish any detailed requirements of the condition and in order to retain a right of review in the event you consider the requirements are onerous.

CONDITION(S):

DP 52369

- Those lots not fronting an existing road being provided with frontage to a constructed subdivisional road connected by a constructed subdivisional road(s) to the local road system and such subdivisional road(s) being constructed and drained at the subdivider's cost. As an alternative, the Western Australian Planning Commission is prepared to accept the subdivider paying to the Local Government the cost of such works as estimated by the Local Government subject to the Local Government giving an assurance to the Commission that the works will be completed within a reasonable period acceptable to the Commission. (LG)
- 2. Street corners within the subdivision being truncated to the standard truncation of 8.5 metres. (LG)
- A cul-de-sac head being provided at the end of Oswego Way, designed and constructed to the satisfaction of the Western Australian Planning Commission. (LG)
- 4. The subdivider making arrangements satisfactory to the Western Australian Planning Commission to contribute towards works associated with the proposed Collie River Bridge, Eaton Drive (district distributor road reserve) and associated administrative costs in accordance with the Shires of Dardanup and Harvey Joint Town Planning Scheme No. 1. (LG)
- The land being graded and stabilised at the subdivider's cost to the satisfaction of the Western Australian Planning Commission. (LG)
- 6. The land being filled and/or drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission, and any easements and/or reserves necessary for the implementation thereof, being provided free of cost. (LG)
- The subdivider to prepare an overall drainage plan for the subject land to the satisfaction of the Western Australian Planning Commission. (LG)
- 8. Uniform fencing along the boundaries of all the proposed lots abutting Eaton Drive and on the boundary of Lot 878 where it abuts the proposed public open space, to be constructed to the satisfaction of the Western Australian Planning Commission. (LG)
- 9. A restrictive covenant being registered on the certificate of title, to the benefit of the Shire of Dardanup and at the subdivider's expense, prohibiting vehicular access onto Eaton Drive from the proposed lots which abut this road, pursuant to section 129BA of the Transfer of Land Act (as amended). (LG)

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The memorial to state as follows:

"This lot is within close proximity of areas which are subject to mosquito activity at various times of the year. In consequence it is within the flight range of adult mosquitos and there may be some potential for transmission of Ross River Virus and other mosquito borne viral diseases, Further information in this regard can be obtained from the Shire of Dardanup and the Department of Health."

- 21. Prior to the commencement of any site works:
 - a site assessment shall be undertaken to determine whether acid sulphate soils are present on the land, if present their extent and severity;
 - b) if the site is found to contain acid sulphate soils, an acid sulphate soil management plan shall be submitted to and approved; and
 - all site works shall be carried out in accordance with the provisions of the approved management plan to the satisfaction of the Western Australian Planning Commission. (DoE);

ADVICE:

- i) Construction should not commence until Council has approved detailed engineering plans and specifications of the works, including earthworks, roads and paths, drainage, clearing, landscaping/rehabilitation and soil stabilisation measures, both during and after construction. Approved plans are those which have been considered by Council and duly amended to meet its requirements and approval
- ii) In respect of Condition 10, the Shire of Dardamp advise that a pre and post geotechnical report is required as high groundwater is common within Eaton.
- iii) In respect to Condition 11 of this approval, the Commission hereby approves of a cash-in-lieu contribution in accordance with section 20C of the Town Planning and Development Act, 1928.
- iv) The subdivider is advised that the subdivision is to be integrated with the adjoining subdivision with respect to drainage, traffic flow and pedestrian links. The subdivider is to coordinate discussions between the Shire of Dardanup Engineer (Manager, Technical Services) and the engineers for the adjoining landowner.
- v) In relation to Conditions 6 and 7, the Shire of Dardamp advise that a contribution of \$250 per lot for is currently required for drainage headworks costs, however the fee is upgraded in line with the consumer price index for Perth on 30 June and 30 December each year. The fee applicable will be determined at the time of payment and may therefore vary from the quoted figure.
- vi) In relation to Condition 16 the provision of underground power includes land for transformer sites, easements and standard street lighting. It is requested that the subdivider provide the Shire of Dardanup with engineering drawings detailing the location and type of street lighting proposed.





- vii) In regard to Condition 18, FESA advise that hydrants will need to be installed along all water mains at a ratio of one per 200m and are to be identified by standard road and pole markings.
- viii) The Department of Environment advise that:
 - a) The proposed development is to incorporate the principles and best management practices detailed in the Planning and Management Guidelines for Water Sensitive Urban Design (State Planning Commission, 1994) and the Manual for Managing Urban Stormwater Quality in Western Australia (Water and Rivers Commission, 1998). The subdivider is to liaise with the Department of Environment in relation to this.
 - b) The subject land is within an area that has been recognised as posing Class 2 acid sulfate soils risk. Proposals that may lead to the disturbance of acid sulfate soils should be planned and managed to avoid adverse affects on the natural and built environment, including human health and activities. Therefore, the Department of Environment and Environmental Protection Authority guidance on managing acid sulfate soils including its supporting documents should be adhered to. These documents can be found at www.environ.wa.gov.au under Contaminated Sites.
 - c) The proposed subdivision is located within the proclaimed Bunbury Goundwater Area where there is a requirement to obtain a Groundwater licence for the use of groundwater (including soak excavations). The issue of a licence is not guaranteed but if issued will contain a number of conditions including the quantity of water that can be pumped each year.
- ix) The subdivider is advised to advise all subdivision contractors of their legal obligations with respect to the Aboriginal Heritage Act of WA (1972) during construction work. The subdivider is advised to contact the Department of Indigenous Affairs (Albany Office) for further information, including the means to undertake on-going monitoring during excavation works.

Yours faithfully

for R N Stokes Acting Secretary

Western Australian Planning Commission

ATTACHMENT 15

BSD Consullants Pty Ltd
P O Box 446

TOWN PLANNING AND DEVELOPMENT ACT. (AS AMENDED)

LOT : Crown Grant No.155 LOCATION : Leschenault 19

PLAN / DIA

VOL / FOL :

APPLECROSS WA 6153

LOCALITY : Eaton Drive
DATE OF PLAN : 08 October 1993

OWNER : Penman Holdings Pty Ltd C/- Stanton & Partners Pier Street PERTH WA 6000

DECISION DATE : 13 October 1993 LGA : Shire of Dardanup

Dear Sir/Madam

The South West Region Planning Committee acting for and on behalf of the Commission under delegated power has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the plan submitted provided that the conditions set out below are fulfilled within three years from the date of this advice.

In accordance with established procedures, all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted.

CONDITION(S):

1. The foreshore and recreation area shown on the subdivision plan, measuring 42.37 hectares, being shown on the Diagram or Plan of Survey as a 'Reserve for Recreation, Foreshore Management and Drainage' and vested in the Crown under Section 20A of the Town Planning and Development Act, 1928; such land to be ceded free of cost without any payment of compensation by the Crown.

Sixth Floor Bunbury Tower 61 Victoria St., Bunbury 6230 Western Australia Tel (097) 910 577 Fax (097) 910 576

E THE REAL OF OF DEPARTMENT OF TER ELI CENTED! PLANNING AND UHBAN DEVELOPMENT The central and northern portions of Lot 4 being set aside as a separate lot on a Diagram or Plan of Survey for future acquisition for the purpose of a Reserve for Recreation, Foreshore Management and Drainage. The whole of the Foreshore Reserve being fenced with an appropriate 13) stock proof fence to the specification and satisfaction of the Local Authority. The subdivider making arrangements satisfactory to the Local Authority to ensure that potential purchasers of Lot 4 are advised that subdivision approval does not imply development approval and that the central and northern portions are:reserved for recreation under the Local Authority Town Planning Scheme located within the Collie River flood plain and are susceptible to inundation. (LA The subdivider making arrangements satisfactory to the Local Authority to ensure that potential purchasers of Lots 1, 2, 3 and 4 are advised of their obligation to provide a 10% Public Open Space contribution in accordance with the approved Structure Plan. The subdivider making arrangements satisfactory to the Water 6. Authority to ensure that the prospective purchasers in the transfer of the lot(s) acknowledge in writing that they are aware that the lots are located within the Bunbury Groundwater Area where there is a need to obtain a licence before a bore or well can be constructed. The licence will contain a number of conditions including the quantity of water that can be pumped each year. (WA) Certification from the State Energy Commission that satisfactory arrangements have been made for the provision of easements for the two existing power lines traversing the property. (SECWA) The applicant is advised that the Local Authority has advised that future subdivision of proposed Lots 1, 2, and 3 will require pro-rata contributions for the primary school sites in the locality, for the construction of the Collie River Bridge linking Eaton and Australind, and for the construction of Hands

Avenue as the major arterial distributor road.

Destinancia Destroparations en companyents SELECT DIES COST 3 THE PART DEPARTHEM OF MARIE PLANNING AND URBAN DEVELOPMENT The applicant is further advised that the majority of Lot 5 is currently reserved for Recreation and that an approach should be made to the Local Authority as soon as possible to initiate a Scheme Amendment to rezone that area appropriately. Yours faithfully CAROL ANDERSON SECRETARY SOUTH WEST REGION PLANNING COMMITTEE 012238 Slath Floor Bunbury Tower 61 Victoria St., Bunbury 6230 Western Australia Tel (097) 910 577 Fax (097) 910 576

01.

ATTACHMENT 16

Austro Planni Comn

Your Ref Enquiries

: Malthew Cuthbert (Ph 9791 0577)

PLAN CHECK RECEIVED 1 7 MAY 2010

Plancheck P O Box 289 MOUNT LAWLEY WA 6929

> Approval Subject To Condition(s) Freehold (Green Title) Subdivision

Application No: 141716

Planning and Development Act 2005

Applicant : Plancheck P O Box 289 MOUNT LAWLEY WA 6929

Owner : Parkridge Group Pty Ltd 8357 Angelo Street SOUTH

PERTH WA 6151

Application Receipt ; 22 March 2010

Lot number : 9501

Location :

Diagram/Plan

50198

C/T Volume/Folio : 2632/552

3/1 Volume/Folio , 2032/552

Street Address : Lot 9501 No Street Address Available, Eaton

Local Government : Shire of Dardanup

The Western Australian Planning Commission has considered the application referred to and is prepared to endorse a deposited plan in accordance with the plan date-stamped 22 March 2010 once the condition(s) set out have been fulfilled.

This decision is valid for four years from the date of this advice, which includes the lodgement of the deposited plan within this period.

The deposited plan for this approval and all required written advice confirming that the requirement(s) outlined in the condition(s) have been fulfilled must be submitted by 18 May 2014 or this approval no longer will remain valid.



Reconsideration - 28 days

Under section 151(1) of the Planning and Development Act 2005, the applicant/owner may, within 28 days from the date of this decision, make a written request to the WAPC to reconsider any condition(s) imposed in its decision. One of the matters to which the WAPC will have regard in reconsideration of its decision is whether there is compelling evidence by way of additional information or justification from the applicant/owner to warrant a reconsideration of the decision. A request for reconsideration is to be submitted to the WAPC on a Form 3A with appropriate fees. An application for reconsideration may be submitted to the WAPC prior to submission of an application for review. Form 3A and a schedule of fees are available on the WAPC website; http://www.wapc.wa.gov.au

Right to apply for a review - 28 days

Should the applicant/owner be aggrieved by this decision, there is a right to apply for a review under Part 14 of the Planning and Development Act 2005. The application for review must be submitted in accordance with part 2 of the State Administrative Tribunal Rules 2004 and should be lodged within 28 days of the date of this decision to: the State Administrative Tribunal, 12 St Georges Terrace, Perth, WA 6000. It is recommended that you contact the tribunal for further details: telephone 9219 3111 or go to its website: http://www.sat.lustice.wa.gov.au

Deposited plan

The deposited plan is to be submitted to the Western Australian Land Information Authority (Landgate) for certification. Once certified, Landgate will forward it to the WAPC. In addition, the applicant/lowner is responsible for submission of a Form 1C with appropriate fees to the WAPC requesting endorsement of the deposited plan. A copy of the deposited plan with confirmation of submission to Landgate is to be submitted with all required written advice confirming compliance with any condition(s) from the nominated agency/authority or Local Government. Form 1C and a schedule of fees are available on the WAPC website: http://www.wapc.wa.gov.au

Condition(s)

The WAPC is prepared to endorse a deposited plan in accordance with the plan submitted once the condition(s) set out have been fulfilled.

The condition(s) of this approval are to be fulfilled to the satisfaction of the WAPC.

The condition(s) must be fulfilled before submission of a copy of the deposited plan for endorsement.

The agency/authority or Local Government noted in brackets at the end of the condition(s) identify the body responsible for providing written advice confirming that the WAPC's requirement(s) outlined in the condition(s) have been fulfilled. The written advice of the agency/authority or Local Government is to be obtained by the applicant/owner. When the written advice of each identified agency/authority or Local Government has been obtained, it should be submitted to the WAPC with a Form 1C and appropriate fees and a copy of the deposited plan.

South West Office, Sixth Floor, Bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230
Tel: (08) 9791 0577; Fax: (08) 9791 0576; TTY: (08) 9264 7535; Infoline: 1800 626 477
e-mall: corporate@wepc.wa.gov.au; web address: http://www.planning.wa.gov.au
ABN 35-482-341-493



If there is no agency/authority or Local Government noted in brackets at the end of the condition(s), a written request for confirmation that the requirement(s) outlined in the condition(s) have been fulfilled should be submitted to the WAPC, prior to lodgement of the deposited plan for endorsement.

Prior to the commencement of any site works or the implementation of any condition(s) in any other way, the applicant/owner is to liaise with the nominated agency/authority or Local Government on the requirement(s) it considers necessary to fulfil the condition(s).

The applicant/owner is to make reasonable enquiry to the nominated agency/authority or Local Government to obtain confirmation that the requirement(s) of the condition(s) have been fulfilled. This may include the provision of supplementary information. In the event that the nominated agency/authority or Local Government will not provide its written confirmation following reasonable enquiry, the applicant/owner then may approach the WAPC for confirmation that the condition(s) have been fulfilled.

In approaching the WAPC, the applicant/owner is to provide all necessary information, including proof of reasonable enquiry to the nominated agency/authority or Local Government.

The condition(s) of this approval, with accompanying advice, are:

CONDITION(S):

- Suitable arrangements being made with Water Corporation so that provision of a suitable water supply service will be available to lot(s) shown on the approved plan of subdivision. (Water Corporation)
- Sulfable arrangements being made with the Water Corporation so that provision of a sewerage service will be available to the lot/s shown on the approved plan of subdivision. (Water Corporation)
- Arrangements being made to the satisfaction of the Western Australian Planning Commission and to the specification of Western Power for the provision of an underground electricity supply service to the lot(s) shown on the approved plan of subdivision. (Western Power)
- The transfer of land as a Crown Reserve, free of cost to Western Power for the provision of electricity supply infrastructure. (Western Power)
- A detailed plan demonstrating the location and capacity of fire emergency infrastructure, including hydrants, is to be prepared and implemented to the specifications of the Water Corporation and the Fire and Emergency Services Authority. (FESA)
- The proposed 15m wide road reserve to be widened to 20m to be consistent with the existing road reserve width of Glenhuon Boulevard, (Local Government)
- The proposed roundabout of Glenhuon Boulevard and Peninsula Lakes Drive intersection to be constructed to Local Government specifications. (Local Government)

South West Office, Sixth Floor, Bunbury Tower, 61 Victoria Street, Bunbury, Western Australia 6230
Tel: (08) 9791 0577; Fax: (08) 9791 0576; "TTY: (08) 9264 7535; Infoline: 1809 626 477
e-mail: corporate@wapc.wa.gov.au; web address: http://www.planning.wa.gov.au
A8H 35 482 341 493



- 8. An area(s) of land equal to at least 10% of the subject lot in area, in a position to be agreed with the WAPC, being shown on the Deposited Plan as a "Reserve for Recreation" 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)
- Footpaths to be constructed along Peninsula Lakes Drive to Local Government specifications. (Local Government)
- The applicant/owner making satisfactory arrangements with the Western Australian Planning Commission for developer cost contributions applicable under the Joint Shire of Harvey-Dardanup TPS No.1 (Local Government)

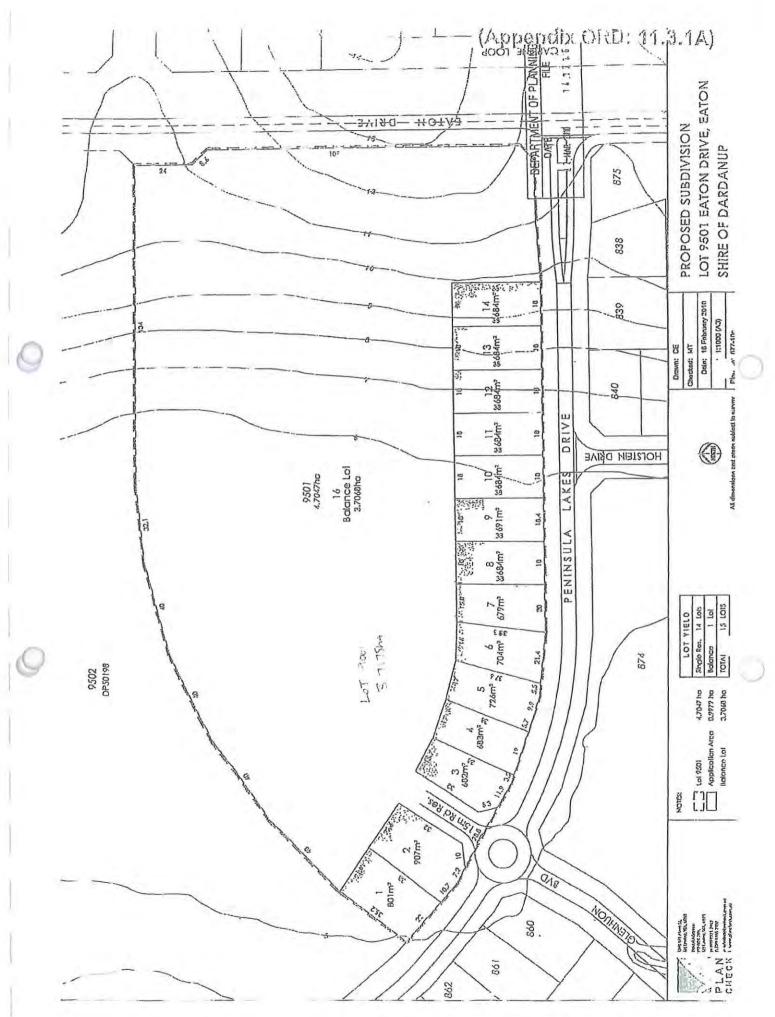
ADVICE:

- Western Power provides only one point of electricity supply per freehold (green title) lot and requires that any existing overhead consumer service is required to be converted to underground from the lot boundary.
- If an existing aerial electricity cable servicing the land the subject of this approval crosses over a proposed lot boundary as denoted on the approved plan of subdivision satisfactory arrangements will need to be made for the removal and relocation of that cable.
- With regard to Condition 4, the specific location and area of land required is to be to the satisfaction of the WAPC on the advice of the Local Government and Western Power.
- Wilh regard to Condition 8, the WAPC hereby approves of a cash-in-lieu contribution in accordance with Section 153 of the Planning and Development Act, 2005,

Tony Evans Secretary

Western Australian Planning Commission

13 May 2010



ATTACHMENT 17

ATTACHMENT 17

UNCONFIRMED MINUTES OF THE ORDINARY MEETING OF COUNCIL HELD 23RD NOVEMBER 2011

20

OFFICER RECOMMENDED RESOLUTION & COUNCIL RESOLUTION

347/11

MOVED - Cr. C N Boyce

SECONDED -

Cr. M T Bennett

THAT Council:

- Refers the Pathway Asset Management Plan 2012-2022 as prepared by the Manager Technical Services to the Strategic Financial Plan for a funding program to be developed.
- Nominates the following pathway projects for possible funding under the 2012-2013 Round of the Regional Bicycle Network Local Government Grants Program and any other eligible pathway funding schemes:

PROJECT	SECTION	LENGTH
Crampton Avenue	Millard St - Lofthouse St	610m
Charterhouse Street	Hamilton Rd - Hale Rd	510m

Note:

If the funding applications are successful, Council will be required to allocate \$73,500 in the 2012/13 budget.

CARRIED 9/0

11.3 MANAGER PLANNING SERVICES REPORT

11.3.1 <u>Title: Request for Clearance of Subdivision WAPC Approval #</u>
141716 (Parkridge Group Pty Ltd)

Reporting

Planning Services

Department:

Reporting Officer:

Mr Robert Quinn - Manager Planning

Services

Legislation:

Planning and Development Act 2005

File Number:

PL141716

Background

A request has been received to clear conditions of subdivision for WAPC approval #141716. Based on long standing practice, all Parkridge Group subdivision clearances are presented to Council for their endorsement.

WAPC approval # 141716 is for 14 lots on Peninsula Lakes Drive. The parent lot being lot 9501 is 4.7047ha in area (Appendix ORD: 11.3.1A). The request is to clear conditions for the creation of ten lots, being lots 4 - 10 inclusive (Appendix Ord: 11.3.1B).

CONFIRMED AS A TRUE AND CORRECT RECORD AT THE ORDINARY MEETING OF COUNCIL HELD 14TH DECEMBER 2011

21

UNCONFIRMED MINUTES OF THE ORDINARY MEETING OF COUNCIL HELD 23RD NOVEMBER 2011

None.

Strategic Plan

Legal Implications -

Mone

Environment

No adverse environmental impacts foreseen.

Precedents -

Mone.

Budget Implications -

None.

Budget - Whole of Life Cost -

None.

Council Policy Compliance -

None

Officer Comment

In order to clear the conditions of WAPC approval # 141716 the following conditions are required to be cleared by Council. The following comments are presented to Council for consideration:

Co	ondition	Comment	Requirement
6.	The proposed 15m wicle road reserve to be widened to 20m to be consistent with the existing road reserve width of Glenhuon Boulevard. (Local Government).	Ivlot required at this stage	Nil
7.	The proposed roundabout of Glenhuon Boulevard and Peninsula Lakes Drive intersection to be constructed to Local Government specifications. (Local Government).	A pro rata contribution towards the construction of the proposed roundabout is required at this stage. Total estimated cost of roundabout is \$80,000. Pro-rata cost based on land area of 10 lots equates to 16% of lots 9501 and 9502 which totals to \$13,024. A 5% administration fee of \$651 is applied also.	Contribution- \$13,024 (No GST required) Administration Fee-\$651 (plus GST)
8.	An area(s) of land equal to at least 10% of the subject lot in area, in a position to be agreed with the WAPC, being shown on the Deposited Plan as a "Reserve for Recreation" and vested in the Crown under Section 152 of	A cash in lieu contribution is required to satisfy this condition. The Planning and Development Act 2005 provides provisions to deal with cash-in-lieu payments and POS calculations. Firstly, Council need to be satisfied that the valuation is acceptable and secondly payment needs to be within ninety days of the valuation.	\$ 150,000 (No GST required)

Condition	Comment	Requirement
the Planning and Development Act 2005, such land to be ceded free of cost and without payment or compensation by the Crown. (Local Government).	been provided by the subdivider which indicates the land is worth \$1,500,000. Therefore a cash in lieu payment of \$150,000 is required to satisfy this condition. (Appendix	
 Footpaths to be constructed along Peninsula Lakes Drive to Local Government specifications. (Local Government). 		Mil
10. The applicant/owner making satisfactory arrangements with the Western Australian Planning Commission for developer cost contributions applicable under the Joint Shire of Harvey-Dardanup TPS No. 1 (Local Government).	Town Planning Scheme Schedule of Shared Costs is required. The adopted 2011/2012 contribution rate is \$62,342 ha. Parkridge Estate has a prefunding credit of \$36,788.61 for the first carriageway, therefore a deduction of \$5,852.15	First carriageway \$I\iii Second carriageway \$6,780.40 (I\o GST required) Collie River Bridge \$35,114.42 (I\o GST required)
Contribution required (GST exclusive)	GST Total(GST inclusive)	\$205,569.82 \$65.10 \$205,634.92

<u>Council Role</u> - Quasi-Judicial

Voting Requirements - Simple Majority

Discussion:

Chief Executive Officer, Mr Mark Chester advised of a correction to the sum in the first paragraph of the recommendation. Please alter to read \$205,634.92.

Manager Planning Services, Mr Robert Quinn advised that the current valuation provided is dated 20/10/11. Council does have the opportunity to query it if they are not happy. Valuation is from a sworn valuer. A private valuation would cost between \$3,000 to \$4,000.

OFFICER RECOMMENDED RESOLUTION & COUNCIL RESOLUTION

348/11 MOVED - Cr. M T Bennett

SECONDED -

Cr. C N Boyce

THAT Council advise Parkridge Group Pty Ltd to satisfy conditions 6-10 inclusive of WAPC subdivision approval No. 141716 the total amount of \$205,634.92 with \$65.10 being GST will need to be submitted to the Shire of Dardanup Administration Office, Eaton prior to the Chief Executive Officer endorsing deposited plan 71122 for lots 4-14 inclusive, Peninsula Lakes Drive Eaton, the contribution components being:

Contribution to roundabout	13,024.00
Administration fee	651.00
Administration GST	65.10
Public Open Space Cash In Lleu	150,000.00
Bridge Contribution	35,114.42
Eaton Drive Contribution	6,780.40
TOTAL	\$ 205,634.92

CARRIED 9/0

11.4 TOWN PLANNING OFFICER REPORT

11.4.1 <u>Title: Public Open Space Management Requirement - Lot 152</u> Recreation Drive, Eaton (Coastline Building Group Ptv Ltd)

Reporting Department: Planning Services

Reporting Officer: Elizabeth Edwards - Senior Planning Officer

Legislation: Planning and Development Act 2005

Town Planning Scheme No. 3

File Number: A10382, A10381

Background

Lot 1 Recreation Drive was rezoned under TPS No. 3 in 2007 for the development of residential lots at R20 and R10 densities and a large lot (now Lot 151) was zoned as a "Restricted Use" for the development of aged person dwellings. TPS No. 3 contains the following condition (f) of the "Restricted Use Zone" R9:

ATTACHMENT 18

Complete Complete And Department

ATTACHMENT 18



South West Region

Your ref:

Our ref:

807/6/9/3PV3

Enquiries: Mr Frank Scibilia

11 May 2009

Parkridge Group Pty Ltd PO Box 8357 SOUTH PERTH WA 6151

Attention: Mr Thurston-Saulsman

Dear Mr Saulsman

Parkridge Estate, Eaton, Shire of Dardanup - Provision of Public Open Space

I refer to your letter dated 3 February 2009 seeking clarification on the subdivider's provision for public open space at Parkridge Estate in response to the DPI's method of calculating the POS requirements which was attached to the DPI's letter dated 5 June 2007.

It is noted that you disagree with the DPI's POS audit where it was revealed that there is a shortfall of 5.2515 ha in POS (i.e. a total of 13.2763 ha of POS is required and only 8.0248 ha of usable land has been provided for active recreational pursuits).

In response to your concerns I propose:

- the structure plan, accompanying the Scheme Amendment provided overall guidance for subdivision, land use (including open space) and access The structure plan provided a framework for more detailed planning (e.g. POS Audits) which is to occur at the subdivision stage;
- b) The POS Audit was based on accurate figures, accurate survey plans, up-to-date cadastre details and policy plans so as to determine which areas are classified as gross subdivisible (i.e. capable of being subdivided and developed). POS Audits can also include requests to the WAPC from the applicant requesting that drainage areas be credited as POS by demonstration through engineering reports which indicate the ability to safely use drainage areas for public recreation for a considerable period within the year;
- As an audit was not provided by you as proponent, DPI determined an audit
 was necessary due to concerns being expressed by yourself and the Shire
 Council, and prepared one to ascertain the status of open space within
 Parkridge estate;

- d) Prior to the gazettal of the Planning and Development Act 2005, all local urban parks, including those containing wetlands and drainage basins, could only be vested for 'Recreation' purposes under Section 20A of the Town Planning and Development Act. The title may have caused confusion as it assumed that 100 percent of the Reserve, including the wetland/drainage area, is useable for recreation and the whole reserve can be dedicated as part of the 10 percent POS requirement. The current statutory framework allows multipurpose reserves to be vested for a wide range of uses ranging from active recreation to drainage. POS Audits can now be prepared separately based on actual land use and usability for recreational pursuits;
- e) WAPC records indicate that no POS was provided under WAPC Ref: 105506. However, POS was provided by a latter application WAPC Ref:118006 which consisted of Lot 437 (2025.3 m²) and Lot 438 (1480.6 m²) of which the latter included a 250 m² drainage basin and an embankment on one side. The lots were not included in the POS audit as they were not reclassified as Crown reserves on the cadastre database. The POS Audit has been modified accordingly which now shows a reduced shortfall of 4.9 ha in POS;
- f) The final arbiter of a POS Audit is the WAPC, not the Shire. However, it should be noted that the Shire now supports the DPI's version of the POS Audit; and
- g) The POS audit focuses on the land owned by Parkridge or where Parkridge previously provided Crown reserves or POS lots.

Please be advised that the POS was based on the WAPC Policy DC 2.3 and not the Liveable Neighbourhoods Policy as the subdivision applications were not requested to be determined under the Liveable Neighbourhoods Policy.

While I believe you will still be concerned I maintain the Audit was done as accurately as possible. If you wish to submit your own audit it will be compared to the one done by DPI to see where discrepancies are and why.

Notwithstanding the above I recommend that a structure plan be progressed for the balance of the site. This will provide a good guide for further subdivision and it will also be able to determine the open space (active and passive) required and relationships with areas required for drainage and conservation.

If you want to discuss draft structure plan designs I would be happy to take a look and provide comment,

Please do not hesitate to contact me or Frank Scibilla of this office if you have any further questions.

Yours sincerely

Michael Schramm

Director, South West Planning



REVISED 20 APRIL 2009

DC.2.3 Formula

1. Total Area:	Area
I)The parent lot	255,20 ha
li) Lot 9504 - (Owned by a Parkridge company)	2.2261 ha
III) Lot 9509 (all Floodway)	16,1388 ha
iv) Lot 9503 (All Floodway)	17.16 ha
v) Lot 9502 (3.050 ha Floodway)	33.6749 ha
vi) Lot 9501	4.7047 ha
vII) Lot 5679 (previously Lot 5) (43,3831 ha Floodway)	44.2311 ha
vIII) Lot 1004 (Not owned by Parkridge)	9.864 ha
ix) Lot 7000 Retirement Village (Not owned by Parkridge)	8.041 ha
x) Lot 999 (Was sold by Parkridge as a residential lot)	0.2476 ha
Ix) Lot 9002 (Not owned by Parkridge)	2.2982 ha
x) Subdivided land	116,069 ha
Total Area of Parkridge Estate:	234.1918 ha
2. Deductions from land owned by Parkridge Estate and Foreshore reserves	
I) Primary School Area	4.001 ha
li) High School Area	8,7529 ha
(III) EPP welland - Lot 1028 (Reserve 48392)	2.5996 ha
Iv) Floodways (Foreshore areas mentioned in Iii) - vii) of Total Area which includes dedicated drainage areas but not POS areas)	79.7319 ha
v) Drainage Basin - Lot 4 (Reserve 45531)	0.3904 ha
vi) Drainage Basin - Lot 874 (Reserve 48933)	0.7500 ha
vii) Pump Station - Lot 873 (Reserve 49042)	0.1025 ha
vIII) Eaton Drive	5.1 ha
ix) Drainage Basin - Lot 438 Charolais Mews and 50% embankment	0,0250ha
Total Deductions:	101.6783
3. Gross Subdivisible Area:	132,5135ha
4. 10 percent POS requirement .	13.2513 ha
	8% as land contribution = 10,601 ha 2% as cash-in-lieu contribution = 2,6503 ha



Department for Planning and Infrastructure
Government of Western Australia

- SACYSTOTICATE AT TAXABLE DESCRIPTION	
6.Public Open Space - Existing and Proposed on Structure Plan as agreed by the Shire and the Commission (including agreed credits to non-	
gross subdivisible areas) i) Lot 874 (Reserve 48933) excluding drainage	1,6195 ha
basin/lake	110,100,111
II) Lot 1028 (Reserve 48392) excluding EPP lake	0.4939 ha
ill) Lot 4 (Reserve 45531) excluding drainage basin/lake	0.5524 ha
lv) Lot 5820 (Reserve 45333) Shelland Place	0.4169 ha
v) Lot 5786 (Reserve 44580)Sindhi Close	1.6977 ha
vl) Lot 19 (Reserve 45358) Recreation Drive	2.9057 ha
vII) Lot 875 (Reserve 48870) Península Rd	0,1451
viii) Lot 6060 (Reserve 46255) Eaton Drive verge area	0.1936 ha
x) Lot 437 Gromark Gale	0.20253
x) Lot 438 Charolaise Mews excluding the drainage basin and 50 % embankment	0.12306
6.Total POS provided	8.35039 ha
7.Overall shortfall in POS	4.9009 ha

ATTACHMENT 19



Your Ref

: 100818

Enquiries

: Andrew Blee (Ph 9791 0577)

Gray & Lewis Land Use Planners Suite 5, 2 Hardy Street SOUTH PERTH WA 6151

Approval Subject To Condition(s) Freehold (Green Title) Subdivision

Application No: 144999

Planning and Development Act 2005

Applicant

Gray & Lewis Land Use Planners Suite 5, 2 Hardy Street SOUTH

PERTH WA 6151

Owner

Parkridge Group Pty Ltd P O Box 8357 Angelo Street SOUTH

PERTH WA 6151

Application Receipt :

30 September 2011

Lot Number

Diagram / Plan

50198

Location

C/T Volume/Folio

2632/552, 2632/553

Street Address

Lot 9501 Peninsula Lakes Drive, Eaton

Local Government

Shire of Dardanup

The Western Australian Planning Commission has considered the application referred to and is prepared to endorse a deposited plan in accordance with the plan date-stamped 30 September 2011 once the condition(s) set out have been fulfilled.

This decision is valid for four years from the date of this advice, which includes the lodgement of the deposited plan within this period.

The deposited plan for this approval and all required written advice confirming that the requirement(s) outlined in the condition(s) have been fulfilled must be submitted by 12 December 2015 or this approval no longer will remain valid.



Reconsideration - 28 days

Under section 151(1) of the *Planning and Development Act 2005*, the applicant/owner may, within 28 days from the date of this decision, make a written request to the WAPC to reconsider any condition(s) imposed in its decision. One of the matters to which the WAPC will have regard in reconsideration of its decision is whether there is compelling evidence by way of additional information or justification from the applicant/owner to warrant a reconsideration of the decision. A request for reconsideration is to be submitted to the WAPC on a Form 3A with appropriate fees. An application for reconsideration may be submitted to the WAPC prior to submission of an application for review. Form 3A and a schedule of fees are available on the WAPC website: http://www.wapc.wa.gov.au

Right to apply for a review - 28 days

Should the applicant/owner be aggrieved by this decision, there is a right to apply for a review under Part 14 of the *Planning and Development Act 2005*. The application for review must be submitted in accordance with part 2 of the *State Administrative Tribunal Rules 2004* and should be lodged within 28 days of the date of this decision to: the State Administrative Tribunal, 12 St Georges Terrace, Perth, WA 6000. It is recommended that you contact the tribunal for further details: telephone 9219 3111 or go to its website: http://www.sat.justice.wa.gov.au

Deposited plan

The deposited plan is to be submitted to the Western Australian Land Information Authority (Landgate) for certification. Once certified, Landgate will forward it to the WAPC. In addition, the applicant/owner is responsible for submission of a Form 1C with appropriate fees to the WAPC requesting endorsement of the deposited plan. A copy of the deposited plan with confirmation of submission to Landgate is to be submitted with all required written advice confirming compliance with any condition(s) from the nominated agency/authority or local government. Form 1C and a schedule of fees are available on the WAPC website. http://www.wapc.wa.gov.au

Condition(s)

The WAPC is prepared to endorse a deposited plan in accordance with the plan submitted once the condition(s) set out have been fulfilled.

The condition(s) of this approval are to be fulfilled to the satisfaction of the WAPC.

The condition(s) must be fulfilled before submission of a copy of the deposited plan for endorsement.

The agency/authority or local government noted in brackets at the end of the condition(s) identify the body responsible for providing written advice confirming that the WAPC's requirement(s) outlined in the condition(s) have been fulfilled. The written advice of the agency/authority or local government is to be obtained by the applicant/owner. When the written advice of each identified agency/authority or local government has been obtained, it should be submitted to the WAPC with a Form 1C and appropriate fees and a copy of the deposited plan.



If there is no agency/authority or local government noted in brackets at the end of the condition(s), a written request for confirmation that the requirement(s) outlined in the condition(s) have been fulfilled should be submitted to the WAPC, prior to lodgement of the deposited plan for endorsement.

Prior to the commencement of any site works or the implementation of any condition(s) in any other way, the applicant/owner is to liaise with the nominated agency/authority or local government on the requirement(s) it considers necessary to fulfil the condition(s).

The applicant/owner is to make reasonable enquiry to the nominated agency/authority or local government to obtain confirmation that the requirement(s) of the condition(s) have been fulfilled. This may include the provision of supplementary information. In the event that the nominated agency/authority or local government will not provide its written confirmation following reasonable enquiry, the applicant/owner then may approach the WAPC for confirmation that the condition(s) have been fulfilled.

In approaching the WAPC, the applicant/owner is to provide all necessary information, including proof of reasonable enquiry to the nominated agency/authority or local government.

The condition(s) of this approval, with accompanying advice, are:

CONDITION(S)

- Suitable arrangements being made with the Water Corporation so that provision of a suitable water supply service will be available to lot(s) shown on the approved plan of subdivision. (Water Corporation)
- Suitable arrangements being made with the Water Corporation so that provision of a sewerage service will be available to the lot/s shown on the approved plan of subdivision. (Water Corporation)
- Arrangements being made to the satisfaction of the Western Australian Planning Commission and to the specification of Western Power for the provision of an underground electricity supply service to the lot(s) shown on the approved plan of subdivision. (Western Power)
- The transfer of land as a Crown Reserve, free of cost to Western Power for the provision of electricity supply infrastructure. (Western Power)
- 5. Those lots not fronting an existing road being provided with frontage to a constructed road(s) connected by a constructed road(s) to the local road system and such road(s) being constructed and drained at the applicant/owner's cost. As an alternative the WAPC is prepared to accept the applicant/owner paying to the local government the cost of such road works as estimated by the local government subject to the local government providing formal assurance to the WAPC confirming that the works will be completed within a reasonable period as agreed by the WAPC. (Local Government)



- Street corners within the subdivision are to be truncated to the satisfaction of the local government. (Local Government)
- The dual use path/cycleway as shown on the approved plan being constructed by the applicant/owner (Local Government)
- On-street car parking adjacent to the Public Open Space is to be designed and constructed to the satisfaction of the local government. (Local Government)
- Street lighting is to be provided to the satisfaction of the local government. Local Government)
- The land is to be provided with an adequate outlet drainage system at the applicant/owner's cost. (Local Government)
- The applicant/owner is to provide a geotechnical report certifying that the land is physically capable of development prior to the commencement of site works. (Local Government)
- The land being filled and/or drained at the subdivider's cost to the satisfaction of the Western Australian Planning Commission and any easements and/or reserves necessary for the implementation thereof, being granted free of cost. (Local Government)
- An Urban Water Management Plan being prepared to the satisfaction of the Department of Water and local government. (Department of Water)
- The approved Urban Water Management Plan being implemented to the satisfaction of the Department of Water and local government. (Local Government)
- The proposed reserve being 7744m² and lots 113-118 being removed from the plan and amalgamated into the balance of title (lot 9502). (Local Government)
- 16. The proposed reserve(s) being 1636m² in area shown on the approved plan of subdivision being shown on the Deposited Plan as a "Reserve for Drainage" 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)
- An area(s) of land at least 10% of the subject lot (l.ot 9502), in a position to be agreed with the WAPC, being shown on the Deposited Plan as a "Reserve for Recreation" 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)
- A detailed plan demonstrating the location and capacity of fire emergency infrastructure, including hydrants, is to be prepared and implemented to the specifications of the Water Corporation and the Fire and Emergency Services Authority. (FESA)



- 19. Pursuant to section 150 of the Planning and Development Act 2005 (as amended), a restrictive covenant preventing motor vehicle access onto Eaton Drive benefiting the local government being lodged on the Certificates of Title of the proposed Lot 50, at the full expense of the applicant. (Local Government)
- 20. The subdivider paying to the Shire of Dardanup, prior to the endorsement of final approval by the Commission, a proportion of the Shared Costs determined in according to the then current Schedule of Shared Costs maintained in accordance with Clause 18 of the Shire of Harvey and Shire of Dardanup Joint Town Planning Scheme No. 1 ('the Scheme'), the proportion being calculated as the net subdividable area of the subdivision divided by the applicable total net subdividable area specified in Schedules 3 or 4 of the Scheme and so that the amount so calculated does not have the effect of requiring payment of any shortfall claimed to relate to any earlier subdivision. (Local Government)
- 21 A Notification, pursuant to Section 165 of the Planning and Development Act 2005 is to be placed on the Certificates of Title of the proposed lot(s) advising of the existence of a hazard or other factor. Notice of this notification is to be included on the Deposited Plan. The notification to state as follows:
 - "This lot is in close proximity to known mosquito breeding areas. The predominant mosquito species is known to carry Ross River Virus and other diseases." (DoP Bunbury)
- Measures being taken to the satisfaction of the Western Australian Planning Commission to ensure the identification and protection of any vegetation on the site worthy of retention prior to commencement of site works. (Local Government)

ADVICE

- Where the Water Corporation is the designated Utility Services Provider for the proposed subdivision relating to water, sewerage and/or drainage, the subdivider shall make satisfactory arrangements with the Corporation for the provision of the requisite services.
- ii. Where required, the subdivider shall provide service connections, make financial arrangements, set aside land, grant easements, apply notices or other requirements, to protect existing and proposed Corporation assets to the satisfaction of the Water Corporation.
- iii. Upon receipt of a request from the subdivider, a Land Development Agreement under Section 67 of the Water Agencies (Powers) Act 1984, will be prepared by the Water Corporation which will document specific requirements for the proposed subdivision.
- iv. With regard to Condition 3, Western Power provides only one point of electricity supply per freehold (green title) lot and requires that any existing overhead consumer service is required to be converted to underground.



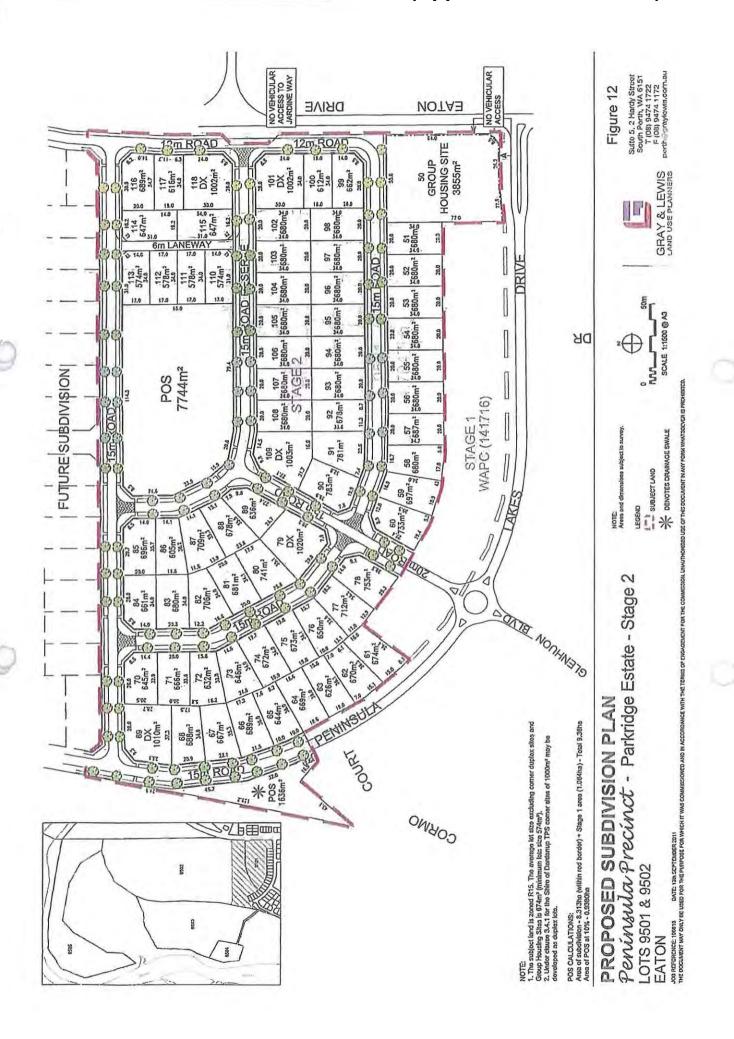
- v. If an existing aerial electricity cable servicing the land the subject of this approval crosses over a proposed lot boundary as denoted on the approved plan of subdivision, satisfactory arrangements will need to be made for the removal and relocation of that cable.
- vi. With regard to Condition 4, the specific location and area of land required is to be to the satisfaction of the WAPC on the advice of the Local Government and Western Power
- vii. All rubbish and vegetation cleared from or created on the land is to be disposed of by means other than burning, to avoid an offence under the Environmental Protection Act 1986.
- viii. Prior to the commencement of site works, construction drawings for such are to be submitted to the local government for approval.

Neil Thomson

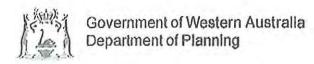
Acting Secretary

Western Australian Planning Commission

12 December 2011



ATTACHMENT 20



Liveable neighbourhoods

You Are Here: Home > The planning system > Liveable neighbourhoods

Liveable Neighbourhoods update page - January 2009 (34.34 KB)

Liveable Neighbourhoods (7673.01 KB)

| Residential Density and Housing Examples - Perth, WA (3173.17 KB)

Liveable Neighbourhoods has been adopted by the WAPC as operational policy, and is to be followed in the design and approval of urban development. Liveable Neighbourhoods applies to structure planning and subdivision for greenfield sites and for the redevelopment of large brownfield and urban infill sites.

In general, Liveable Neighbourhoods replaces the current WAPC development control policies. Where there is conflict with existing policies, Liveable Neighbourhoods will prevail unless an applicant can demonstrate why the relevant Liveable Neighbourhoods policies cannot or should not apply.

Overlaps between development control policies and Liveable Neighbourhoods will be progressively removed through a mixture of incorporation into Liveable Neighbourhoods and rescission of redundant policies. Development control policies will of course be retained for those matters not covered by Liveable Neighbourhoods.

Liveable Neighbourhoods

Liveable Neighbourhoods Review

The Department of Planning has initiated the review of the Western Australian Planning Commission's (WAPC) Liveable Neighbourhoods ("LN") and related planning policies. Your input is sought to help identify issues to inform the review.

LN contains information on a wide range of land development matters not limited to planning. The wide range of matters addressed in LN are complex and technical in nature. Many LN issues are known and have been captured, others are yet to be documented.

A staged review of LN will be undertaken. The first stage commences with the identification

Page 2 of 3

and capture of all broad LIN review matters/issues. To neip capture the issues, a table has been prepared which focuses upon:

What works? - aspects of LN that has performed well to date.

What can be improved? – areas that need to be improved to enhance performance.

What hasn't worked? – areas that have failed and need comprehensive review & re-work.

What's missing? – matters & issues which are currently not included in LN and should be.

Several key stakeholders have been requested to review the issues table and identify any broad review issues not listed. This exercise solely focuses on the identification and capture of all broad matters/issues to inform the LN review. Further consultation and input on specific detailed matters/issues will be sought from stakeholders in future LN review stages.

Once responses are received and reviewed, the table will be consolidated and finalised to form a final list of LN review matters/issues. The information gathered will assist to refine the scope and scale of the LN review, including resource allocation, staging and timing.

The final list of LN review matters/issues will then be used as a starting point to undertake the review of LN on a staged basis, generally aligned to the topics within existing LN 'elements'.

To ensure the wide range of complex, technical and competing matters and issues are appropriately managed and considered throughout the LN review, a technical advisory group will be established comprising members from state and local government, planning and development industry sectors.

LN Review Stakeholder Database

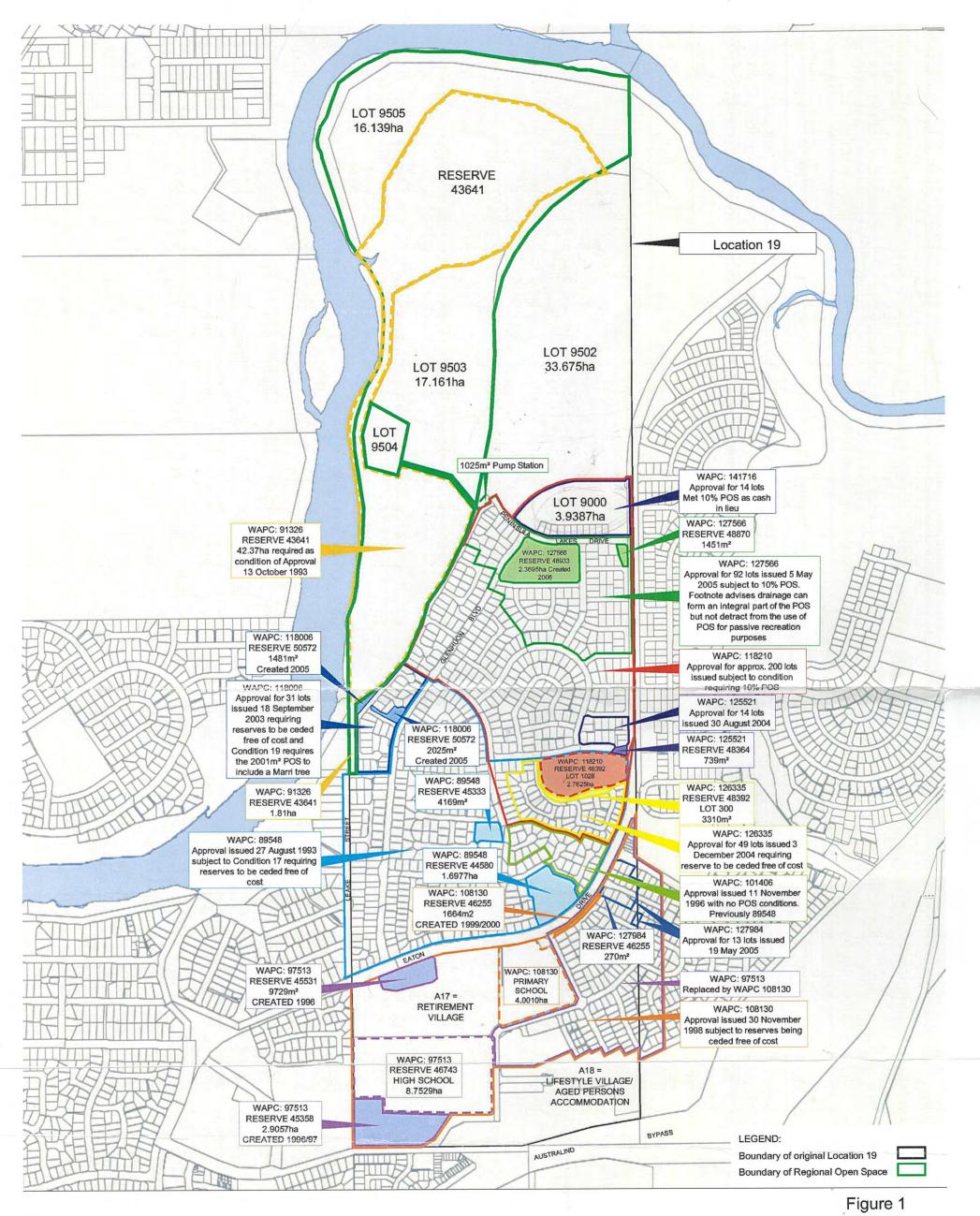
A stakeholder database will be established for communications purposes. Interested persons wishing to be placed on this database should email their name, address, email and telephone contact details to LNReview@planning.wa.gov.au

Further LN review progress updates and additional information will be posted on this page on the Planning WA Website.

This is a printer friendly version of the web page available at http://planning.wa.gov.au/650.asp

APPENDIX 4

Engineering Servicing Report - MPM Development Consultants



OVERALL POS AUDIT PLAN

Península Precinct - Parkridge Estate

EATON

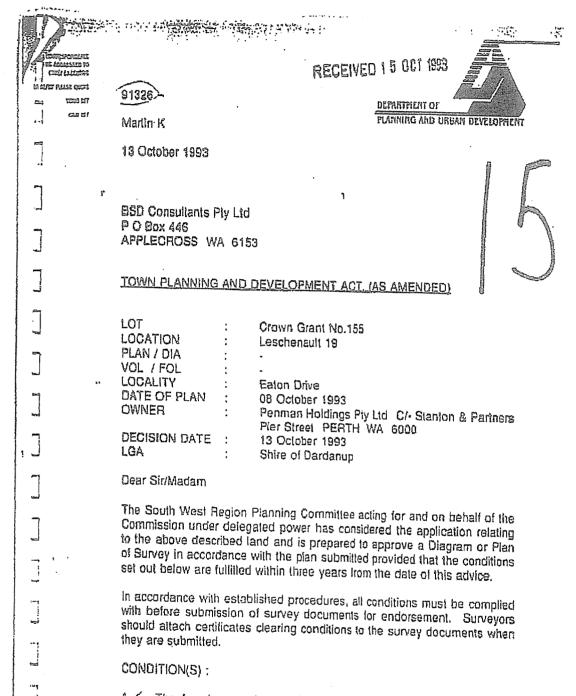
0 200m SCALE 1:10 000 @ A3 GRAY & LEWIS
LAND USE PLANNERS
Suite 5, 2 Hardy Street
South Perth, WA 6151
T (08) 9474 1722
F (08) 9474 1172
perth@graylewis.com.au

JOB REFERENCE: 100818 DATE: 8th NOVEMBER 2013

THE DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. UNAUTHORISED USE OF THIS DOCUMENT IN ANY FORM WHATSOEVER IS PROHIBITED.



APPENDIX F | ORIGINAL SUPERLOT SUBDIVISION



The foreshore and recreation area shown on the subdivision plan, measuring 42.37 hectares, being shown on the Diagram or Plan of Survey as a 'Reserve for Recreation, Foreshore Management and Drainage' and vested in the Crown under Section 20A of the Town Planning and Development Act, 1928; such land to be ceded free of

cost without any payment of compensation by the Crown.

Sixth Floor Bumbury Tower 61 Victoria St., Bumbury 6250 Western Australia Tel (097) 810 977 Fax (097) 910 976 💝

AGO B

विकाव स्वाप्त स्व्या ಹುಬ DEPARTMENT OF ea et PLANNING AND UNDAN DEVELOPMENT The central and northern portions of Lot 4 being set aside as a separate lot on a Diagram or Plan of Survey for future acquisition for the purpose of a Reserve for Recreation, Foreshore Management and Drainage, The whole of the Foreshore Reserve being fenced with an appropriate stock proof fence to the specification and satisfaction of the Local Authority. . i The subdivider making arrangements satisfactory to the Local Authority to ensure that potential purchasers of Lot 4 are advised that subdivision approval does not imply development approval and that the central and northern portions are:reserved for recreation under the Local Authority Town Planning Scheme located within the Collie River flood plain and are susceptible to inundation. (LA The subdivider making arrangements satisfactory to the Local Authority to ensure that potential purchasers of Lots 1, 2, 3 and 4 are advised of their obligation to provide a 10% Public Open Space contribution in accordance with the approved Structure Plan. The subdivider making arrangements satisfactory to the Water J 5. Authority to ensure that the prospective purchasers in the transfer of the lot(s) acknowledge in writing that they are aware that the lots are located within the Bunbury Groundwater Area where there is a need to obtain a licence before a bore or well can be constructed. The ficence will contain a number of conditions including the quantity of water that can be pumped each year. (WA) 17. Certification from the State Energy Commission that satisfactory arrangements have been made for the provision of easements for the two existing power lines traversing the property. (SECWA) The applicant is advised that the Local Authority has advised that future subdivision of proposed Lots 1, 2, and 3 will require pro-rate contributions for the primary school sites in the locality, for the construction of the Collie River Bridge linking Eaton and Australind, and for the construction of Hands Avenue as the major anterial distributor road.

Sixth fleet Bunbury Tower Bi Virtedo St. Bunbury 6230 Western Australia Tel 1097) 010 577 Fan (097) 010 578

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		The applicant is further advised that the majority of Lot 5 is currently reserved for Recreation and that an approach should be made to the Local Authority as soon as possible to initiate a Scheme Amendment to rezone that area appropriately.
		t J
		Yours faithfully
		Anderson.
		CAROL ANDERSON SECRETARY
		SOUTH WEST REGION PLANNING COMMITTEE
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DATE REC'D 574/12

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SOUTH WEST REGION PLANNING COMMITTEE

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AGENDA ITEM: FILE NO.;

REPT OFFR: AUTH OFFR: 0 91326 KEVIN MA

KEVIN MARTIN KEVIN MARTIN ALL

PROPOSED SUPER LOT SUBDIVISION LESCHENAULT LOCATION 19, EATON

1.0 BACKGROUND

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- 1.1 The subject land is located between the Collie River and the Australind By Pass Road, to the north of the existing Eaton residential area (see attached locality plan). Along with adjoining farm land it formed the basis of a Structure Plan and a rezoning recently endorsed by the Committee and approved by the Minister.
- The Structure Plan set out road patterns, residential densities, school sites, commercial sites, open space layout and river foreshore reserves. The foreshore area was determined as being the whole of the land falling within the Collie River flood plain, including fringing vegetation, wetlands and salt marshes. It was indicated that the foreshore area would be required to be given up for reservation as a condition of subdivision.
- 1.3 The applicant has proposed to subdivide the land into four super lots to facilitate financing and subsequent development. This involved the creation of three large lots over the future urban area, a 30 metres wide foreshore reserve and a fourth lot being the remainder of the Collie River flood plain, Government authority.
- 1.4 The subdivision was approved under delegated authority subject to various conditions. One of the conditions required the whole of the foreshore reserve, as outlined on the Structure Plan to be given up free of cost. This was necessary at the super lot subdivision stage, otherwise it would not have been possible to have that foreshore reserve surrendered as it would not have been part of any of the lots subsequently being subdivided.
- 1.5 The proponent has appealed to the Minister, arguing that the requirement is grossly inequitable, given the large size of the proposed foreshore reserve in relation to the overall land area and the very limited nature of the superior subdivision. The appellant also contended that some other conditions imposed were more relevant to the subsequent residential tot subdivision.

2.0 REPORT

2.1 After submitting an appeal against the conditions the appellant (proponent's consultant) arranged several discussions with Departmental officers. It was conceded by the Department that it was inequilable to require the full

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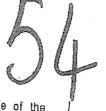
AGS B

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foreshore reserve to be ceded free of cost in this instance. This would have involved about 65ha out of a total land area of about 250ha. (ie approx 35%).

- 2.2 Of the two properties forming the Structure Plan area the eastern most let has only relatively limited river frontage and a narrow flood plain. However the western let has river frontage on two sides, plus a much wider flood plain, containing two large wetlands and a salt marsh.
- 2.3 The appallant also agreed that a mere 30 metres wide foreshore reserve was inadequate under the circumstances. Following discussions it was agreed that the thirty metres wide foreshore reserve, plus the two large wetlands/salt marshes, would be given up free of cost, and the remaining tow lying cleared grazing area would be set aside as a separate lot for future acquisition. This would involve about 40ha being given up free of cost and about 45ha being for future purchase.
- 2.4 It was also agreed that the existing historic homestead on the knot adjacent to the river would require rezoning from the current recreation reserve to residential, but the rezoning need not proceed the subdivision.
- 2.5 The conditions imposed on the original super lot subdivision are attached hereto. In discussions with the applicant it was agreed that:
 - Condition 1 be deleted.
 - Condition 2 be revised to refer to the lesser area.
 - Condition 3 be deleted and replaced by a condition requiring fencing of the foreshore and two welland areas.
 - Condition 4 be deleted as it is more relevant to subsequent subdivision.
 - Condition 5 be retained as is.
 - Conditions 6 & 7 be deleted as they are more relevant to subsequent subdivision.
 - Condition 8 be modified to refer only to the two existing power lines traversing the property.
 - First footnote be retained.
 - Second tootnote be deleted and instead a condition be Imposed requiring an undertaking for future purchasers to be advised of the obligation to provide a 10% POS contribution in accordance with the approved Structure Plan.
 - Third footnote be deleted.



- A further condition be added regarding the setting aside of the foreshore lot for future acquisition.
- It was also considered that a condition should be added requiring the developer to give an undertaking to the Local Authority to advise any potential purchasers of the proposed foreshore lot:
 - Of the current reservation of the land.
 - That the land is within a flood plain and is susceptible to inundation.
 - That subdivision approval does not imply development approval.
- Given the circumstances attached to this subdivision an approval has been 2,7 given to a fresh application in accordance with abovementioned changes in condillons. The appellant has now agreed to withdraw the appeal. It is requested that the Committee endorse that action. A copy of the approval notice, conditions and footnotes is attached hereto.
- The whole issue of foreshore reserves along the Cottie and Brunswick 2.8 Rivers is to be the subject of a detailed site inspection and a joint meeting with the Shire of Dardanup and Harvey, prior to the Committee meeting.

RECOMMENDATION

M. William

The South West Region Planning Committee acting on behalf of the Commission under delegated power resolved to endorse the Departmental action of approving the modified super lot subdivision application subject to conditions which allow for portion of the proposed foreshore reserve to be set aside as a separate lot for future acquisition and which delete those conditions that are more appropriate to subsequent subdivision.

KEVIN MARTIN AMANAGER STRATEGIC PLANNING SOUTH WEST BRANCH

October 11, 1993

RES JLYED & RECORDED IN MINUTES OF THE SOUTH WELLULLUN BLANNING COMMITTEE MEETING

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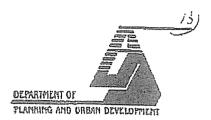
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tann ree CALLET 89547

O'Keefe J

27 August 1993

BSD Consultants Pty Ltd PO Box 446 APPLECROSS WA 6153



TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

Crown Grant No. 155

LOCATION

Leschenault 19

PLAN / DIA

VOL / FOL

Ealon Drive , Ealon

LOCALITY DATE OF PLAN

05 April 1993

OWNER

Penman Holdings Pty Ltd C/- Stanton & Pariners

Pier Street PERTH WA 6000

DECISION DATE

LGA

27 August 1993

Shire of Dardanup

Dear Sir/Madam

The South West Region Planning Committee acting for and on behalf of the Commission under delegated power has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the plan submitted provided that the conditions set out below are fulfilled within three years from the date of this advice.

In accordance with established procedures, all conditions must be complied with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted.

CONDITION(S):

The boundary alignment of proposed Lot 4 being amended to include only the area Identified as 'Recreation' in both the Ealon Structure Plan and Shire of Dardanup Town Planning Scheme No.3, Amendment No.47, with access to the reserve to be provided by means of a bailleaxe access leg, to extend from Leake Street along the western lot boundary (LA)

original approval

Slatin Moor Bumbury Tower 61 Victoria St., Bumbury 6250 Western Australia Tel (097) 910 577 fax 10971 910 576

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- Proposed Lot 4 being shown on the Diagram or Plan of Survey as a "Reserve for Recreation, Foreshore Management and Drainage" and vested in the Crown under Section 20A of the Town Planning and Development Act, 1928; such land to be ceded free of cost without any payment of compensation by the Crown. (LA/LIMA)
- The subdivider preparing a detailed management plan for proposed Lot 4, to the satisfaction of the Leschenault Inlet Management Authority and the Local Authority, fully at the cost of the developer. (LA/LIMA)
- The subdivider preparing a comprehensive Drainage Plan for the entire Eaton Structure Plan area, to the specifications and satisfaction of the Local Authority. (LA)
- 5. The subdivider making arrangements satisfactory to the Water Authority to ensure that the prospective purchasers in the transfer of the lot(s) acknowledge in writing that they are aware that the lots are located within the Bunbury Ground Water Area where there is a need to obtain a licence before a bore or well can be constructed. The licence will contain a number of conditions including the quantity of water that can be pumped each year. (WA)
- Such padmount sites as may be required by the State Energy Commission being transferred free of cost to the Commission, with the locations of the sites being to the satisfaction of the Local Authority. (SEC) (LA)
- Certification from the State Energy Commission that financial and other requirements have been satisfied for the provision of a suitable electricity supply to the lot/s proposed by this application.
- Certification from the State Energy Commission that satisfactory arrangements have been made for the provision of easements for State Energy Commission existing or future equipment.

The applicant is advised that the Local Authority has advised that future subdivision of proposed Lots 1, 2, and 3 will require pre-rate contributions for the primary school sites in the locality, for the construction of the Collie River Bridge linking Eaton and Australind, and for the construction of Hands Avenue as the major arterial distributor road.

Council and the applicant are advised that unless otherwise agreed to by the Commission, the first Diagram or Plan of Survey lodged for the Commission's endorsement shall include the Public Open Space required by

Sixth Floor Bumbury Tower OI Victoria St., Bunbury 6230 Western Australia Tet (097) 910 577 Fax (097) 910 576

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27 August 1993

BSD Consultants Pty Ltd PO Box 446 APPLECROSS WA 6153



TOWN PLANNING AND DEVELOPMENT ACT, (AS AMENDED)

LOT

LGA

LOCATION

PLAN / DIA

VOL / FOL

LOCALITY

DATE OF PLAN OWNER

DECISION DATE

Crown Grant No. 155

Leschenault 19

Eaton Drive , Eaton

05 April 1993

Penman Holdings Pty Ltd C/- Stanton & Partners

Pier Street PERTH WA 6000

27 August 1993 Shire of Dardanup

Dear Sir/Madam

The South West Region Planning Committee acting for and on behalf of the Commission under delegated power has considered the application relating to the above described land and is prepared to approve a Diagram or Plan of Survey in accordance with the plan submitted provided that the conditions set out below are fulfilled within three years from the date of this advice.

In accordance with established procedures, all conditions must be compiled with before submission of survey documents for endorsement. Surveyors should attach certificates clearing conditions to the survey documents when they are submitted.

CONDITION(S):

The boundary alignment of proposed Lot 4 being amended to include only the area identified as 'Recreation' in both the Eaton Structure Plan and Shire of Dardanup Town Planning Scheme No.3, Amendment No.47, with access to the reserve to be provided by means of a battleaxe access leg, to extend from Leake Street along the western lot boundary (LA)

original approval

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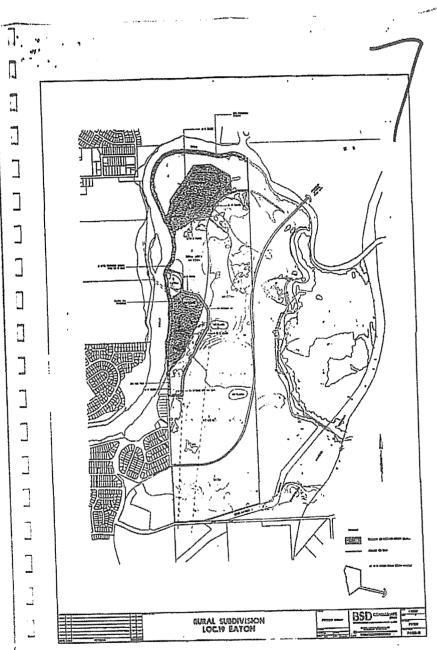
Condition 2 of this approval, identified as a Reserve for Recreation, and shall include the creation of other lots within the subdivision to ensure that the Public Open Space land is properly vested under Section 20A on transfer of those lots.

The applicant is further advised that the EPA and LIMA should be consulted regarding drainage requirements and wallands management provisions, in the preparation of detailed management plans for proposed Lot 4.

Yours faithfully

CAROL ANDERSON
SECRETARY
SOUTH WEST REGION PLANNING COMMITTEE

State Place Busbury Tower 61 Victoria St., Bunbury 6239 Western Australia Tel (097) 810 577 Fax (097) 910 576



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F)	TOWN PLANNING AND DEVELOPMENT ACT 1928 (Regulation 4)	Form IA
	APPLICATION FOR APPROVAL OF PLAN OF *SUBDIVISION/AMALGAMATION*	I OIM IA
x : 1	TO A CANAL AND A C	
-	(To be accompanied by six cupies of the plan of subdivision or amalgamation showing the dimensions, the area and the matter than the planning and Urban Development, Perth, W.A. 6000.	
	TO: Department of Planning and Urban Development, Perth, W.A. 6000.	colbet infor-
	1. * Eny/Town/Shire of DAEDANICO	
	2. Name(s) of Owner(s): Surname PENMAN HOLANCE OF JE	
	Surname	
	Surrans	
	3. Address in Full 4- Stanton AND ACTURERS	
	LIEC STE	***************************************
	4. Applicant's Name in Full (If owner, put "Self"). 4 6000 5. Address for Correspondence. 6 0. 6000	
	ALD MACROSS W.A.	15 3
	6. Locality of "Subdivision/Amalgamation (Street, Suburb, etc.) Contract [5] FATALL	3163488
. :	7. Titles Office Land Description (Americans) Chown Goldon Tolling Control of the	411111111111111111111111111111111111111
	Location(s) LECH ENAULT IS	********
	Certificate(s) of Title Vol.	
	Original area of lot/s 255 7 HECT 1255	***************************************
. 8	8. Name of nearest road junction/lidersection EATIN DENE / LENCE STRONG	metric)
	A AND ASSIGNED SHEDS.	************
- 10.	State (in detail) numers and	E
	RANGEL SUB-DIVISION TO CREATE 5 3Per Long	**********
	IN ACCORDINGE WITH AN APPRINDING	
11.	Does owner own any adjacent lots " New No. 15 miles	LAN.
	want own any adjacent lots" "Med Nu. If "Yes" give details	********
12. 1	Does the owner or a proposed perchant intend to apple many	**********
	Does the dwher or a proposed purchaset intend to antalgamate any of the proposed lots with adjacent land?	evno.
13. S	State name of Drainage Irrigation District (if applicable)	*********
14. V	Will underground power be provided: *YESHER.	*******
15, A tri	Are any State Energy Commission transmission wires, gas pipelines or other works situated in the land? "YESWE" F "YES" give details. SWE 22 KN OVERCHEAD Feb.	Mrssaces,
1F	F "YES" give details Two 22 KN DVDC HOTEN GO	Petres
	AS SHOWN ON THE ATTRIAGO PLANS	*******

Signature(s) d(....

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C/- Stanton Partners Pler Street PERTH W.A. 6000

The Shire Clerk, Dardanup Shire Council. Little Street, DARDANUP WA 6236

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PLANNING AND URBAN DEVELOPMENT

EATON DEVELOPMENTS PTY LTD have made application for approval from the Department of Planning and Urban Development to subdivide Leschenault Location 19 and has obtained preliminary approval from the Department of Planning & Urban developement subject to, inter alia, the execution of this Undertaking by Eaton Developments Pty Ltd.

NOW THEREFORE EATON DEVELOPMENTS PTY LTD HEREBY UNDERATKES to the DARDANUP SHIRE COUNCIL as follows:-

- (a) to ensure that any potential purchaser of Lot 4 is aware that subdivision approval does not imply development approval and that the central and northern portions of Lot 4 are:
 - (i) reserved for recreation under the Local Authority Town Planning Scheme; and
 - (ii) located within the Collie River Flood Plain and are susceptible to inundation; and
- (b) to ensure that potential purchasers of Lots 1, 2, 3 and 4 are aware of the obligation to provide a 10% public open space contribution in accordance with the approved structure glan.

Any contract of sale of the properties in question from EATON DEVELOPMENTS PTY LTD will it ide acknowledgements from the purchasers of the matters contained within this undertaking.

DATED this

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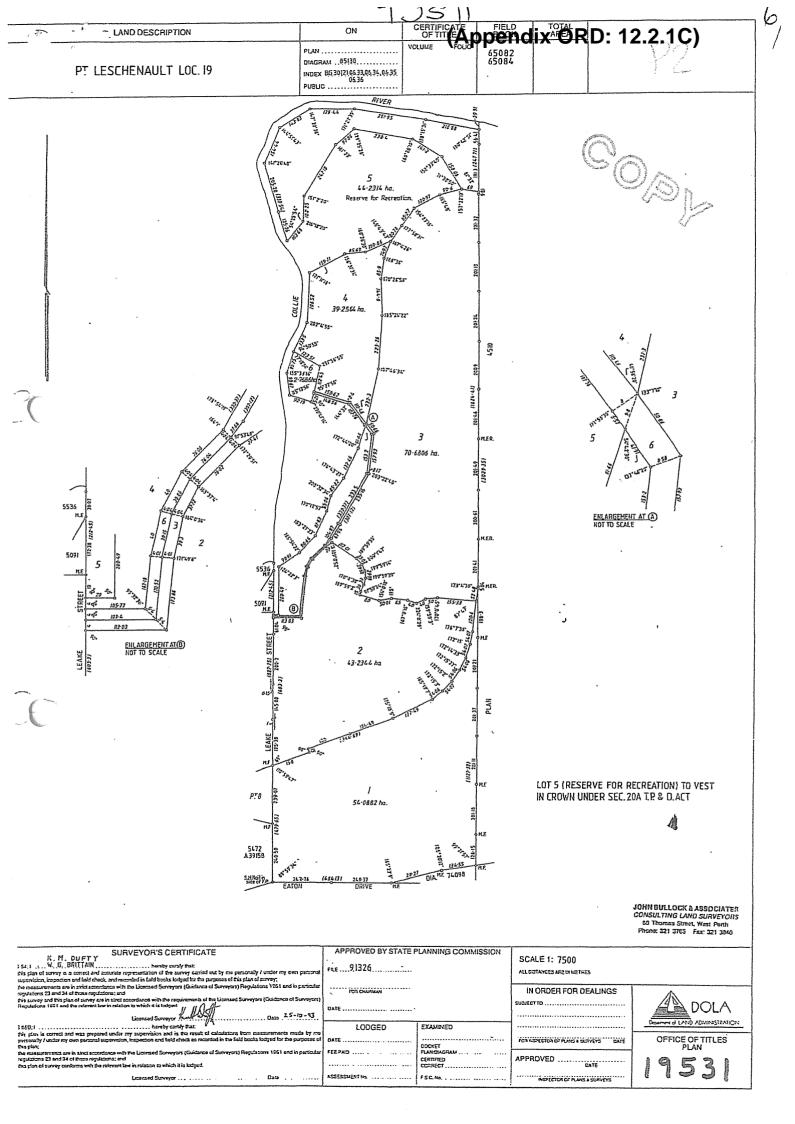
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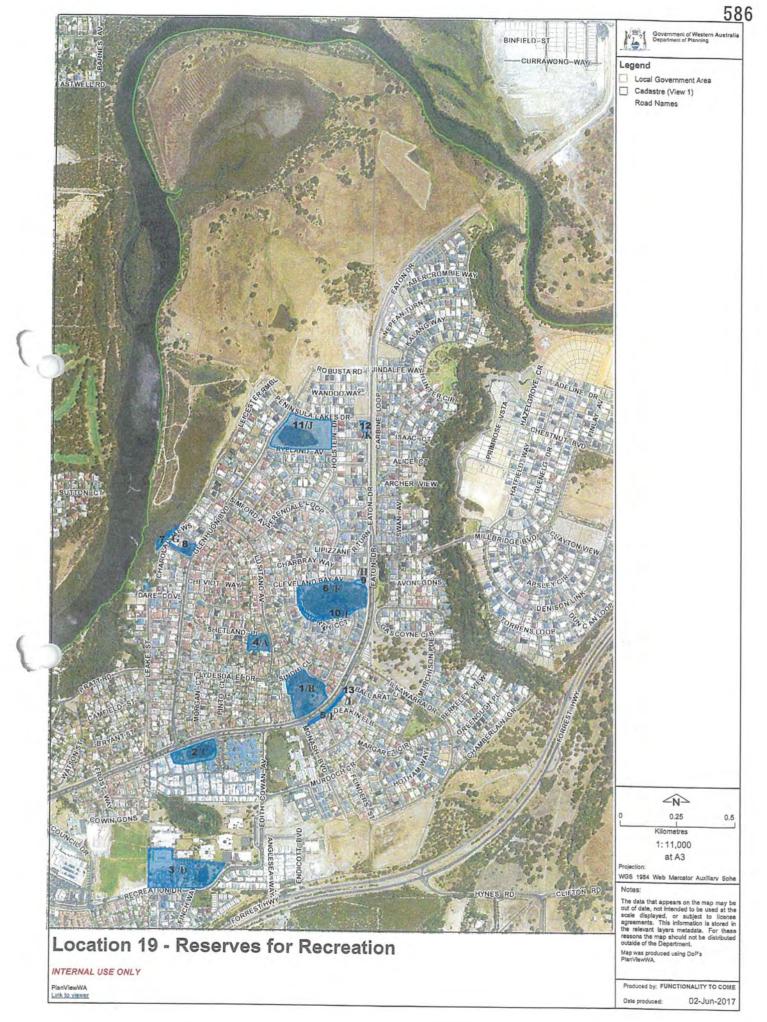
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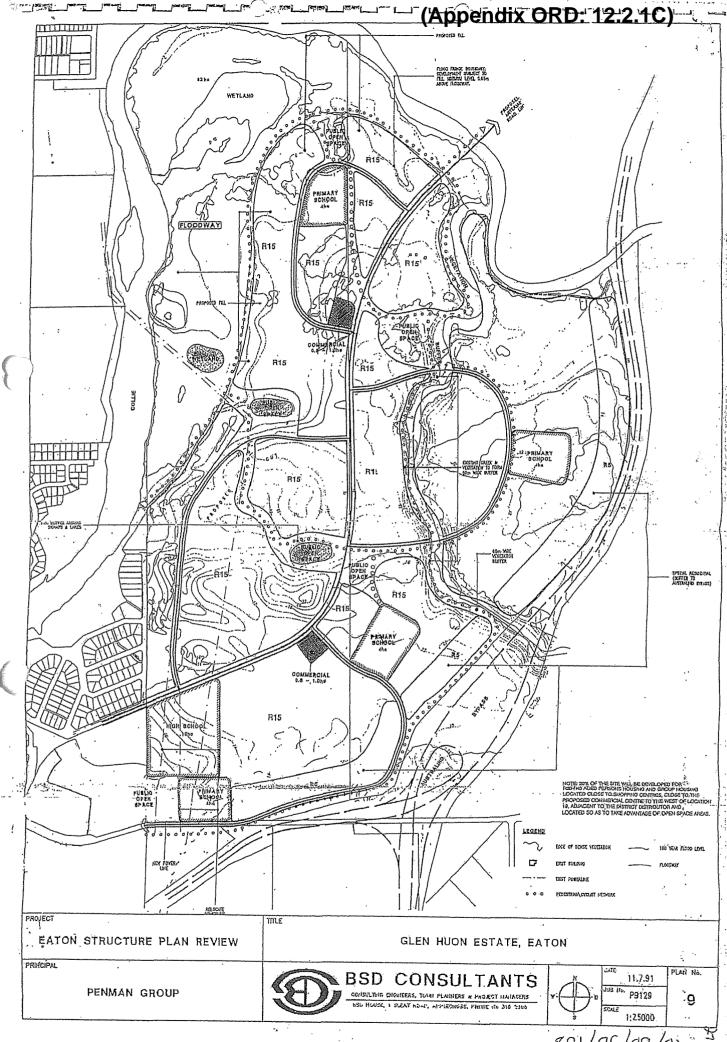
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SECRETARY

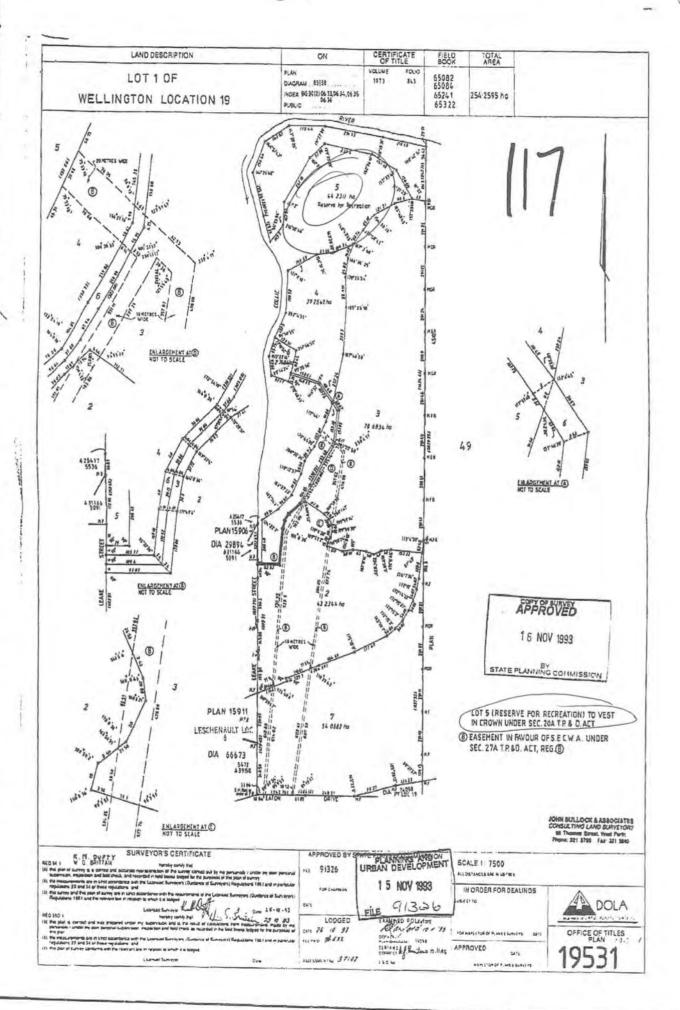
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APPENDIX G | CORRESPONDENCE SEPT 2014



Subject

FW: Parkridge Public Open Space Calculations

Sent from my iPad

On 11 Sep 2014, at 5:02 pm, "Brash, David" < David Brash @planting as a seaso > wrote:

Hi Liz and Thurston,

Thank you for sending through the two spreadsheets with the total reserve land included for the Parkridge Public Open Space Calculations. This much appreciated. It has helped me to understand the areas of agreement and disagreement. This will help with the process from this point forward.

The purpose of this email is to obtain agreement for the process moving forward so we can narrow down the scope of the issues in dispute and the matters to be addressed in reaching agreement on the POS obligations for WAPC 150241 Lot 9502 and Ptn of Lot 9002 Peninsula Lakes Drive, Eaton.

Firstly the Department agrees on the following:

The total 10% POS required the overall for subdivision of loc. 19 (the land) = 13.2513
ha – that is the total pos obligation for the Gross Subdivisible Area of the whole of
the original land parcel Location 19 (the land) is 13.2513 ha.

I understand that this is not in dispute and it would be good if we could both agree on that before we progress further. If I could receive a response in the affirmative to this it would be appreciated.

 The total area of the Gross Subdivisible Area ceded under subdivision approvals, issued for the subdivision of the land up to but not including subdivision application WAPC 141716, is 11.8879 ha.

Again I understand that this is not in dispute and it would be good if we could both agree on that before we progress further. If I could receive a response in the affirmative to this it would be appreciated.

In terms of the process, if we can agree I intend to send through to you tomorrow or Monday:

 A spreadsheet highlighting those parcels, ceded through the subdivision process to date, that the Department <u>agrees</u> with the subdivider on in terms of a 10% credit for public open space. We will call this spreadsheet A.



A spreadsheet highlighting those parcels ceded through the subdivision process to date that the Department <u>does not agree</u> with the subdivider in terms of a 10% credit for public open space and holds the position that these parcels would not qualify as pos and therefore should not contribute toward meeting the 13.2513 ha pos requirement. We will call this spreadsheet C.

I am hopeful that we can reach agreement on spreadsheet A and spreadsheet C and if we can then we can proceed together to reach agreement on the % of each of the agreed ceded parcels which can be attributable to the credit of the subdivider in meeting the 10 % pos obligation for the land. This will become spreadsheet B.

Before I send through the spreadsheet A and C can we agree on the two points above and the process for moving forward.

Looking forward to your feedback.

Kind Regards

David Brash | Senior Planning Officer | South West Statutory Planning | Regional Planning And Strategy Department of Planning | 6th Floor, 61 Victoria Street | Bunbury WA 6000 T (08) 9791 0591 | F (08) 9791 0576

E David Brash@olanning.ws.gov.au | W ywww.planning.wa.wov.au

<image001.png>

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Thurston

Subject:

FW: Parkridge Public Open Space Calculations

From: Thurston Saulsman [mailto:tjs@bigpond.net.au]

Sent: Friday, 12 September 2014 7:33 AM

To: Brash, David

Cc: Liz; Geoff Lewis (geoff@graylewis.com.au); Fraser, Neil Subject: Re: Parkridge Public Open Space Calculations

Hi David,

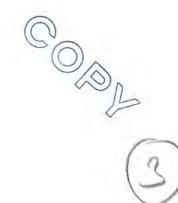
Thank you for your email. It's a very constructive approach in, hopefully, resolving the POS issue. However, before responding to your email would you mind clarifying item 2. We assume you mean public open space and not Gross Subdivisible Area. On your clarification we will rend accordingly.

Thank you

Regards

Thurston Saulsman

Sent from my iPad





Thurston

Subject:

FW: Parkridge Public Open Space Calculations

From: Brash, David [mailto:David.Brash@planning.wa.gov.au]

Sent: Friday, September 12, 2014 8:38 AM

To: 'Thurston Saulsman'

Cc: 'Liz'; 'Geoff Lewis (geoff@graylewis.com.au)'; Fraser, Neil Subject: RE: Parkridge Public Open Space Calculations

HI Thurston,

Thanks for responding.

Point 2 is simply stating that the total land cede from the gross subdivisible area to date is 11.7988 ha. I didn't think that was in doubt. The question of how much of that 11.7988 ha is attributable to pos is what we are setting out to determine through the next stage of the process.

"Navid Brash | Senior Planning Officer | South West Statutory Planning | Regional Planning And Strategy Department of Planning | 6th Floor, 61 Victoria Street | Bunbury WA 6000

T (08) 9791 0591 | F (08) 9791 0576

E <u>David.Brash@planning.wa.gov.au</u> | W <u>www.planning.wa.gov.au</u>



SHAPING SUSTAINABLE COMMUNITIES



Thurston

Subject:

FW: Parkridge Public Open Space Calculations

Expires:

Thursday, 16 October 2014 12:00 AM

From: Thurston [mailto:tis@bigpond.net.au] Sent: Tuesday, September 16, 2014 1:19 PM

To: 'Brash, David'

Cc: Fraser, Neil; Geoff Lewis; THouweling@cornerstonelegal.com.au

Subject: RE: Parkridge Public Open Space Calculations

Hi David,

It appears to us that we might be moving more into argument rather than negotiations. We are of the view we are ot qualified to comment on planning law. We may have a view in regards to what we believe are, or are not, statement of facts in Parkridge Group Pty Ltd and WAPC [2011] WASAT 113. However, we prefer to refer such matters to our consultants for advice and we believe the appropriate place for these arguments will be at SAT if, this is where this matter finds itself.

In saying that we take this opportunity to clarify our position.

- 1) In our current application for subdivision we are happy to provide all POS in keeping with good planning principles, and believe that we have.
- 2) POS provided over and above the agreed amount of public open space to be provided is not provided free of cost.
- 3) We have agreed with the Department that the total area of POS to be provided is 13.2513 hectares.
- 4) We are advised that the WAPC do not have legal authority to retrospectively review WAPC conditions of subdivision approvals.
- 5) We have provided an audit indicating how much POS has been ceded free of cost by Parkridge Group Pty Ltd and other owners of Parkridge Estate land previously known as location 19.

We remind the Department that POS is still to come from land in the Parkridge Estate which is not owned by Parkridge Group Pty Ltd. This land is yet to be subdivided. This land, to the best of our knowledge, is owned by Lucca Investments Pty Ltd. The POS requirement for this land is identified in the Shire of Dardanup audit of May 2002 conducted by the then Chief Planning Officer, Mr Mark Jones. A copy of this audit is available in the WAPC documents provided by the Commission in Parkridge Group Pty Ltd and WAPC [2011] WASAT 113. Our question is, will the Department or the Commission be requesting the owner of that land to also contribute to any shortfall of POS in Parkridge Estate if so determined by the Commission or the Department?

Notwithstanding our stated position comments and question, we are open and prepared to discuss a resolution to this matter. Should you wish to meet, we, unfortunately, are only available, Monday Tuesday and Wednesday of next week. CO DO LAS

Kind Regards Thurston

Thurston

Subject:

FW: Parkridge Public Open Space Calculations

From: Brash, David [mailto:David.Brash@planning.wa.gov.au]

Sent: Friday, September 12, 2014 8:38 AM

To: 'Thurston Saulsman'

Cc: 'Liz'; 'Geoff Lewis (geoff@graylewis.com.au)'; Fraser, Neil Subject: RE: Parkridge Public Open Space Calculations

HI Thurston,

Thanks for responding.

Point 2 is simply stating that the total land cede from the gross subdivisible area to date is 11.7988 ha. I didn't think that was in doubt. The question of how much of that 11.7988 ha is attributable to pos is what we are setting out to determine through the next stage of the process.

"David Brash | Senior Planning Officer | South West Statutory Planning | Regional Planning And Strategy Department of Planning | 6th Floor, 61 Victoria Street | Bunbury WA 6000 T (08) 9791 0591 | F (08) 9791 0576

E David.Brash@planning.wa.gov.au | W www.planning.wa.gov.au









Thurston

Subject:

FW: Parkridge Public Open Space Calculations

Expires:

Sunday, 12 October 2014 12:00 AM

From: Thurston [mailto:tjs@bigpond.net.au] Sent: Friday, September 12, 2014 11:42 AM

To: 'Brash, David'

Cc: Geoff Lewis; Liz (Liz@graylewis.com.au); Fraser, Neil; Thouweling@cornerstonelegal.com.au

Subject: RE: Parkridge Public Open Space Calculations

Hi David

Thank you for the clarification.

irstly we agree with point one. That is;

1. The total 10% POS required the overall for subdivision of loc. 19 (the land) = 13.2513 ha - that is the total POS obligation for the Gross Subdivisible Area of the whole of the original land parcel Location 19 (the land) is 13.2513 ha.

Unfortunately, we are unable to agree with your point 2 being;

1. The total area of the Gross Subdivisible Area ceded under subdivision approvals, issued for the subdivision of the land up to but not including subdivision application WAPC 141716, is 11.8879 ha

We say this because we are assuming that the total area of POS being 11.8879 hectares that you refer to is from Scenario 2 of the POS Audit prepared by Geoff Lewis. If so, we take this opportunity to clarify that the audit provides two scenarios; Scenario 1 which is Parkridge Position and Scenario 2 which is the Department's position as understood by our planners. The audit does not state which scenario is correct.

In regards to Parkridge position we say that all subdivisions in location 19 have been subdivided, since 1993, by the relevant owners of the lots (not all lots being owned Parkridge) is in accordance with the Planning and Development Act 2005 and in accordance with all WAPC's conditions of subdivision.

Scenario 2 is the WAPC's position. We understand the WAPC's position however we are unable to make comment. The retrospective review of WPAC approved conditions by the WAPC is a position of law which we are unfamiliar with and we are not qualified to comment. However, in the spirit of cooperation and as discussed in your email, we look forward to the departments comments, finding common ground and hopefully an agreement

Regards Thurston





Thurston

Subject:

FW: Parkridge Public Open Space Calculations

From: Brash, David [mailto:David.Brash@planning.wa.gov.au]

Sent: Friday, September 12, 2014 1:25 PM

To: 'Thurston'

Cc: 'Geoff Lewis'; 'Liz'; Fraser, Neil; 'THouweling@cornerstonelegal.com.au'

Subject: RE: Parkridge Public Open Space Calculations

Hi Thurston,

With respect, the 11.8879 ha is drawn from The Tribunals assessment of fact at [22] and [23] of Parkridge Group Pty Ltd and WAPC [2011] WASAT 113 and not from any information provide by your consultant.

ould you respond to confirm your position on the 11.8879ha of ceded land please.

Regards

David Brash | Senior Planning Officer | South West Statutory Planning | Regional Planning And Strategy Department of Planning | 6th Floor, 61 Victoria Street | Bunbury WA 6000 T (08) 9791 0591 | F (08) 9791 0576 E David.Brash@planning.wa.gov.au | W www.planning.wa.gov.au



SHAPING SUSTAINABLE COMMUNITIES





Thurston

Subject:

FW: Parkridge Public Open Space Calculations

Expires:

Sunday, 12 October 2014 12:00 AM

From: Thurston [mailto:tjs@bigpond.net.au]
Sent: Friday, September 12, 2014 5:41 PM

To: 'Brash, David'

Subject: RE: Parkridge Public Open Space Calculations

Hi David,

So that it is perfectly clear and we totally understand what we may or may not be agreeing to can you please confirm that it is the WAPC 's position that all matters stated in [22] and [23] of Parkridge Group Pty Ltd and WAPC [2011] WASAT 113 are accepted by the WAPC as matters of fact.

egards Thurston







APPENDIX C | ENVIRONMENTAL ASSESSMENT



ENVIRONMENTAL ASSESSMENT REPORT

LOT 9008 ROBUSTA ROAD, EATON

DECEMBER 2022



Telephone +618 9755 7217 info@accendoaustralia.com.au PO Box 5178 West Busselton WA 6280 ABN 11 160 028 642 www.accendoaustralia.com.au

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Document Control

Version	Date	Author	Reviewer
V1	24/10/2018	PN	KMT
V2	4/12/2018	KMT	TS
V3	28/11/2022	KMT	KS
Filename	1818_Parkridge Estate EAR_v3		

EXECUTIVE SUMMARY

Parkridge Group Pty Ltd (the proponent) is proposing to subdivide and develop Lot 9008 Robusta Road, Eaton (herein referred to as the subject site). The subject site has a combined area of approximately 32 hectares (ha). It is located 2.5 km north of the Eaton town centre and 8 km east-north- east of Bunbury and is situated adjacent to the Collie River.

A Structure Plan (Harley Dykstra 2022) has been prepared for the subject site to enable urban development with residential cells ranging from R20-40 and R5, also incorporating areas of Regional Open Space.

This report provides a synthesis of a range of information regarding the environmental attributes and values of the subject site. Where environmental values have been identified, suitable management measures have been proposed. In consideration of these management measures, an assessment of the overall environmental impact of the proposed development has been provided.

The environmental attributes and values identified within the site have been outlined in **Section 4** and include:

- Surface elevations range from 10.50 m AHD in the south-eastern corner to 1.30 m AHD along the northern boundary within the Collie River floodplain.
- The subject site has been classified as having a 'moderate to low risk' of ASS occurring within three metres of the natural soil surface.
- The subject area sits within the Leschenault Estuary Catchment and as such is covered by the Leschenault Estuary WQIP.
- The majority of vegetation has been cleared as a result of the historical and current land use (livestock grazing).
- The subject site is mapped as containing a portion of a CC wetland. As identified within the Wetland Buffer Determination study (Bioscience 2012) for the subject site, this mapping appears to be incorrect as a site analysis revealed that the wetland function area associated with the CC wetland does not extend into the subject site. Furthermore, an examination of this specific area during the fauna assessment (Harewood 2018) revealed it to be comprised of only two native species (Eucalyptus rudis and Melaleuca rhaphiophylla) over introduced pasture grasses, which is not consistent with the definition of a CC wetland.
- As a result of the fauna assessment it was determined that the fauna habitat values at the subject site have been severely compromised by the removal of most of the original native vegetation and the degradation of the main remnant patches.
- There is no evidence of WRPs utilising vegetation with the subject site as habitat and overall, habitat quality in areas to be developed are low/very low.
- Some areas of vegetation represent black cockatoo habitat, but the degree of use appears to be low with no breeding or roosting activity detected and only a very limited amount of foraging habitat being present.
- There exist no major constraints relating to fauna, and in particular fauna of conservation significance with respect to the proposed development.

In consideration of the abovementioned key environmental features, the following management measures have been proposed to minimise potential impacts associated with the subdivision of the subject site:

- Prepare and implement an ASS and Dewatering Management Plan if necessary.
- Implement the approved LWMS during subdivision works.

Based on this assessment, Accendo considers that there are no fatal flaws or key environmental values that cannot be accommodated to enable development of the subject site for its intended purpose.

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FIGURES

Figure 1. Locality Plan

Figure 2. Extent of the Subject Site

Figure 3. Acid Sulfate Soil Mapping

Figure 4. Wetland Mapping

APPENDICIES

Appendix A. Structure Plan

Appendix B. Fauna Assessment (Harewood 2018 and Harewood 2022)

1 INTRODUCTION

1.1 Background

Parkridge Group Pty Ltd (the proponent) is proposing to subdivide and develop Lot 9008 Robusta Road, Eaton (herein referred to as the subject site). The subject site has an area of approximately 32 hectares (ha). It is located 2.5 km north of the Eaton town centre and 8 km east-north-east of Bunbury and is situated adjacent to the Collie River (refer to **Figure 1** and **2**).

A Structure Plan (Harley Dykstra 2022) has been prepared for the subject site to enable urban development with residential cells ranging from R20-40 and R5, also incorporating areas of Regional Open Space.

This Environment Assessment Report has been prepared to support the proposed subdivision of the subject site. It investigates the existing environment and the opportunities and constraints associated with the development of the site, including recommended management measures to mitigate impacts.

The subject site presents a unique opportunity for residential development within the locality in consideration of its proximity to existing town centres and transport routes.

1.2 Purpose and Scope

This report provides a synthesis of a range of information regarding the environmental attributes and values of the subject site. Where environmental values have been identified, suitable management measures have been proposed. In consideration of these management measures, an assessment of the overall environmental impact of the proposed development has been provided.

In addition to the above, this Environmental Assessment Report also addresses a submission received from the Department of Biodiversity, Conservation and Attractions (DBCA) regarding the Structure Plan.

1.3 Associated Reports

Previous reports produced for the subject site (and adjacent landholdings) include:

- Structure Plan Parkridge Estate (Calibre 2018a);
- Lot 9004 Eaton Drive, Eaton Local Water Management Strategy (Calibre 2018b);
- Fauna and Habitat Assessment Lot 9004 Eaton Drive, Eaton (Harewood 2018);
- Black Cockatoo Habitat Tree Review Lot 9004 Eaton Drive, Eaton (Harewood 2022);
- Desktop Environmental Assessment Report Stage 3 Lot 9004 Peninsula Lakes Drive, Eaton (Accendo 2017);
- Environmental Impact Assessment, Lot 9502 Peninsula Lakes Drive, Eaton (Bioscience 2012).

2 STRUCTURE PLAN

2.1 Description

The Structure Plan has been developed to guide the subdivision and development of 32 ha of undeveloped land within the remaining portion of Parkridge Estate. The Structure Plan for the site is provided in **Appendix A**.

The Structure Plan provides for 1.01 ha of Regional Open Space (ROS) and landscaped common property at the rear of the strata lots.

2.2 Environmental Features of the Structure Plan

The subject site does not have a high level of ecological value. This can be attributed to the historical and current land use which has resulted in clearing of native vegetation for agricultural purposes, e.g. livestock farming.

From an environmental perspective the key influences of the Structure Plan are:

- The Conservation Category (CC) wetland and its associated buffer; and
- Water management.

3 LEGISLATION, POLICY AND GUIDELINES

The following legislation, policy and guidelines have been considered and will guide the required and expected management outcome from Federal, State and local government agencies.

3.1 Commonwealth Legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation.

The EPBC Act aims to protect Matters of National Environmental Significance. Under the EPBC Act, the Commonwealth Department of the Environment and Energy (DotEE) lists Threatened species, Migratory species and Threatened Ecological Communities (TECs) in certain categories determined by criteria provided within the EPBC Act.

Under the EPBC Act, a significant impact is determined by the sensitivity, value and quality of the environment which is to be impacted and the intensity, duration, magnitude and geographic extent of the impacts (DEWHA 2008). If a proposed action is deemed to have a significant impact, this action should be referred to the Minister.

3.2 Western Australian Legislation

This desktop assessment has been undertaken in consideration of the relevant Western Australian state legislation which includes the following.

Biodiversity and Conservation Act 2016 (BC Act)

The Department of Biodiversity, Conservation and Attractions (DBCA) lists flora and fauna taxa under the provisions of the BC Act as protected according to their need for protection. Flora is given Declared Rare status when their populations are geographically restricted or are threatened by local processes. In addition, under the BC Act, by Notice in the Western Australian Government Gazette of 9 October 1987, all native flora and fauna is protected throughout the State.

Environmental Protection Act 1986 (EP Act)

This EP Act is administered by the Department of Water and Environmental Regulation (DWER) and the DBCA. The EP Act provides for conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with it. The Act establishes head powers to provide mechanisms for the development of Environmental Protection Policies (EPP), the referral and assessment of proposals (Environmental Impact Assessment), the control of pollution and enforcement. The Act also provides for an Environmental Protection Authority (EPA) that is a statutory authority and is the primary provider of independent environmental advice to Government. The EPA is assisted by the EPA Service Unit comprising the Environmental Impact Assessment and Policy Divisions of the DWER.

3.3 State Policy and Guidelines

Shire of Dardanup Biodiversity Policy

The objective of the *Biodiversity Policy* is to preserve significant areas of remnant vegetation, significant wetlands and waterways as well as key biodiversity corridors for future generations.

For the Eaton locality, the following is stated:

- Ensure buffers for ROS in new residential areas are based on ecological requirements of vegetation complexes and separation of wetlands from proposed residences (mosquito management zones). These should be achieved through the structure planning process.
- Ensure existing ROS is reserved for recreation and conservation where there are natural areas.
- Maximize protection of tree stands and understorey in POS, local schools and wider road reserves and road islands.
- Consider providing proponents with incentives to change road layouts to accommodate tree and understorey retention e.g. Increased densities adjacent to protected natural areas.

Shire of Dardanup Town Planning Scheme No. 3

The general objectives of this Scheme as related to this report include:

- To zone the Scheme Area for the purposes in the Scheme described;
- To secure the amenity, health and convenience of the Scheme Area and the inhabitants;
- To make provisions as to the nature and location of buildings and the size of lots when used for certain purposes;
- The preservation of places of natural beauty, of historic buildings and objects of historical and scientific interest; and
- To make provision for other matters necessary or incidental to town planning and housing.

In relation to this report the Scheme provides for the zoning of 'Local Reserves' which restricts the use of and development on land zoned as a local reserve.

Wetland Management

The EPA administers the *Environmental Protection of Wetlands – Position Statement No. 4* (2004) to outline their principles for the protection of wetlands. The EPA's broad objectives are:

- To protect the environmental values and functions of wetlands in Western Australia.
- To protect, sustain and, where possible, restore the biological diversity of wetland habitats in Western Australia.
- To protect the environmental quality of the wetland ecosystems of Western Australia through sound management in accordance with the concept of 'wise use', as described in the Ramsar Convention, and ecologically sustainable development principles.
- To have as an aspirational goal, no net loss of wetland values and functions.

The identification and delineation of a wetland is described within the *Protocol for Proposing Modifications* to the Geomorphic Wetlands Swan Coastal Plain Dataset (DPaW 2007), whereby three key factors are considered:

- Hydrology is dynamic and varies annually, seasonally and between wetlands. Long term
 groundwater data over differing seasons is required to accurately assess wetland hydrology.
- Hydric Soils are soils formed in response to prevailing inundation or waterlogging, and are a long term wetland determining characteristic.
- Wetland Vegetation reflects hydrology and hydric soils, in particular, obligate wetland species are considered reliable wetland indicators.

4 BIOPHYSICAL ENVIRONMENT

4.1 Land Use

Historically, the subject site has been used for broad acre agriculture. Accordingly, the subject site is largely devoid of remnant vegetation and consists of paddock grasses. There is a small area on the central western boundary of the site consisting of a stand of trees and a strip of vegetation which runs along the bank of the Collie River and joins into the densely vegetated area to the northwest of the subject site. Currently, the subject site is used for livestock grazing.

4.2 Topography, Soils and Geology

4.2.1 Topography

The subject site is comprised of undulating sand dunes and swampy low-lying areas that are consistent with the geomorphology of the Collie River. Surface elevations range from 10.50 m Australian Height Datum (AHD) in the south-eastern corner to 1.30 m AHD along the northern boundary within the Collie River floodplain.

4.2.2 Geology

The Bunbury-Burekup Sheet of the 1:50,000 Urban Geology Series maps published by the Geological Survey of Western Australia indicates that the subject site comprises two geological units. The Pleistocene Age Bassendean Sand (low rounded dunes) is mapped within the south-east corner of the subject site, while the remainder is underlain by Pleistocene Age Guildford Formation (primarily alluvial sandy clay).

4.2.3 Acid Sulfate Soils

Based on DWER's regional ASS risk mapping, the site has been identified as having a "moderate to low" risk of ASS occurring within 3 m of the natural soil surface (refer to **Figure 3**).

Golder Associates carried out a geotechnical and preliminary ASS investigation across the subject site in 2005. Based upon the results of this investigation it was concluded that the risk of encountering ASS above the action criteria (SCR 0.03%) is high within 3 m of the existing surface.

4.3 Groundwater

Groundwater was also found in 27 of the 35 test pits as part of the geotechnical investigation (Golder Associates, 2005). Groundwater depth ranged between 0.3 and 2.0 m below natural surface (BNS).

In addition, to determine the likely seasonal maximum groundwater levels across the subject site, onsite groundwater level monitoring was undertaken by Calibre between May 2009 and October 2010. The investigation included the installation of 23 monitoring bores across the site, to a depth of approximately 2.1m BNS. Results indicated that groundwater levels generally fall towards the low lying areas of the Collie River floodplain, from east to west with depth to groundwater ranging from above surface to 5.6 m BNS.

4.4 Surface Water

The Collie River is located approximately 330 m west of the subject site. The Collie River discharges south into the Leschenault Estuary and ultimately into the Indian Ocean. The subject site sits within the Leschenault Estuary Catchment and as such is covered by the Leschenault Estuary Water Quality Improvement Plan (WQIP). The Estuary and its tributaries are also a Management Area proclaimed under the *Waterways Conservation Act 1976* and a catchment included in the state government's Regional

Estuary initiative. The subject site discharges west towards the Collie River and ultimately the Leschenault Estuary (Calibre 2018b).

The subject site contains two manmade permanent freshwater dams which provide a water source for grazing stock.

4.5 Wetlands

Wetlands within Western Australia are classified on the basis of landform and water permanence pursuant to the Semeniuk (1995) classification system (refer to **Table 1**).

Table 1. Wetland classifications (Semeniuk 1995).

Water Longevity	Landform					
Water Longevity	Basin	Channel	Flat	Slope	Highland	
Permanent Inundation	Lake	River	-	-	-	
Seasonal Inundation	Sumpland	Creek	Floodplain	-	-	
Intermittent Inundation	Playa	Wadi	Barlkarra	-	-	
Seasonal Waterlogging	Dampland	Trough	Palusplain	Paluslope	Palusmont	

Areas of wetlands have been mapped previously by Semenuik (1995) across the entire Swan Coastal Plain. This mapping has been converted into a digital dataset that is maintained by the DBCA and is referred to as the 'Geomorphic Wetland of the Swan Coastal Plain' dataset. This dataset contains information on geomorphic wetland types and assigns management categories that guide the recommended management approach for each wetland area. The wetland management categories and management objectives are listed in **Table 2**.

Table 2. DBCA wetland management categories (Semeniuk 1995).

Category	Description	Management Objectives
Conservation	Wetlands support a high level of ecological attributes and functions.	 Highest priority wetlands. Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including: Reservation in national parks, crown reserves and State owned land, Protection under Environmental Protection Policies, and Wetland covenanting by landowners. No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.
Resource Enhancement	Wetlands which may have been partially modified but still support substantial ecological attributes and functions	Priority wetlands. Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland function, structure and biodiversity.
Multiple Use	Wetlands with few remaining attributes and functions	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare.

The Geomorphic Wetlands of the Swan Coastal Plain dataset indicates that the majority of the subject site is mapped as a Multiple Use (MU) wetland. A CC wetland is mapped as marginally intersecting the north-western extent of the subject site (refer to **Figure 4**). However, a Wetland Buffer Determination study (Bioscience 2012) undertaken within the subject site determined that the CC wetland mapping is incorrect, as the function area associated with this wetland does not extend into the subject site. Notwithstanding, the area mapped as a CC wetland will be reserved as ROS and will be preserved for conservation purposes.

4.6 Vegetation and Flora

The balance of the subject site is completely cleared of native vegetation, with just a small number of scattered trees of various types. The small areas of remnant native vegetation are predominately comprised of a flooded gum/paperbark woodland in the north, and a grove of peppermint low woodland on higher ground in the south east of the subject site. All the vegetation present can be regarded as being in a 'Degraded' or 'Completely Degraded' condition.

4.6.1 Flora

A search on DBCA's *NatureMap* online indicated that one Declared Rare Flora (DRF) (*Diuris drummondii*) and two Priority Flora (PF) (*Lasiopetalum membranaceum* (Priority 3) and *Caladenia speciosa* (Priority 4)) exist within 2 km radius of the of the subject site. Previous site inspections have not resulted in the identification of any conservation significant flora (Bioscience 2012). Furthermore, given the highly disturbed nature of the subject site and the current land use (livestock grazing), the presence of flora of conservation significance is considered very unlikely.

4.6.2 Vegetation

Regional vegetation has been mapped by Heddle *et al.* (1980) at a scale of 1:250,000 based on major geomorphic units on the Swan Coastal Plain. The subject site traverses the Swan vegetation complex as defined by Heddle *et al.* (1980) which can be described as:

• Fringing woodland of *Eucalyptus rudis – Melaleuca rhaphiophylla* with localised occurrence of low open forest of *Casuarina obesa* and *Melaleuca cuticularis*.

The mapped Heddle *et al.* (1980) vegetation complex can be used to determine vegetation extent and status on the Swan Coastal Plain. The DBCA records show that approximately 13% of the pre- European extent remains across the Swan Coastal Plain. The national objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent below 30% of their pre- European extent remaining. However, the subject site is located within the 'constrained area' of the Perth Metropolitan Region (EPA 2006). Within this area the EPA (2006) provides for the reduction of vegetation complexes to a minimum of 10% of their pre – European extent remaining. The Swan vegetation complex has in excess of 10% of its pre-European extent remaining.

In addition, given that the vegetation structure and species diversity associated with Swan complex is largely absent, the vegetation within the subject site is not representative of this vegetation complex.

In consideration of the above, the vegetation within the subject site is not considered significant as a remnant.

Threatened Ecological Communities

Threatened Ecological Communities (TECs) are defined by the DBCA and are assigned to a category of Priority 1 to Priority 5. While they are not afforded direct statutory protection at a State level their

significance is acknowledged through other State environmental approval processes (i.e. the Environmental Impact Assessment pursuant to Part IV of the EP Act).

Selected TECs are also afforded statutory protection at a Federal level pursuant to the EPBC Act. The EPBC Act provides for the protection of TECs that are listed under section 181 of the Act, and are defined as "Critically Endangered", "Endangered" or "Vulnerable".

A search was undertaken of the DBCA's TEC database and the EPBC Act Protected Matters database and it was found that the *Banksia Woodlands of the Swan Coastal Plain ecological community*, listed under the EPBC Act as a TEC in the 'Endangered' category is 'likely to occur within the area'. The Banksia Woodlands of the Swan Coastal Plain ecological community is a woodland associated with the Swan Coastal Plain of south western, Western Australia. A key diagnostic feature of this TEC is a prominent tree layer of Banksia, with scattered eucalypts and other tree species often present among or emerging above the Banksia canopy. The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs (Threatened Species Scientific Committee 2016). Although the ecological community is characterised by high endemism and considerable localised variation in species composition across its range, the absence of Banksia species and lack of vegetation structure, denotes that the TEC does not occur within the subject site.

4.6.3 Regional Ecological Linkages

Ecological linkages can be described as any area of remaining remnant vegetation that can provide a corridor or linkage between larger patches of vegetation, to allow movement of flora, fauna and their genetic material through the landscape.

A Strategy was developed for the EPA to identify regionally significant natural areas in its consideration of the Greater Bunbury Region Scheme. These areas were identified using the reports and studies listed below:

- System reports System 1 and System 6 (DEC 1976 1983);
- Areas of threatened and poorly reserved plant communities: EPA (1994, derived from Gibson et al. 1994);
- · Areas of threatened ecological communities: as defined by English and Blyth (1997); and
- The Kemerton Buffer Link (EPA 1999).

This resulted in the identification of 16 ecological linkages which are recognised in the Greater Bunbury Region Scheme. The subject site is not located within an ecological linkage which can be attributed to the lack of remnant vegetation.

4.6.4 Environmentally Sensitive Areas

Section 51B of the EP Act allows the Minister to declare an Environmentally Sensitive Area (ESA). Once declared, the exemptions to clear native vegetation under the regulations do not apply in these areas. TECs, areas within 50 m of any Declared Rare Flora and defined wetland areas constitute ESAs. However, a number of other areas of environmental significance are also listed. Current declared ESAs are listed in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*.

An ESA marginally intersects the north-western extent of the subject site, which is associated with the CC wetland (refer to **Figure 4**). Under the Structure Plan this area is reserved as ROS and will be preserved for conservation purposes.

4.7 Fauna

4.7.1 Fauna of Conservation Significance

A search of the DBCA Threatened Fauna database was undertaken to establish whether species declared as 'Rare or likely to become extinct' (Schedule 1), 'Birds protected under an international agreement' (Schedule 3) and 'Other Specially protected fauna' (Schedule 4) as listed under the WC Act have been recorded in proximity to the subject site. One species each listed as Schedule one, Priority one and Priority four were recorded within a 1km radius of the subject site. (refer to **Table 3**).

The EPBC Act Protected Matters Search Tool also identified several threatened and migratory species that could potentially occur within or in proximity to the subject site. This included three species classified as Critically Endangered, ten Endangered species, 18 Vulnerable species and 11 Migratory bird species (**Table 3**).

Table 3. Significant fauna potentially occurring within the subject site as identified by State and Commonwealth database searches.

Species	DPaw Status	EPBC Act Status	Likelihood of Occurrence
Actitis hypoleucos (Common Sandpiper)		Migratory	Unlikely
Anous stolidus (Common Noddy)		Migratory	Unlikely
Anous tenuirostris metanops (Australian Lesser Noddy)		Vulnerable	Unlikely
Apus pacificus (Fork-tailed Swift)		Migratory	Unlikely
Ardenna carneipes (Flesh-footed Shearwater)		Migratory	Unlikely
Botaurus poiciloptilus (Australasian Bittern)		Endangered	Unlikely
Calidris acuminate (Sharp-tailed Sandpiper)		Migratory	Unlikely
Calidris ferruginea (Curlew Sandpiper)		Critically Endangered	Unlikely
Calidris melanotos (Pectoral Sandpiper)		Migratory	Unlikely
Calyptorhynchus banksii subsp. naso (Forest Red-tailed Black-Cockatoo)		Vulnerable	Possible
Calyptorhynchus baudinii (Baudin's Cockatoo)		Endangered	Possible
Calyptorhynchus latirostris (Carnaby's Cockatoo)		Endangered	Possible
Caretta caretta (Loggerhead Turtle)		Endangered	Unlikely
Chelonia mydas (Green Turtle)		Vulnerable	Unlikely
Dasyurus geoffroii (Chuditch, Western Quoll)		Vulnerable	Unlikely
Dermochelys coriacea (Leatherback Turtle)		Endangered	Unlikely
Diomedea amsterdamensis (Amsterdam Albatross)		Endangered	Unlikely
Diomedea dabbenena (Tristan Albatross)		Endangered	Unlikely
Diomedea epomophora (Southern Royal Albatross)		Vulnerable	Unlikely
Diomedea exulans (Wandering Albatross)		Vulnerable	Unlikely
Diomedea sanfordi (Northern Royal Albatross)		Endangered	Unlikely
Geotria australis (Pouched Lampray)	P1		Unlikely
Hydromys chrysogaster (Water-rat)	P4		Unlikely

Species	DPaw Status	EPBC Act Status	Likelihood of Occurrence
Macronectes giganteus (Southern Giant-Petrel)		Endangered	Unlikely
Macronectes halli (Northern Giant Petrel)		Vulnerable	Unlikely
Manta alfredi (Reef Manta Ray)		Migratory	Unlikely
Manta birostris (Manta Ray)		Migratory	Unlikely
Motacilla cinera (Grey Wagtail)		Migratory	Unlikely
Nannatherina balstoni (Baltson's Pygmy Perch)		Vulnerable	Unlikely
Natator depressus (Flatback Turtle)		Vulnerable	Unlikely
Neophoca cinera (Australian Sea-Lion)		Vulnerable	Unlikely
Numenius madagascariensis (Eastern Curlew)		Critically Endangered	Unlikely
Pachyptila turtur subantarctica (Fairy Prion (southern))		Vulnerable	Unlikely
Pandion haliaetus i		Migratory	Unlikely
Pseudocheirus occidentalis (Western Ringtail Possum)	S1	Critically Endangered	Possible
Thalassarche cauta (Tasmanian Shy Albatross)		Vulnerable	Unlikely
Thalassarche cauta cauta (Shy Albatross)		Vulnerable	Unlikely
Thalassarche cauta steadi (White-capped Albatross)		Vulnerable	Unlikely
Thalassarche impavida (Campbell Albatross)		Vulnerable	Unlikely
Thalassarche melanophris (Black-browed Albatross)		Vulnerable	Unlikely
Thalassarche steadi (White-capped Albatross)		Vulnerable	Unlikely
Tringa nebularia (Common Greenshank)		Migratory	Unlikely
Westralunio carteri (Carter's Freshwater Mussel)		Vulnerable	Unlikely

In order to determine the ecological values of the subject site, Harewood undertook a targeted fauna and habitat assessment in September 2018 (refer to **Appendix B**).

Wetland Habitat

Of the abovementioned conservation significant species (excluding black cockatoos and Western Ringtail Possums), many have preferred habitat types associated with the Collie River and foreshore area. Accordingly, a Fauna Habitat Assessment (Harewood 2018) was undertaken to determine the quality and composition of wetland habitat within the subject site.

An examination of the CC wetland area mapped within the subject site revealed it to be comprised of a section of the open/low woodland of flooded gum (*Eucalyptus rudis*), paperback (*Melaleuca rhaphiophylla*) and grassland habitat unit which is 'Completely Degraded' and unlikely to fulfil the criteria of a CC wetland.

The vegetation present is comprised of only two native species (*Eucalyptus rudis* and *Melaleuca rhaphiophylla*) over introduced pasture grasses. The area is currently open to livestock grazing and there is unlikely to be any recruitment of new trees and it can therefore be expected that its quality will further deteriorate over time. The fauna habitat values of the mapped wetland area within the subject site can be considered to be very low. The subject site is not expected to support any wetland species of conservation significance (Harewood 2018).

Black Cockatoos

The black cockatoo (including Baudin's black cockatoo *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*) breeding habitat assessment involved the identification of all suitable breeding tree species, including marri, jarrah, flooded gum and any other endemic Corymbia/Eucalyptus species within the subject site, that had a diameter at breast height (DBH) of equal to or over 50 cm (Harewood 2018). The number and size of any hollows present and their suitability for black cockatoos was then recorded. Peppermints, banksia, sheoak and melaleuca tree species were not assessed as they typically do not develop hollows that are used by black cockatoos.

The assessment identified 112 trees within the subject site with a DBH of equal to or over 50 cm. Hollows or possible hollows of some type were identified in 21 of these trees. An updated black cockatoo habitat tree review (Harewood 2022) was undertaken whereby only 13 trees with hollows were identified. Utilising a drone, these hollows were viewed to determine their characteristics. None of the hollows within these trees were considered suitable for black cockatoo breeding purposes given their size and shape (Harewood 2022).

Trees that are known to be or are potentially used as a direct food source (e.g. seeds, flowers, nectar, bark or grubs) by one or more of the species of black cockatoo were recorded within the subject site and include the following:

- Flooded Gum Eucalyptus rudis;
- Marri Corymbia calophylla;
- Jarrah Eucalyptus marginata; and
- Peppermint Agonis flexuosa.

Species such as flooded gum and peppermint while foraged upon on occasions are only likely to contribute a small proportion to any one bird's diet relative to more favoured species such as marri and therefore areas of these species are not generally regarded as representing quality foraging habitat. The only actual evidence of foraging left by black cockatoos was in the form of chewed marri fruits in the central section of the subject site. This evidence was attributed to either the Forest red-tailed black cockatoo or the Baudin's cockatoo. The extent of what would be regarded as quality black cockatoo foraging habitat within the subject site is very small, being comprised of approximately 0.2 ha of marri forest supported to a small degree by a limited number of scattered marri and jarrah trees. Therefore, black cockatoo species are very unlikely to rely on the subject site for its persistence and development within this area is not likely to be considered significant (Harewood 2018).

No evidence of black cockatoos roosting within trees located inside the subject site was observed during the fauna assessment (Harewood 2018).

Western Ringtail Possum (WRP) Assessment

During the fauna assessment, no evidence of WRP being present or utilising the subject site was found during the day or night surveys (Harewood 2018).

The vegetation in the northern portion of the subject site has been mapped by Shedley *et. al.* 2014, as being High Quality habitat suitability (Category Class B) for WRP. However, the low plant species diversity and lack of favoured foraging species present would indicate that the area provides very low quality habitat for WRPs, at best. While WRPs may occur occasionally as transients they would not permanently reside in this vegetation type (Harewood 2018).

The area of remnant vegetation consisting of low woodlands of peppermint adjacent to a small area of marri forest in the centre of the subject site has been mapped as being Medium and High Quality WRP habitat, respectively.

However, the value of this area as WRP habitat is greatly diminished by its small size and isolated nature, with the closest other continuous vegetation being over 300 m away. The absence of WRP observations in these areas during the fauna assessment suggests that the species cannot persist in this remnant or that they have not been able to populate it from other areas due to the distance of separation (Harewood 2018).

5 POTENTIAL IMPACTS AND MANAGEMENT

During the process of undertaking this investigation, a range of specific environmental issues were explored in relation to the subject site and the proposed development. These issues arise from the proposed development, the existing environment of the subject site, its surrounds and the prevailing state and federal environment policy and legislation. The implications associated with the issues in the context of the intended development of the subject site are discussed in this Section.

5.1 Acid Sulfate Soils

The ASS objectives as prescribed by the EPA are to:

- Maintain the integrity, ecological function and environmental values of the soil and landform.
- Ensure that emissions do not adversely affect environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards.
- Ensure that rehabilitation achieves an acceptable standard compatible with the intended land use, and consistent with appropriate criteria.

The DWER has published a number of guidelines relating to the identification, reporting and management of contaminated sites and ASS in WA, including the Contaminated Site Management Series report and *Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes* (DWER 2015).

5.1.1 Potential Impacts

According to existing DWER mapping, the risk of ASS occurring within 3 m of the surface is moderate to low.

In an undisturbed state below the water table, these soils remain benign and non-acidic. However, if these soils are exposed to the atmosphere through drainage, excavation or dewatering, the sulfides may react with oxygen and form sulfuric acid.

While identification of possible ASS hotspots is important, the occurrence of ASS is rarely a 'fatal flaw' issue and in most circumstances can be appropriately addressed at the subdivision/development stages through design or management mechanisms. As a result, if required, detailed ASS investigations would not be necessary until detailed engineering design drawings have been prepared for the subject site.

5.1.2 Environmental Management and Mitigation

It is expected that any deep excavations within the subject site requiring dewatering, such as installing deep sewerage, may trigger the need for a detailed ASS investigation and management plan. Any such investigation is best done after the location and depths of deep excavations are determined, in order to reduce the field work required. This is not expected to be a constraint to the proposed development of the subject site, but may result in a slightly extended approval programme for site works and a relatively minor increase in investigation and reporting fees.

A DWER guideline compliant ASS and Dewatering Management Plan will, if required, then be developed and implemented to manage:

- All proposed dewatering proposed in association with residential development (in accordance with subdivision and servicing layout); and
- Any excavation in actual or potential ASS areas.

The excavation of ASS and dewatering for the project will be managed in accordance with DWER guidelines to result in no adverse impacts to the environment.

5.2 Water Management

The EPA water management objectives include:

- Maintain the quantity of water (surface and ground) so that existing and potential environmental values are protected.
- Ensure that the quality of water emissions (surface and ground) do not adversely affect environmental values or the health, welfare and amenity of people and land uses, and meets statutory requirements and acceptable standards.

5.2.1 Potential Impacts

Development of the subject site is associated with the following potential impacts:

- Groundwater and surface water at the subject site flows west towards the Collie River, which is an
 environmentally sensitive receptor. Impacts to groundwater and/or surface water quality on site
 may also impact sensitive receptors downstream.
- The use of subsoil drainage to control pre-development groundwater levels may impact the CC wetland adjacent to the subject site.

5.2.2 Environmental Management and Mitigation

A LWMS has been prepared to support the Structure Plan associated with the subject site. The LWMS details the best management practices approach to water management that will be undertaken for this development, in accordance with *Better Urban Water Management* (WAPC 2008). The LWMS will achieve integrated water management through the following design objectives:

- Effectively manage the risk to human life, property damage and environmental degradation from water contamination, flooding and waterlogging.
- Maintain and if possible, improve water quality (surface and groundwater) within the development in relation to pre-development water quality.
- Reduce potable water consumption within both public and private spaces using practical and costeffective measures.
- Promote infiltration of surface water on site to minimise the risk of further water quality degradation in the Leschenault Estuary Catchment.
- Implement best management practices in regard to stormwater management, including structural and non-structural controls.
- Incorporate where possible, low maintenance, cost-effective landscaping and stormwater treatment systems.

It is expected that development of the subject site will have a positive impact on groundwater quality through Best Management Practices and the treatment of stormwater prior to infiltration as discussed below:

- The stormwater structural controls will improve infiltrating stormwater water quality through reducing water velocities, biological uptake and increasing infiltration areas.
- Water quality will be improved through minimising and controlling the levels of fertilisers and pesticides applied to the site through appropriate plant selection and operation and maintenance.
- The management of stormwater and nutrients will be in accordance with the Leschenault Estuary WQIP and Better Urban Water Management practices.

Based on the investigations undertaken and the management measures proposed, it is not expected that any changes to groundwater flows, levels or quality will have an adverse impact on the function and environmental values of the subject site.

5.3 Wetlands

The EPA wetland objective is to maintain and where possible enhance the integrity, ecological function and environmental values of wetlands.

5.3.1 Potential Impacts

A portion of the subject site is mapped as containing a MU wetland. MU wetlands have few remaining functions, values and typically their attributes have been considerably degraded such that they provide limited ecological value. On this basis, MU wetlands do not usually preclude development. The impacts to the MU wetlands within the subject site are minimal as these wetlands are in a "Completely Degraded" condition and are considered suitable for development.

A site-specific study (Bioscience 2012) has determined that the CC wetland located adjacent to the subject site does not extend into the subject site. Nonetheless, the area (incorrectly) mapped as a CC wetland within the subject site along with a 50 m buffer, will be excluded from development and retained within ROS. Accordingly, there will be no direct impacts to the CC wetland as result of the proposed development. Indirect potential impacts as a result of the proposed development may include:

- ASS impacts resulting from earthworks or dewatering.
- Changes to hydrology through changes in surface water flows and subsoil drains.

5.3.2 Environmental Management and Mitigation

It is envisaged that by maintaining pre-development surface and groundwater flows to the buffer area, the vegetation will be provided with similar water needs after development, whilst experiencing improved water quality through the use of constructed vegetated bioretention areas (swales) and other suitably designed and best practice water sensitive urban design techniques.

It is important to acknowledge the current surface water flow through the CC wetland, which includes the nutrient run-off from the surrounding paddocks, is not treated. The proposed water management strategy seeks to improve significantly this outcome through incorporating best stormwater quality management practice consistent with Better Urban Water Management principles.

It is anticipated that the above management mechanisms will improve the current condition of the wetland as well as providing suitable waterbird habitat.

5.4 Vegetation and Flora

The EPA flora and vegetation objective is to maintain the abundance, diversity, geographic distribution and productivity of flora at the species and ecosystem levels through the avoidance or management of adverse impacts and through improvement in knowledge.

5.4.1 Potential Impacts

As a result of historical and current anthropogenic disturbances, the vegetation within the subject site is in a 'Degraded' to 'Completely Degraded' condition. It is very unlikely to contain any flora or vegetation of conservation significance and it does not provide any ecological connectivity to surrounding environmental features (i.e. the Collie River).

Consequently, it is anticipated that the proposed development will have very little impact on native vegetation.

5.4.2 Environmental Management and Mitigation

Within the development footprint, there are no vegetation or flora values within the subject site that preclude development or require protection. Accordingly, no specific management measures pertaining to remnant vegetation are deemed necessary.

Any potential impacts will be reduced through the following:

- Retention and replanting of areas ROS in accordance with the Shire of Dardanup's objectives for this area.
- Road reserves will be landscaped, which will involve planting species native to the local area.

5.5 Fauna

The EPA fauna objective is to maintain the abundance, diversity, geographic distribution and productivity of native fauna at the species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

5.5.1 Potential Impacts

No evidence of WRPs being present or utilising the subject site has been identified (Harewood 2018). This is likely to be attributed to the composition of the majority of vegetation onsite (flooded gum and paperbark), which represents low quality habitat for WRPs. While WRPs may occur occasionally as transients they would not permanently reside in this vegetation type given the low plant species diversity and a complete lack of some of their favoured foraging species (e.g. peppermint, sheoak).

The value of the peppermint and marri dominated vegetation to WRPs is greatly diminished by the fact that it is a relatively small area (<2 ha) and is isolated, being over 300 metres from the closest other continuous area of vegetation. The absence of WRP observations in this area also suggests that the species cannot persist in this remnant or that they have not been able to populate it from other areas due to the distance of separation (Harewood 2018). Accordingly, there are not expected to be any impacts to WRPs as a result of the proposed development.

The peppermint and marri dominated vegetation unit represents black cockatoo habitat, but the degree of use appears to be low with no breeding or roosting activity detected and only a very limited amount (<2ha) of foraging habitat being present.

Based on the results of the assessment and the scale of the proposed development, likely impacts on WRPs and black cockatoos and/or their preferred habitat are limited (Harewood 2018 and Harewood 2022).

In consideration of their 'Completely Degraded' condition, the fauna habitat values of the CC wetland and MU wetland mapped within the subject site are very low. Accordingly, there are not expected to be any impacts to wetland fauna of conservation significance as a result of the proposed development

5.5.2 Environmental Management and Mitigation

The following management measures have been developed and incorporated to reduce the likelihood of impacts to native fauna:

- Fauna corridors will be created through the revegetation of the ROS.
- Utilise a licensed fauna spotter for all vegetation clearing.

6 CONSULTATION

The proposed Structure Plan was advertised in accordance with the *Planning and Development (Local Planning Schemes) Regulations 2015*. In response to the advertising, 12 submissions (including five public submissions) were received. In the context of environmental issues, the DBCA provided a set of comments which are addressed below in **Table 4**.

Table 4. Response to DBCA's Comments

DBCA	Shire	Accendo Response
The northern portion of Lot 9004 contains native vegetation associated with the adjacent Conservation Category Wetlands (CCW) on the Collie River floodplain.	Noted.	An examination of this specific area during the fauna survey (Harewood 2018) revealed it to be comprised of only two native species (<i>Eucalyptus rudis</i> and <i>Melaleuca rhaphiophylla</i>) over introduced pasture grasses. It is considered highly degraded and unlikely to fulfil the criteria of a CC wetland. The area is currently open to livestock grazing and there is unlikely to be any recruitment of new trees and it can therefore be expected that its quality will further deteriorate over time. The fauna habitat values of this area can be considered to be very low. It should be noted that other sections of this same vegetation unit located within the subject site, is in identical condition and has been mapped as a MU wetland which is consistent with its highly degraded condition (Harewood 2018). Based on the site-specific survey results (Harewood 2018 and Bioscience 2012), it is considered that the CC wetland does not actually occur within the subject site.
Shelley et at, 2014 mapped the northern Lot 9004 vegetation as being High Quality habitat suitability (Category Class B) for western ringtail possums (WRP) High Quality habitat suitability is important in maintaining the integrity of WRP habitat, which is required to increase the reproductive output of the species and to counter declining populations and losses due to habitat loss and predation.	Noted.	The open woodland of flooded gum and paperback present in the north of the subject site has been mapped by Shelley <i>et al.</i> (2014) as being within the "high" habitat suitability class for WRPs. Observations made during the field survey (Harewood 2018) suggest that this area should in fact be rated as having a "very low" habitat suitability (i.e. able to support <0.5 WRPs per ha) at best. Apart from the absence of any WRP observations in this area, this conclusion is justified by the fact the vegetation is comprised of only flooded gum and paperbark, a combination which represents low quality habitat for WRPs. While WRPs may occur occasionally as transients they would not permanently reside in this vegetation type given the low plant species diversity and a complete lack of some of their favoured foraging species (e.g. peppermint, sheoak) (Harewood 2018).

WRP (Schedule 1) is listed as critically endangered species under the Commonwealth of Australia's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Western Australia's Wildlife Conservation Act 1950.	Noted.	Noted. A targeted survey for WRPs was undertaken within the subject site. This included a daytime survey and two-night time survey. No WRPs were identified and no evidence of WRPs utilising the subject site was identified. An assessment of the fauna habitat types within the subject site identified that the habitat quality for WRPs within the development footprint ranged from low to very low. In consideration of the above, there are not anticipated to be any impacts to WRP as a result of the proposed development.
It appears that 2 to 3ha of this high quality WRP habitat will be cleared if the current structure plan is implemented. These areas are also very close, if not overlapping, the environmentally sensitive area associated with the CCW.	The map contained in (Appendix ORD:12.2C) identifies the Conservation Category Wetland (CCW) referred to which is outside of the PESP area and not impacted by the proposal. The vegetated area in the northern part of the site that will be subject to clearing is estimated by staff to be approximately 1.7ha.	Based on the targeted WRP survey, vegetation subject to clearing represents low to very low-quality habitat for WRPs. Furthermore, no evidence of WRPs utilising any of the vegetation within the subject site was identified. In the expert opinion of a highly qualified zoologist, there will be negligible impacts to WRP as a result of the proposed development (Harewood 2018).
The central portion of the structure plan shows that about 1ha of mapped medium quality WRP habitat is to be cleared and the rest retained in Public Open Space (POS).	Noted	The value of the peppermint and marri dominated vegetation to WRPs is greatly diminished by the fact that it encompasses a small area (<2 ha) and is isolated, being over 300m from the closest other continuous area of vegetation. The absence of WRPs in this area also suggests that the species cannot persist in this remnant or that they have not been able to populate it from other areas due to the distance of separation (Harewood 2018). As discussed above, the impacts to WRPs as a result of the proposed development are considered negligible (Harewood 2018).

While the application provided some vegetation classification information, it did not include any flora or fauna survey information.

The structure plan report (Page 10) states that the PESP area has previously been assessed by the EPA during the preparation of the Greater Bunbury Region Scheme, and subsequent amendments to the Local Planning Scheme when the land was re-zoned to 'Development' zone (Amendment 187).

It also states that the site has previously been subject to an approved subdivision design that proposed to clear the remnant vegetation, however officers are unclear as to what this is referring to as the most recent subdivision was refused.

Notwithstanding, it is recommended that Council requests a modification to the Structure Plan to include the following notation:

"At subdivision the applicant/ landowner shall be required to undertake a flora and fauna study to identify the presence of threatened flora and fauna within the site being regarded as being of biodiversity and conservation value." A Fauna and Habitat Assessment of the subject site was undertaken by a qualified zoologist in September 2018 (Harewood 2018). Based on the results of the assessment it was concluded that there exist no major constraints relating to fauna, and in particular fauna of conservation significance with respect to the proposed development.

The Fauna and Habitat Assessment identified the vegetation types within the subject site. Given the historical and current land use (livestock grazing), all the vegetation present can be regarded as being in a Degraded or Completely Degraded condition. Most of the vegetation present is comprised of only two native species (*Eucalyptus rudis* and *Melaleuca rhaphiophylla*) over introduced pasture grasses. Accordingly, it is very unlikely that any flora or vegetation of conservation significance would occur within the subject site. Therefore, undertaking a flora and vegetation survey will provide no further environmental value.

DBCA advises that the proposed clearing should be referred to the Department of Water and Environmental Regulation specifically for consideration under the Environmental Protection Act, Native, Vegetation Clearing regulations.

Council's consideration of the proposal does not remove the responsibility of the landowner to comply with the Environment Protection Act 1986 regarding the clearing of vegetation.

The Structure Plan was referred to DWER for comment as required.

A clearing exemption pursuant Schedule 6 of the *Environmental Protection Act 1986* applies to the application area associated with a WAPC subdivision approval.

The proposed structure plan depicts an area of Local Open Space which retains some bushland and a small strip of Regional Open Space (ROS) along the northern and western Lot 9004 boundary. However, it would be desirable to also retain the northern Lot 9004 treed vegetation, to retain the High Quality WRP habitat within Public Open Space. Amongst these areas, the highest priority for protection would be the lines of mature trees immediately inside the northern structure plan boundary, just outside the proposed ROS, associated with the GBRS floodway and flood fringe boundary. This will also retain valuable established trees for the CCW buffer.

It is recommended that Council requests a modification to the Structure Plan to include the following note:

"At subdivision the applicant/ landowner shall be required to undertake a flora and fauna study to identify the presence of threatened flora and fauna within the site being regarded as being of biodiversity and conservation value." This area has been assessed and was determined to be in a Completely Degraded condition. It is predominately comprised of only two native species (*Eucalyptus rudis* and *Melaleuca rhaphiophylla*) over introduced pasture grasses. The area is currently open to livestock grazing and there is unlikely to be any recruitment of new trees and it can therefore be expected that its quality will further deteriorate over time. The fauna habitat values of this area of the CC wetland can be considered to be very low. It should be noted that other sections of this same vegetation unit located within the subject site, is in identical condition and has been mapped as a MU wetland which is consistent with its highly degraded condition (Harewood 2018).

The proponent should consider referral requirements to the Federal Department of the Environment and Energy under the EPBC Act in terms of significant impacts on WRP habitat.

Council's consideration of the proposal does not remove the responsibility of the landowner to comply with the EPBC Act regarding the clearing of vegetation.

Based on a targeted WRP assessment, it was determined that impacts to WRP from the proposed development will be negligible (Harewood 2018). The subject site does not appear to support any WRPs and provides low to very low habitat quality for the species. Accordingly, referral to the DotEE pursuant to the EPBC Act is not considered necessary.

DBCA supports the use of a fauna spotter during clearing and recommends that the fauna spotter is used during all clearing works associated with the development footprint. A wildlife protection management plan could be prepared and implemented to manage threatened species during approved clearing works.

Noted. The flora and fauna study will identify the presence of any native animals within the areas identified for clearing.

If determined appropriate DWER may place conditions regarding the requirement for a fauna spotter and/or a wildlife protection management plan on the clearing permit.

Noted.

7 SUMMARY

Accendo was engaged by the proponent to prepare an environmental assessment to support the preparation of a Structure Plan for the subject site. This has included a site-specific fauna assessment to identify and assess the environmental attributes and values within the subject site. The environmental attributes and values identified within the site have been outlined in **Section 4** and include:

- Surface elevations range from 10.50 m AHD in the south-eastern corner to 1.30 m AHD along the northern boundary within the Collie River floodplain.
- The subject site has been classified as having a 'moderate to low risk' of ASS occurring within three metres of the natural soil surface.
- The subject area sits within the Leschenault Estuary Catchment and as such is covered by the Leschenault Estuary WQIP.
- The majority of vegetation has been cleared as a result of the historical and current land use (livestock grazing).
- The subject site is mapped as containing a portion of a CC wetland. As identified within the Wetland Buffer Determination study (Bioscience 2012) for the subject site, this mapping appears to be incorrect as a site analysis revealed that the wetland function area associated with the CC wetland does not extend into the subject site. Furthermore, an examination of this specific area during the fauna assessment (Harewood 2018) revealed it to be comprised of only two native species (Eucalyptus rudis and Melaleuca rhaphiophylla) over introduced pasture grasses, which is not consistent with the definition of a CC wetland.
- As a result of the fauna assessment it was determined that the fauna habitat values at the subject site have been severely compromised by the removal of most of the original native vegetation and the degradation of the main remnant patches.
- There is no evidence of WRPs utilising vegetation with the subject site as habitat and overall, habitat quality in areas to be developed are low/very low.
- Some areas of vegetation represent black cockatoo habitat, but the degree of use appears to be low with no breeding or roosting activity detected and only a very limited amount of foraging habitat being present.
- There exist no major constraints relating to fauna, and in particular fauna of conservation significance with respect to the proposed development.

In consideration of the abovementioned key environmental features, the following management measures have been proposed to minimise potential impacts associated with the subdivision of the subject site:

- Prepare and implement an ASS and Dewatering Management Plan if necessary.
- Implement the approved LWMS during subdivision works.

Based on this assessment, Accendo considers that there are no fatal flaws or key environmental values that cannot be accommodated to enable development of the subject site for its intended purpose.

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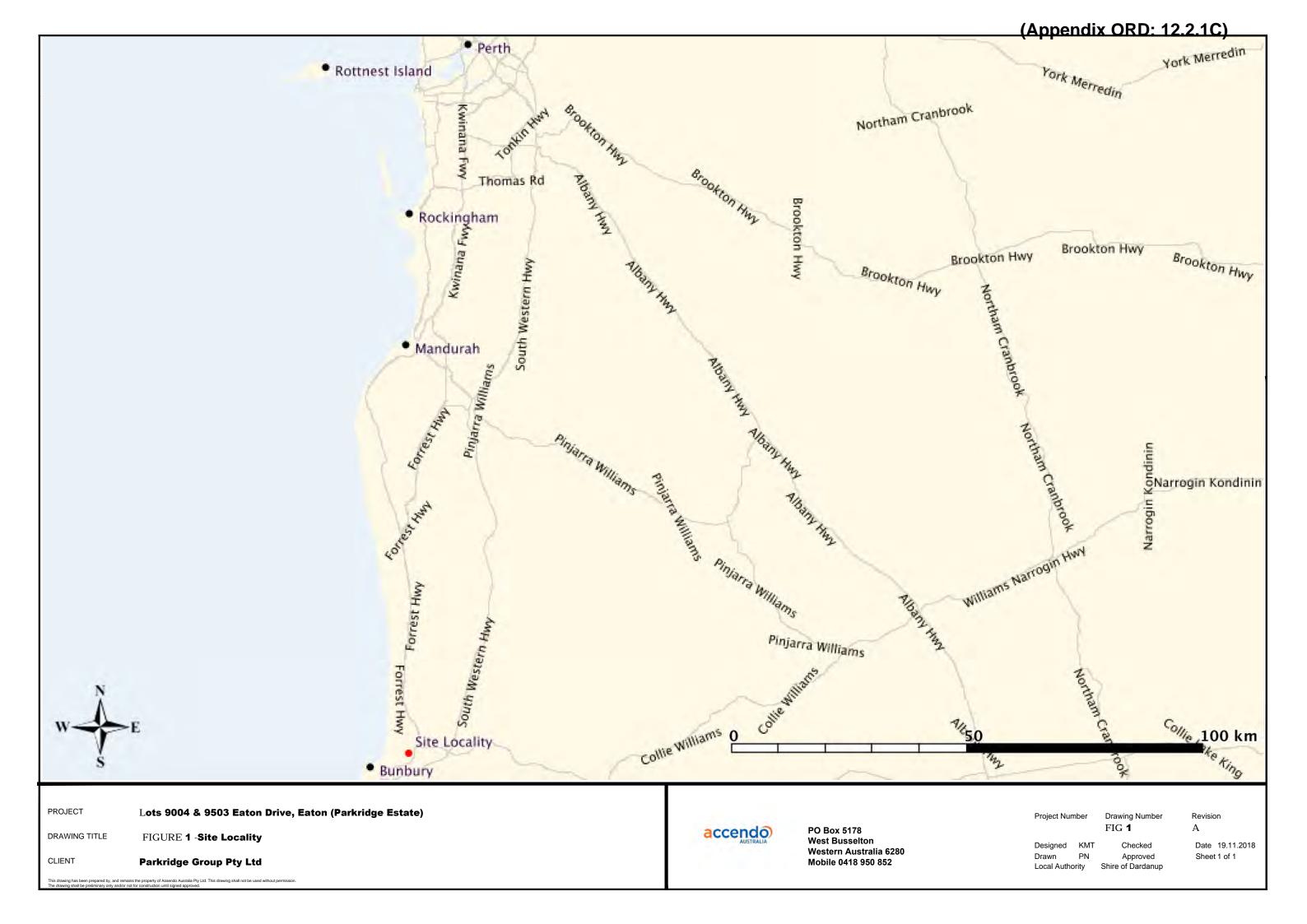
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FIGURES





PROJECT

Lots 9004 & 9503 Eaton Drive, Eaton (Parkridge Estate)

DRAWING TITLE

FIGURE 2 - Extent of Site

CLIENT

Parkridge Group Pty Ltd

accendo

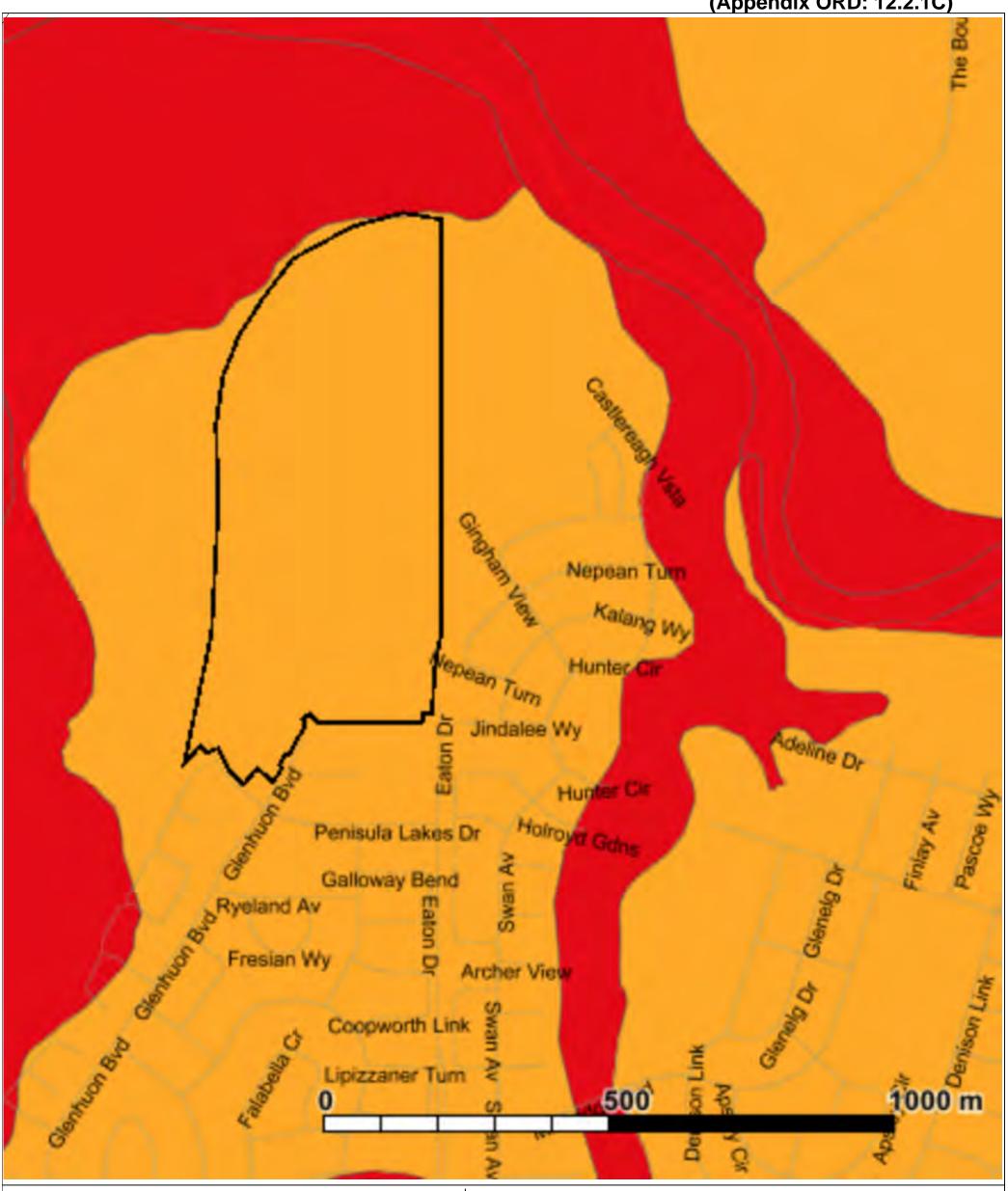
PO Box 5178 West Busselton Western Australia 6280 Mobile 0418 950 852

Project Number

FIG 2

Designed KMT Local Authority

Checked Approved Shire of Dardanup Date 19.11.2018





CLIENT

High to moderate risk of ASS occurring within 3m of natural soil surface. (or deeper) Moderate to low risk of ASS occurring within 3m of natural soil surface.

PROJECT Lot 9004 & 9503 Eaton Drive, Eaton (Parkridge Estate)

DRAWING TITLE FIGURE 3 - Acid Sulphate Soil Mapping

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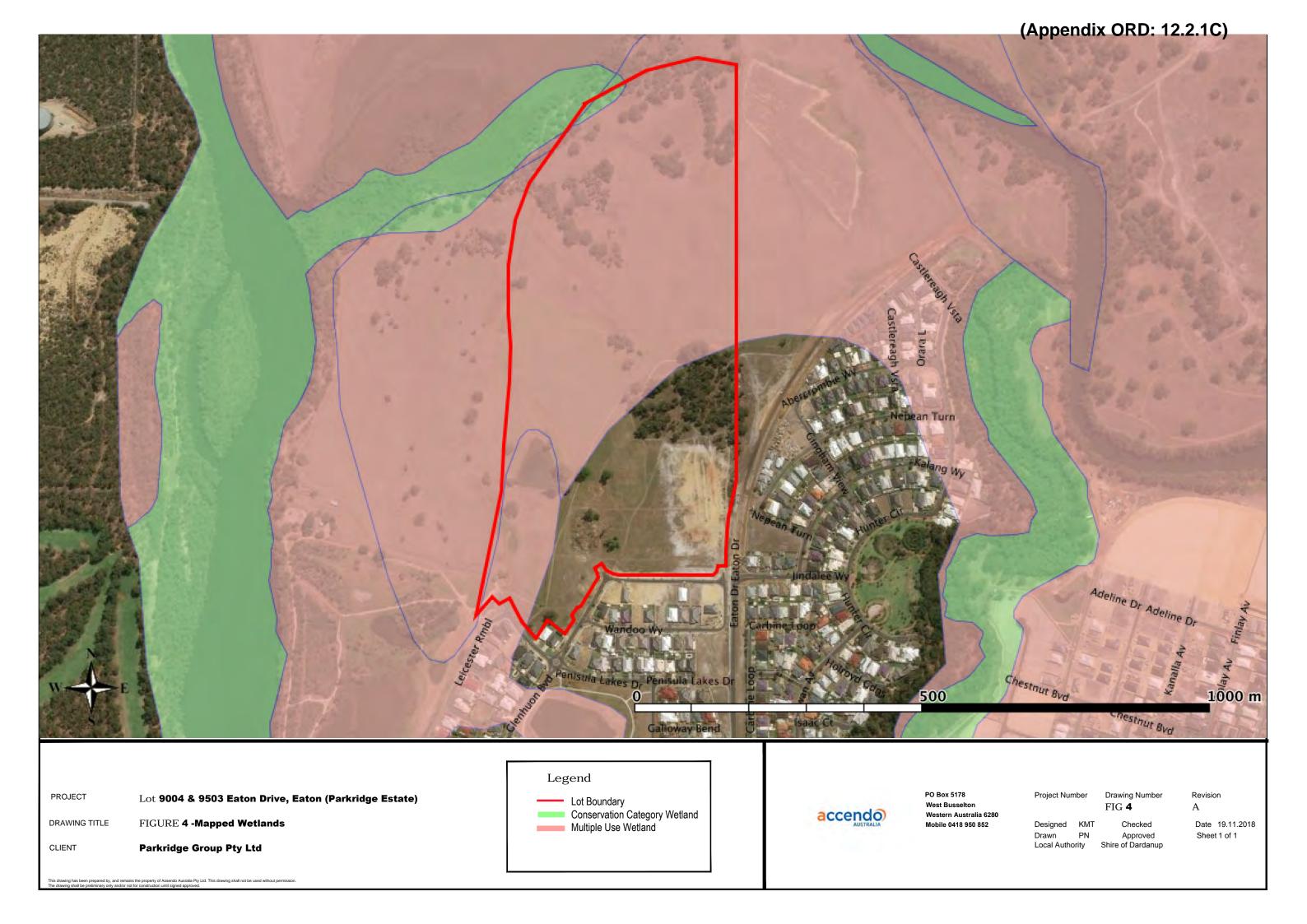
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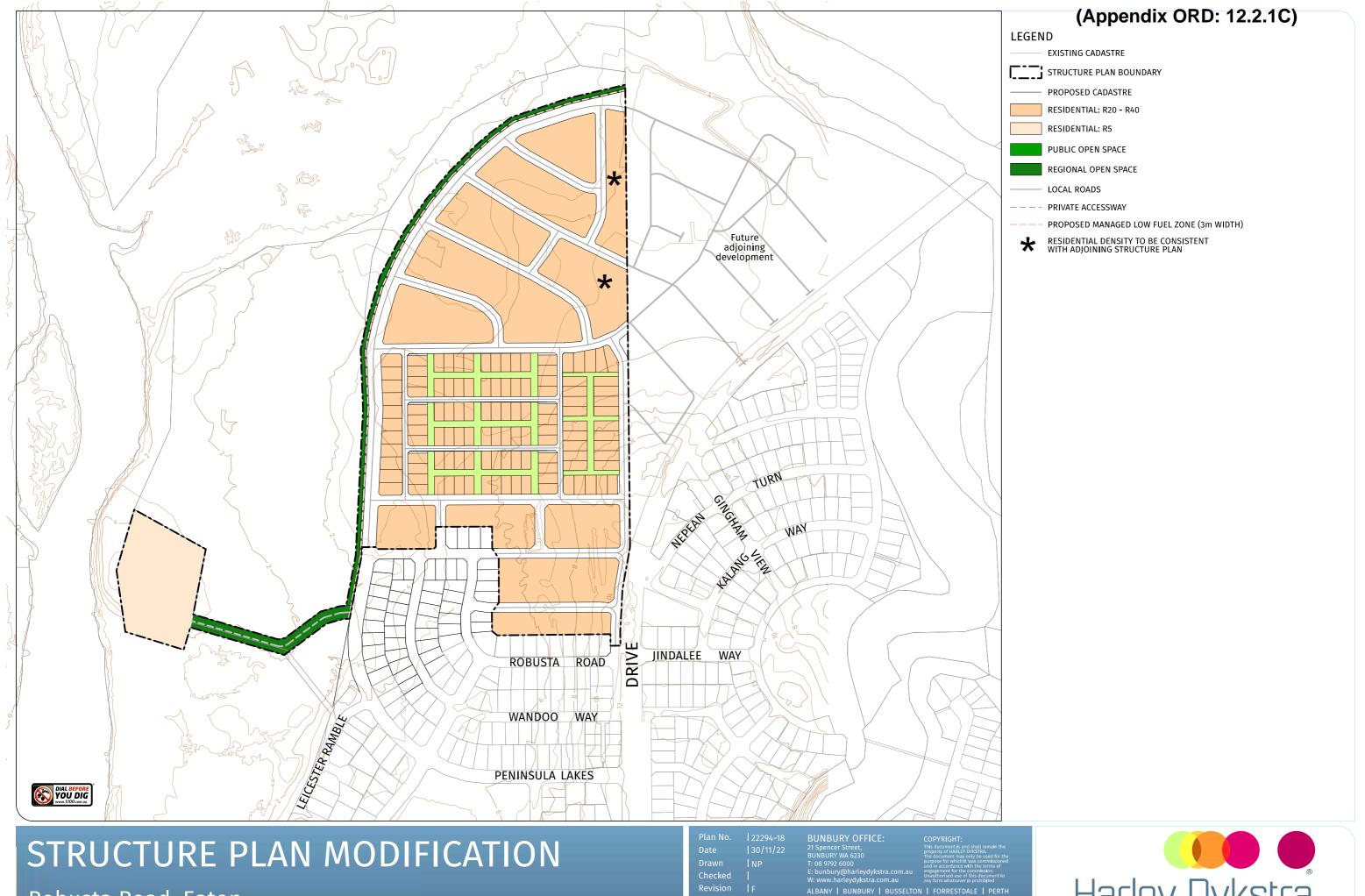
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Revision A

Date 19.11.18 Approved PN Sheet 1 of 1 Local Authority Shire of Dardanup



APPENDIX A. STRUCTURE PLAN



Robusta Road, Eaton PARKRIDGE



APPENDIX B. FAUNA ASSESSMENTS (HAREWOOD)

Fauna and Habitat Assessment



Lot 9004 and Lot 9503 Eaton Drive Eaton

November 2018 V2

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FIGURES

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FIGURE 4: Wetland Classifications

FIGURE 5: Possum Observations

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APPENDIX A: Black Cockatoo Habitat Tree Details

APPENDIX B: List of Fauna Observed

SUMMARY

This report details the results of a targeted fauna and habitat assessment over Lot 9004 and Lot 9503 Eaton Drive, Eaton (subject site). Lot 9004 and Lot 9503 have a combined area of about 34 hectares, most of which is cleared farmland used for or previously used for livestock grazing (Figure 1 and 2)

The scope of works was to carry out a habitat assessment including that of a Conservation Category Wetland, part of which extends into the subject site. A targeted survey for western ringtail possums and black cockatoo habitat was also completed.

The small areas (<4.4 ha) of remnant native vegetation onsite are mainly comprised of a flooded gum/paperbark woodland in the low lying arears in the north of the property and a grove of peppermint low woodland on higher ground in the south east (Figure 3). The balance of the site is totally cleared with just a small number of scattered trees of various types (mainly flooded gum and paperbark). All the vegetation present can be regarded as being in a degraded or highly degraded condition.

Overall fauna habitat values at the subject site have been severely compromised by the removal of most of the original native vegetation and the degradation of the main remnant patches. Most areas lack any natural attributes and are now only utilised by generally common and widespread fauna species with non-specific requirements which allow them to persist in disturbed/highly disturbed habitats. As a consequence, the fauna biodiversity of the subject site is well below levels present prior to historical and ongoing disturbances taking place.

The assessment of part of a Conservation Category Wetland (Figure 4) which extends into the subject site suggests that it should be considered for re-classification as a Multiple Use Wetland given it is highly degraded and of an identical character to adjoining areas that are mapped as such.

No evidence of western ringtail possum being present or utilising the subject site was found during the day or night surveys. Given the relatively small extent of the remnant vegetation remaining on site (~4.4 ha excluding scattered trees) and the fact that it was relatively easy to survey for evidence of the species, it is the Authors opinion that at the time of the surveys western ringtail possums were not present within the subject site. The lack of use of the area by this species can be attributed to the low quality habitat present in some areas and the small extent and isolation of other remnant patches.

The habitat tree assessment identified 112 trees within the subject site with a DBH of \geq 50cm. Twenty one of these trees were observed to contain hollows or possible hollows of some type with four being assessed at the time to possibly have hollows suitable for black cockatoos to use for nesting (i.e. large enough entrance into a suitably sized and orientated branch/truck). No actual evidence (e.g. chew marks) of any hollows being used by black cockatoos for nesting (currently or previously) was seen. Common brushtail possums were

FAUNA AND HABITAT ASSESSMENT - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2018 - V2

observed in close proximity to some of these hollow trees during the nocturnal surveys and these animals may be occupying at least some of the potential hollows recorded.

The extent of what would be regarded as quality black cockatoo foraging habitat within the subject site is very small, being comprised of about 0.2 ha of marri forest supported to a small degree by a limited number of scattered marri and jarrah trees.

No existing roosting trees (trees used at night by black cockatoos to rest) were positively identified during the survey.

The results of the assessment suggest that if the proposed development were to be referred to the Department of the Environment and Energy (DotEE) for review under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that it would be regarded as "not a controlled action" given impacts on listed species or their habitat are not likely to be significant.

It is therefore concluded that there exists no major constraints relating to fauna, and in particular fauna of conservation significance with respect to the proposed development.

It is recommended that a fauna relocation program be implemented prior to and during clearing works to ensure direct impact on fauna (e.g. common brushtail possums) most likely to be encountered, are minimised.

1. INTRODUCTION

This report details the results of a targeted fauna and habitat assessment over Lot 9004 and Lot 9503 Eaton Drive, Eaton (subject site). The subject site is situated about nine kilometres east of Bunbury in the south west of Western Australia and is centred at approximately 33.296748°S and 115.727755°E. Lot 9004 and Lot 9503 have a combined area of about 34 hectares, most of which is cleared farmland used for or previously used for livestock grazing (Figure 1 and 2).

2. SCOPE OF WORKS

The scope of works, as defined by Accendo Australia, was to

- Carry out a wetland habitat assessment of the native vegetation associated with a nearby Conservation Category Wetland;
- Carry out a preliminary survey of western ringtail possums (WRP)(Pseudocheirus
 occidentalis) with the aim of obtaining an estimate of the distribution, abundance
 and habitat extent of the species within the subject site;
- Carry out a black cockatoo habitat assessment with the aim of determining the status, extent and quality of habitat within the subject site; and
- Prepare a report summarising all results.

Note: For the purposes of this report the term black cockatoo is in reference to Baudin's black cockatoo *Calyptorhynchus baudinii*, Carnaby's black cockatoo *Calyptorhynchus latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso*.

3. METHODS

Daytime field survey work at the site was carried out on the 9 and 10 September 2018. The nocturnal WRP surveys were carried out on the 29 and 31 September 2018. All survey work and reporting has been completed by Greg Harewood (Zoologist).

3.1 HABITAT ASSESSMENT

3.1.1 Fauna Habitat Assessment

The vegetation communities, soils and landforms identified during the site reconnaissance survey have been used as the basis for a classification of areas into broad fauna habitat types.

3.1.2 Wetland Habitat Assessment

The northern portion of Lot 9004 contains native vegetation mapped as part of a Conservation Category Wetland (CCW) which extends westwards outside of the subject site. The onsite wetland vegetation making up part of this habitat was examined to determine its quality and composition in relation to the overall CCW classification.

3.2 WESTERN RINGTAIL POSSUM ASSESSMENT

To determine if western ringtail possums were utilising the subject site the following was carried out:

- Daytime survey of the site along closed spaced traverses searching for dreys, obvious tree hollows (and other potential daytime refuge habitat), scats and individual WRPs. The day time survey was carried out using a GPS equipped PDA for guidance and as a data recorder;
- Two night time surveys were undertaken to provide information on the approximate distribution and abundance of WRPs. The nocturnal counts involved the systematic searching of potential WRP habitats within the subject site along close spaced transects, on foot using a head torch. The nocturnal counts were carried out using a GPS equipped PDA for guidance and as a data recorder; and
- An estimation of the amount and quality of WRP habitat present within the subject site based on field observations and available air photography has also been made. This information has been compared to mapping and classifications of habitat suitability provided by Shelley et al. (2014).

3.3 BLACK COCKATOO HABITAT ASSESSMENT

The following methods were employed to comply with the defined scope of works and are based on guidelines published by the federal DotEE (Commonwealth of Australia 2012) which states that surveys for Carnaby's, Baudin's and forest red-tailed black cockatoo habitat should:

- be done by a suitably qualified person with experience in vegetation or cockatoo surveys, depending on the type of survey being undertaken;
- maximise the chance of detecting the species' habitat and/or signs of use;
- determine the context of the site within the broader landscape—for example, the amount and quality of habitat nearby and in the local region (for example, within 10 km);
- account for uncertainty and error (false presence and absences); and

FAUNA AND HABITAT ASSESSMENT - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2018 - V2

 include collation of existing data on known locations of breeding and feeding birds and night roost locations.

Habitat used by black cockatoos have been placed into three categories by the DotE (Commonwealth of Australia 2012) these being:

- Breeding Habitat;
- Foraging Habitat; and
- Night Roosting Habitat.

So as to comply with the requested scope of works and in line with the published guidelines the following was carried out.

3.3.1 Black Cockatoo Breeding Habitat

The black cockatoo breeding habitat assessment involved the identification of all suitable breeding tree species within the subject site that had a diametre at breast height (DBH) of equal to or over 50cm. The DBH of each tree was estimated using a pre-made 50 cm "caliper".

The location of each tree identified as being over the threshold DBH was recorded with a GPS and details on tree species, number and size of hollows (if any) noted. Trees observed to contain hollows (of any size/type) were marked with "H" using spray paint for easy future reference.

Target tree species included marri, jarrah and flooded gum or any other endemic *Corymbia/Eucalyptus* species of a suitable size that was present. Peppermints, *banksia*, sheoak and *melaleuca* tree species (for example) were not assessed as they typically do not develop hollows that are used by black cockatoos.

For the purposes of this study a tree containing a potential cockatoo nest hollow was defined as:

Generally, any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) or possible hollows considered potentially suitable for occupation by black cockatoos for the purpose of nesting/breeding. Hollows or possible hollows that had an entrance greater than about 10cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk, were recorded as "potential nest hollows".

Identified hollows were examined using binoculars for evidence of actual use by black cockatoos (e.g. chewing around hollow entrance, scarring and scratch marks on trunks and branches).

FAUNA AND HABITAT ASSESSMENT – LOT 9004 & 9503 EATON DRIVE - EATON – NOVEMBER 2018 – V2

A review of available literature was carried out to determine the location/extent of any known/likely black cockatoo breeding habitat areas in the vicinity of the subject site.

3.3.2 Black Cockatoo Foraging Habitat

The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around the base of trees) observed during the field survey was recorded. The nature and extent of potential foraging habitat present was also documented irrespective of the presence of any actual foraging evidence.

A review of available literature was also carried out to determine the location/extent of any known/likely black cockatoo foraging habitat areas in the vicinity of the subject site.

3.3.3 Black Cockatoo Roosting Habitat

Direct and indirect evidence of black cockatoos roosting within trees was with the subject site was noted if observed (e.g. branch clippings, droppings or moulted feathers). Two dusk surveys were also carried out immediately prior to the nocturnal WRP surveys

A review of available literature was also carried out to determine the location/extent of any known/likely black cockatoo roosting habitat areas in the vicinity of the subject site.

3.4 OPPORTUNISTIC FAUNA OBSERVATIONS

Opportunistic observations of fauna species were made during all field survey work which primarily involved a series of transects across the subject site during the day while searching microhabitats such as logs, rocks, leaf litter and observations of bird species with binoculars. Secondary evidence of a species presence such as tracks, scats, skeletal remains, foraging evidence or calls were also noted if observed/heard.

4. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the subject site at the time of the field assessments. It should also be recognised that site conditions can change with time.

During the black cockatoo habitat survey a search for trees containing hollows was completed. It should be noted that identifying hollows suitable for fauna species from ground level has limitations. Generally the full characteristics of any hollow seen are not fully evident (e.g. internal dimensions). It is also difficult to locate all hollows within all trees as some are not observable from ground level.

FAUNA AND HABITAT ASSESSMENT - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2018 - V2

The location of observations was recorded using a handheld GPS. The accuracy of the GPS cannot be guaranteed above a level of about 5 to 10 metres, though it should be noted that in some circumstance the accuracy can increase or decrease beyond this range.

RESULTS 5.

5.1 HABITAT ASSESSMENT

5.1.1 Fauna Habitat Assessment

The subject site is situated on the western margin of the Swan Coastal Plain and mainly overlaps a low-lying section of the Guildford Formation which is characterised by alluvial sandy clays. The higher ground in the south east section of the subject site represents a subdued section of the Bassendean Dune System which consists of a relatively thin layer of leached, grey sands. The general area has largely been cleared of vegetation in the past, primarily for livestock grazing and more recently for residential developments.

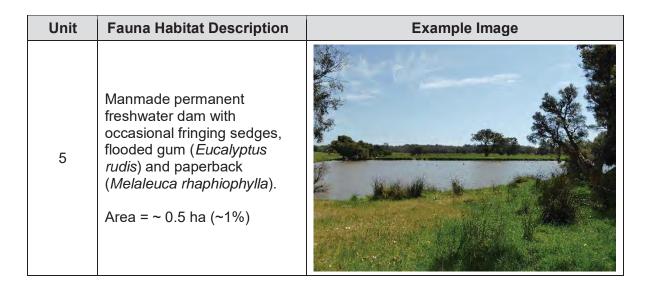
The small areas of remnant native vegetation onsite are mainly comprised of a flooded gum/paperbark woodland in the low lying arears in the north of the property and a grove of peppermint low woodland on higher ground in the south east. The balance of the site is totally cleared with just a small number of scattered trees of various types (mainly flooded gum and paperbark). All the vegetation present can be regarded as being in a degraded or highly degraded condition.

Descriptions and examples images of the main fauna habitats/dominant vegetation present within the subject site are provided in Table 1. The location and extent of the identified habitat units is shown in Figure 3.

Table 1: Main Fauna Habitats within the Subject Site

Unit	Fauna Habitat Description	Example Image
1	Cleared paddocks comprised of grassland introduced pasture species with occasional sedges and widely scattered remnant trees (flooded gum (<i>Eucalyptus rudis</i>), peppermint (<i>Agonis flexuosa</i>), jarrah (<i>Eucalyptus marginata</i>), marri (Corymbia calophylla) and paperback (<i>Melaleuca rhaphiophylla</i>). Area = ~ 29.1 ha (~86%)	

Unit	Fauna Habitat Description	Example Image
2	Open woodland of flooded gum (<i>Eucalyptus rudis</i>) over low woodland of paperback (<i>Melaleuca rhaphiophylla</i>) over a grassland of introduced pasture species. Area = ~ 2.7 ha (~8%)	
3	Low woodland/low open woodland of peppermint (Agonis flexuosa) with emergent jarrah (Eucalyptus marginata) and marri (Corymbia calophylla) over a grassland of introduced pasture species. Area = ~ 1.5 ha (~4%)	
4	Tall open forest of marri (<i>Corymbia calophylla</i>) over grassland of introduced pasture species. Area = ~ 0.2 ha (~1%)	



Overall fauna habitat values at the subject site have been severely compromised by the removal of most of the original native vegetation and the degradation of the main remnant patches. Most areas lack any natural attributes and are now only utilised by generally common and widespread fauna species with non-specific requirements which allow them to persist in disturbed/highly disturbed habitats. As a consequence the fauna biodiversity of the subject site is well below levels present prior to historical and ongoing disturbances taking place.

5.1.2 Wetland Habitat Assessment

Figure 4 shows the relative extent of mapped wetland classification units within the subject site. As can be seen in Figure 4 a small section (~2,000 m²) of a Conservation Category Wetland is mapped as extending into the subject site. An examination of this specific area during the field survey revealed it to be comprised of a section of the open/low woodland of flooded gum (*Eucalyptus rudis*), paperback (*Melaleuca rhaphiophylla*) and grassland habitat unit which is clearly highly degraded and unlikely to fulfil the criteria of a Conservation Category Wetland. An example image is provided in Plate 1 below.

Plate 1: Example image of the Conservation Category Wetland within the Subject Site



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The vegetation present is comprised of only two native species (Eucalyptus rudis and Melaleuca rhaphiophylla) over introduce pasture grasses. The area is currently open to livestock grazing and there is unlikely to be any recruitment of new trees and it can therefore be expected that its quality will further deteriorate over time. The fauna habitat values of this area of the CCW can be considered to be very low. It should be noted that other sections of this same vegetation unit located within the subject site, is in identical condition and has been mapped as a Multiple Use Wetland which is consistent with its highly degraded condition.

That section of the CCW that occurs outside of the subject site to the west is significantly different in its character and is in a much higher level of condition. An example image is provided below.

Plate 2: Example image of the Conservation Category Wetland outside of the Subject Site



This area of the CCW is likely to have relatively good fauna habitat values given most of the original vegetation structure and composition still persists.

5.2 WESTERN RINGTAIL POSSUM ASSESSMENT

The locations of various possum observations made during the site surveys are shown in Figure 5.

No evidence of western ringtail possum being present or utilising the subject site was found during the day or night surveys. Given the relatively small extent of the remnant vegetation remaining on site (~4.4 ha excluding scattered trees) and the fact that it was relatively easy to survey for evidence of the species it is the Author's opinion that at the time of the surveys WRP were not present within the subject site.

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Eight common brushtail possums (*Trichosurus vulpecula*) were observed on the first night survey and seven on the second night. This distribution of observations suggest that nine individual possums were involved.

The open woodland of flooded gum and paperback present in the north of the subject site has been mapped by Shelley *et al.* (2014) as being within the "high" habitat suitability class for WRPs (i.e. able to support 5-10 WRPs per ha). Observations made during the field survey suggest that in reality this area should in fact be rated as having a "very low" habitat suitability (i.e. able to support <0.5 WRPs per ha) at best. Apart from the lack of WRP observations in this area, this conclusion is justified by the fact the vegetation is comprised of only flooded gum and paperbark, a combination which represents low quality habitat for WRPs. While WRPs may occur occasionally as transients they would not permanently reside in this vegetation type given the low plant species diversity and a complete lack of some of their favoured foraging species (e.g. peppermint, sheoak).

The other main area of vegetation within the subject site is dominated by a low open woodland of peppermint. This area has been mapped by Shelley *et al.* (2014) as being within the "medium" habitat suitability class for WRPs (i.e. able to support 2-5 WRPs per ha). This classification is probably justified given the dominance of peppermint, a food source often favoured by WRPs. The small area of marri forest which adjoins the peppermint has been mapped as being within the "high" habitat suitability class for WRPs (i.e. able to support 5-10 WRPs per ha). This vegetation unit is however unlikely to have the capacity to support this density of WRPs and should in fact be mapped as having the same or slightly less value as the adjoining peppermint woodland given a lack of midstorey species (including peppermint) which WRPs generally favour.

The value of the peppermint and marri dominated vegetation to WRPs is however greatly diminished by the fact that they cover a relatively small area (<2 ha) and are isolated, being over 300 metres from the closest other continuous area of vegetation. The lack of WRP observations in these areas also suggests that the species cannot persist in this remnant or that they have not been able to populate it from other areas due to the distance of separation.

5.3 BLACK COCKATOO HABITAT ASSESSMENT

5.3.1 Black Cockatoo Breeding Habitat

Trees considered potentially suitable for black cockatoos to use as nesting habitat (using DotEE criteria – Commonwealth of Australia 2012, but ultimately subject to a suitable hollow being present or developing and a range of other factors) which were found within the subject site comprised the following species:

- Flooded Gum Eucalyptus rudis
- Marri Corymbia calophylla;

- Jarrah Eucalyptus marginata; and
- Dead unidentified species.

It should be noted that the likelihood of particular tree species developing hollows suitable for black cockatoos to use for breeding varies considerably. On the Swan Coastal Plain tuart is most commonly used by Carnaby's black cockatoos for breeding (Johnstone & Kirkby 2011). Available data also suggests that jarrah (*Eucalyptus marginata*) rarely produces suitable hollows. Kirkby (2009) reports that from a database of 109 confirmed black cockatoo nest trees throughout an area of jarrah forest only six were located in jarrah trees.

A summary of the potential black cockatoo habitat trees observed within the subject site is provided in Table 2 below and their location shown in Figure 6.

The assessment identified 112 trees within the subject site with a DBH of \geq 50cm. Twenty one of these trees were observed to contain hollows or possible hollows of some type with four being assessed at the time to possibly have hollows suitable for black cockatoos to use for nesting (i.e. large enough entrance into a suitably sized and orientated branch/truck).

No actual evidence (e.g. chew marks) of any hollows being used by black cockatoos for nesting (currently or previously) was seen. Common brushtail possums were observed in close proximity to some of these hollow trees during the nocturnal surveys and these animals may be occupying at least some of the potential hollows recorded.

Table 2: Summary of Potential Black Cockatoo Habitat Trees (DBH ≥50cm) within the Subject Site

Tree species	Total Number of Habitat Trees Recorded	Number of Trees with <u>No</u> <u>Hollows</u> Observed	Number of Trees with Hollows Considered Unsuitable for Nesting Black Cockatoos	Number of Trees with Hollows Considered Possibly Suitable for Nesting Black Cockatoos
Flooded Gum	73	65	8	0
Marri	22	22	0	0
Jarrah	8	4	4	0
Dead Unidentified Eucalyptus	9	0	5	4
Total	117	91	17	4

Additional details on each habitat tree observed can be found in Appendix D.

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A review of publicly available data showed no previous black cockatoo breeding records in or near the subject site (DoP 2011). The closest breeding records shown in the DoP document are located 20 km south east of the subject site in Dalyellup.

Based on available mapping there is about 5,300 ha of remnant native vegetation within 10 kilometres of the subject site. Some of this vegetation is also likely to contain "potential" breeding habitat as defined by DotEE.

5.3.2 Black Cockatoo Foraging Habitat

Following is a list of the main flora species recorded within the subject site survey that are known to be or are potentially used as a direct food source (e.g. seeds, flowers, nectar, bark or grubs) by one or more species of black cockatoo:

- Flooded Gum Eucalyptus rudis
- Marri Corymbia calophylla;
- Jarrah Eucalyptus marginata; and
- Peppermint Agonis flexuosa.

It should be noted that some of the above-mentioned species (e.g., flooded gum and peppermint) while foraged upon on occasions are only likely to contribute a small proportion to any one birds diet relative to more favoured plant species such as marri. Areas of flooded gum and peppermint are therefore not generally regarded as representing quality foraging habitat. In addition, some tree species are also only represented by a small number of specimens (i.e. jarrah) and therefore do not contribute to the overall foraging resource to a significant degree.

The only actual evidence of foraging left by black cockatoos was in the form of chewed marri fruits at a few locations in the area of marri located in the central section of the subject site. This evidence was attributed to the forest red-tailed black-cockatoo or Baudin's black-cockatoo depending on the nature of the marks left on the fruit debris in each instance, examples of which is provided in Table 3.

The extent of what would be regarded as quality black cockatoo foraging habitat within the subject site is very small being comprised of about 0.2 ha of marri forest supported to a small degree by a limited number of scattered marri and jarrah trees.

Table 3: Foraging Evidence Examples

Foraging Evidence Description	Example Image
Marri Fruits – foraging activity attributed to the forest red-tailed black-cockatoo.	
Marri fruits – foraging activity attributed to Baudin's black cockatoo.	

Based on available mapping there is about 5,300 ha of remnant native vegetation within 10 kilometres of the subject site. Much of this is likely to also represent black cockatoo foraging habitat of some type.

5.3.3 Black Cockatoo Roosting Habitat

No evidence of black cockatoos roosting within trees located inside the subject site was observed during the survey period.

A review of the 2017 Great Cocky Count database shows no documented roost sites within the subject site, the closest active roost (2017) being about 3 km south. This site was in use by 20 white-tailed black cockatoos during the 2017 Great Cocky Count. Another nine documented roost sites (but not necessarily in current use) occur within 10 km of the subject site.

5.4 OPPORTUNISTIC FAUNA OBSERVATIONS

Opportunistic fauna observations are listed in Appendix B. A total of 37 native fauna species were observed (or positively identified from foraging evidence, scats, tracks,

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skeletons or calls) within the subject site during the course of site visits. Five introduced species were also confirmed as being present. Most of the fauna species recorded are common, widespread bird species.

Evidence of two listed threatened black cockatoo species was observed (forest red-tailed black cockatoo and Baudin's black cockatoo – foraging evidence (chewed marri fruits) (see section 5.2.4.2). No evidence of any listed migratory or DBCA priority fauna species using the area was found.

6. CONCLUSION

The fauna assessment within the subject site was undertaken for the purposes of delineating and characterising the fauna and wetland habitats present and to identify potential impacts of the proposed development. Targeted searches for western ringtail possums and black cockatoo individuals and their habitat were also carried out.

An assessment of part of a Conservation Category Wetland which extends into the subject site suggests that it should be considered for re-classification as a Multiple Use Wetland given it is highly degraded and of an identical character to adjoining areas that are mapped as such.

Based on the results of the assessment and the scale of the proposed development, likely impacts on western ringtail possums and black cockatoos and/or their preferred habitat are considered to be non-existent/negligible.

Western ringtail possums appear not to be utilising vegetation with the subject site as habitat and overall, habitat quality in areas to be developed are low/very low.

Some areas of vegetation represent black cockatoo habitat, but the degree of use appears to be low with no breeding or roosting activity detected and only a very limited amount of quality foraging habitat being present.

The results of the assessment suggest that if the proposed development were to be referred to the DotEE for review under the *EPBC Act* that it would be regarded as "not a controlled action" given impacts on listed species or their habitat are not likely to be significant.

It is therefore concluded that there exists no major constraints relating to fauna, and in particular fauna of conservation significance with respect to the proposed development.

It is recommended that a fauna relocation program be implemented prior to and during clearing works to ensure direct impact on fauna (e.g. common brushtail possums) most likely to be encountered, are minimised.

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7. REFERENCES

Commonwealth of Australia (2012). EPBC Act Referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) Calyptorhynchus latirostris, Baudin's cockatoo (vulnerable) Calyptorhynchus baudinii, Forest red-tailed black cockatoo (vulnerable) Calyptorhynchus banksii naso.

Department of Planning (DoP) (2011). 'Greater Bunbury Region Scheme (GBRS) potential habitat for the Carnaby's Black Cockatoo which may require further assessment". Department of Planning: Mapping and GeoSpatial Branch January 2011.

Johnstone, R. E. & Kirkby, T. (2011). Carnaby's Cockatoo (Calyptorhynchus latirostris), Baudin's Cockatoo (Calyptorhynchus baudinii) and the Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso) on the Swan Coastal Plain (Lancelin-Dunsborough), Western Australia. Studies on distribution, status, breeding, food, movements and historical changes. Report for the Department of Planning, Western Australia.

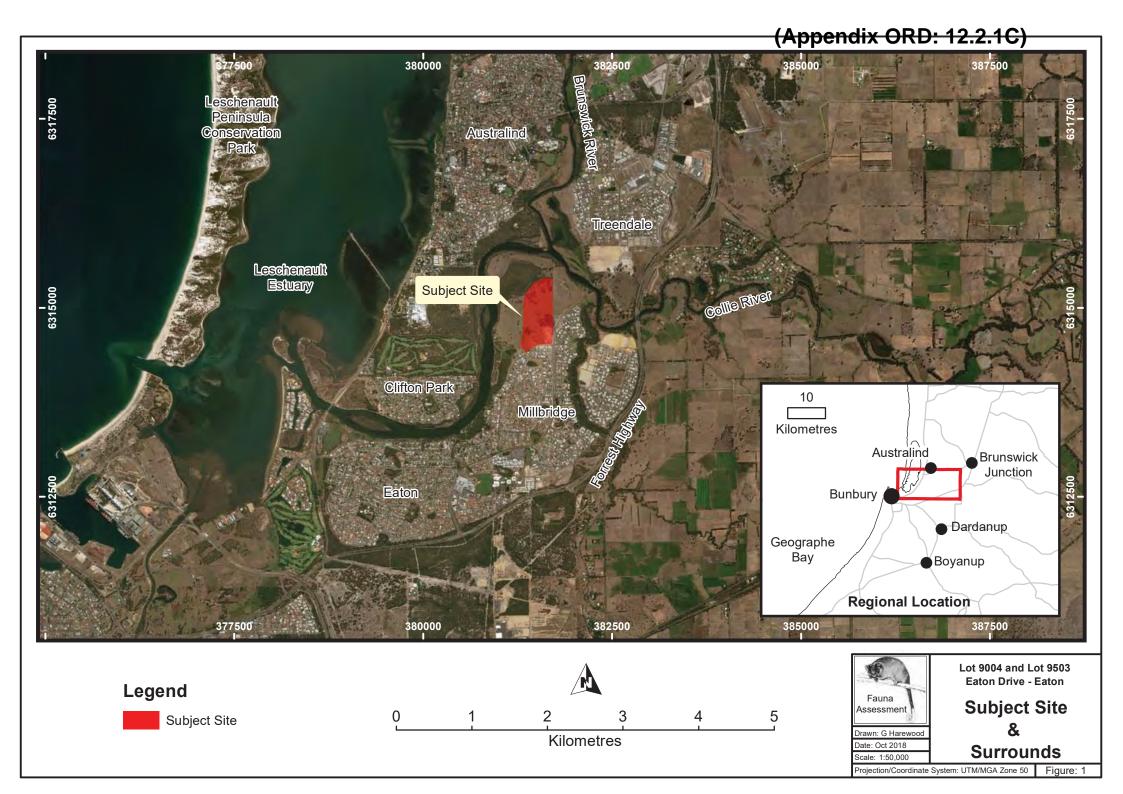
Kirkby, T. (2009). Results of Black Cockatoo Survey at Lot 2 Dawesville. Unpublished report for WA Limestone.

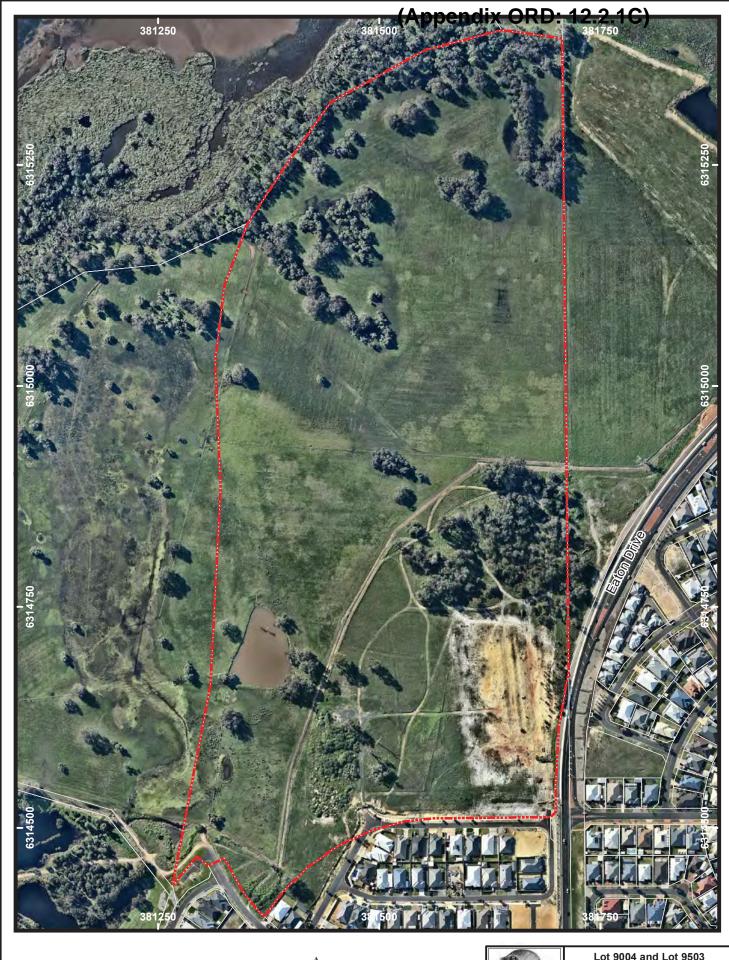
Shedley E. and Williams K. (2014). An assessment of habitat for western ringtail possum (Pseudocheirus occidentalis) on the southern Swan Coastal Plain. Unpublished report for the Department of Parks and Wildlife, Bunbury, Western Australia.

(Appendix ORD: 12.2.1C)

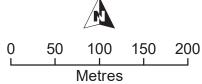
FAUNA AND HABITAT ASSESSMENT – LOT 9004 & 9503 EATON DRIVE - EATON – NOVEMBER 2018 – V2

FIGURES









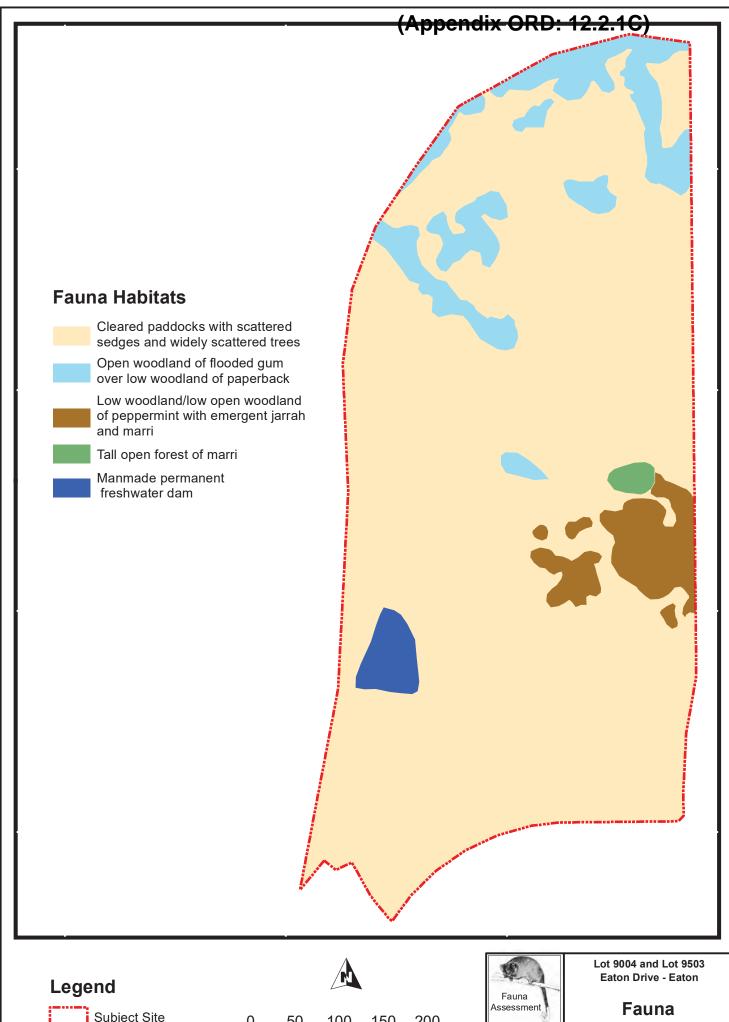


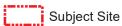
Lot 9004 and Lot 9503 Eaton Drive - Eaton

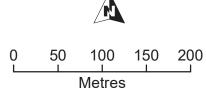
Air Photo

Projection/Coordinate System: UTM/MGA Zone 50

Figure: 2



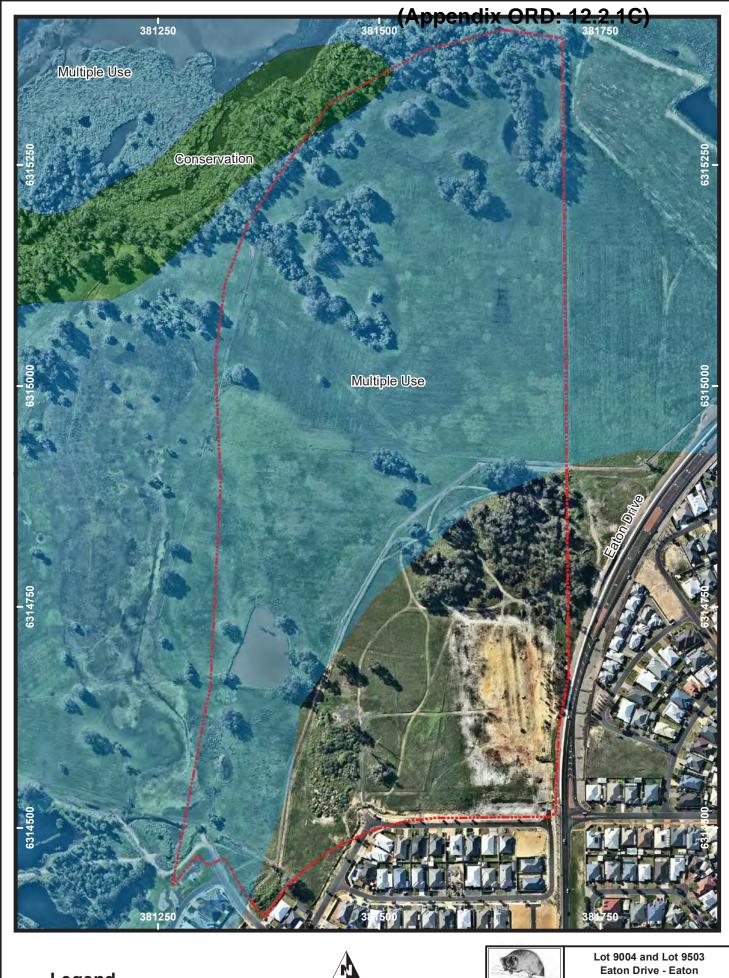






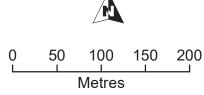
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Projection/Coordinate System: UTM/MGA Zone 50







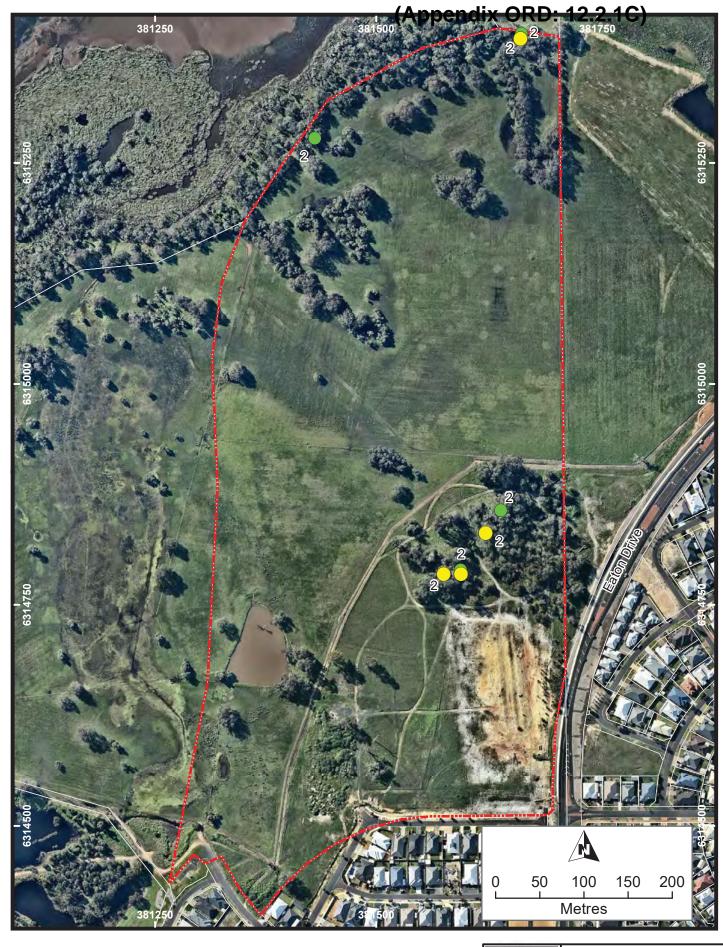




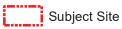
Wetland
Classifications

Projection/Coordinate System: UTM/MGA Zone 50

Figure: 4







Night 1 - Common Brushtail Possum (8)

Night 2 - Common Brushtail Possum (7)

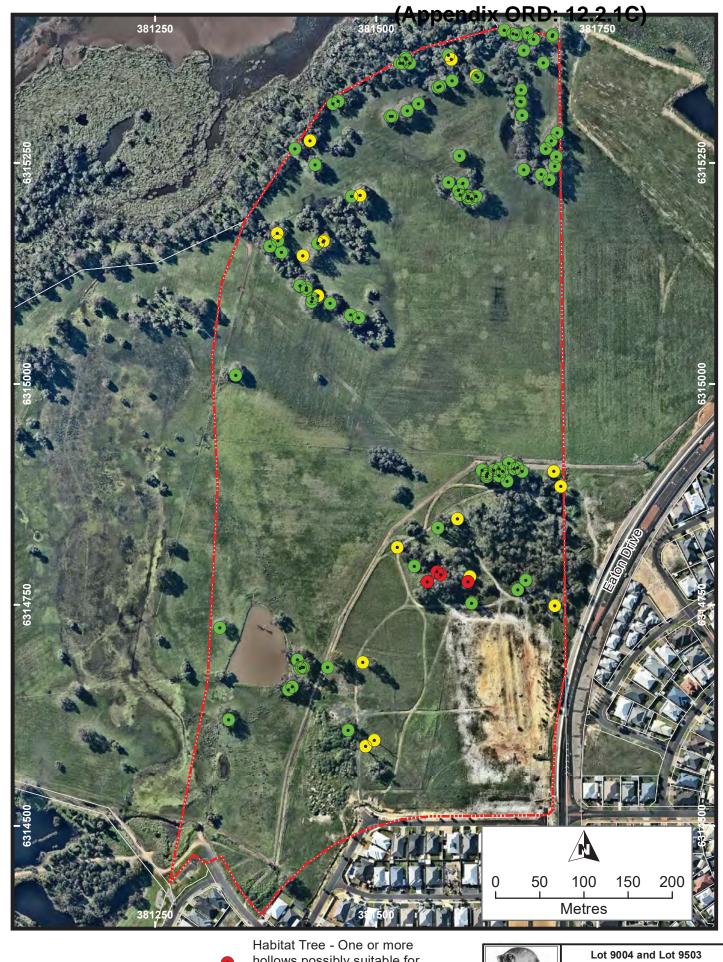


Lot 9004 and Lot 9503 Eaton Drive - Eaton

Possum Observations

Projection/Coordinate System: UTM/MGA Zone 50

Figure: 5







- Habitat Tree One or more hollows possibly suitable for black cockatoos
- Habitat Tree One or more hollows unsuitable for black cockatoos
- Habitat Tree No hollows seen



Habitat Trees (DBH >50cm)

Eaton Drive - Eaton

Projection/Coordinate System: UTM/MGA Zone 50

(Appendix ORD: 12.2.1C)

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APPENDIX A

BLACK COCKATOO HABITAT TREE DETAILS

Habitat Trees DBH >50cm Datum - GDA94

Entrance Size Ranges - Small = >5cm. Medium = 5 to 10cm. Large = >10cm

Entrance Si	trance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm											
Waypoint Number	Zone		mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimated Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50H	381709	6314884	Dead Unknown	15-20	>50	2+	Small & Medium	No signs	No signs	No	Internal dimensions of hollows unknown
wpt002	50H			Dead Unknown	15-20	>50	2+	Small	No signs	No signs	No	Internal dimensions of hollows unknown
wpt003	50H		6314901		15-20	>50	0					
wpt004			6314905		20+	>50	0					
wpt005	50H		6314904		20+	>50	0					
wpt006	50H	381650	6314910	Marri	20+	>50	0					
wpt007	50H	381643	6314901	Marri	20+	>50	0					
wpt008	50H	381639	6314904	Marri	20+	>50	0					
wpt009	50H	381620	6314902	Marri	15-20	>50	0					
wpt010	50H	381626	6314899	Marri	20+	>50	0					
wpt011	50H	381625	6314897	Marri	20+	>50	0					
wpt012	50H	381625	6314895	Marri	20+	>50	0					
wpt013	50H	381639	6314896	Marri	20+	>50	0					
wpt014	50H	381633	6314902	Marri	15-20	>50	0					
wpt015	50H	381648	6314890	Marri	20+	>50	0					
wpt016	50H	381592	6314847	Jarrah	15-20	>50	2+	Small, Medium & Large	No signs	No signs	No	Internal dimensions of hollows unknown
wpt017	50H	381570	6314837	Marri	20+	>50	0					
wpt018	50H	381524	6314815	Jarrah	20+	>50	2+	Small	No signs	No signs	No	Internal dimensions of hollows unknown
wpt019	50H	381543	6314794	Marri	15-20	>50	0					
wpt020	50H	381558	6314776	Dead Unknown	10-15	>50	2+	Medium & Large (Cockatoo)	No signs	No signs	Yes	Internal dimensions of hollows unknown
wpt021	50H	381573	6314784	Dead Unknown	10-15	>50	2+	Medium & Large (Cockatoo)	No signs	No signs	Yes	Internal dimensions of hollows unknown
wpt022	50H	381569	6314787	Dead Unknown	15-20	>50	2+	Medium & Large (Cockatoo)	No signs	No signs	Yes	Internal dimensions of hollows unknown
wpt023	50H	381604	6314776	Dead Unknown	10-15	>50	2+	Medium & Large (Cockatoo)	No signs	No signs	Yes	Internal dimensions of hollows unknown
wpt024	50H	381606	6314782	Dead Unknown	5-10	>50	2+	Medium & Large	No signs	No signs	No	Internal dimensions of hollows unknown
wpt025	50H	381608	6314752	Jarrah	10-15	>50	0	_				
wpt026	50H		6314767		10-15	>50	0					
wpt027	50H	381669	6314778	Jarrah	15-20	>50	0					
wpt028	50H	381702	6314749	Dead Unknown	10-15	>50	2+	Small & Medium	No signs	No signs	No	Internal dimensions of hollows unknown
wpt029	50H	381488	6314590	Dead Jarrah	15-20	>50	2+	Small, Medium & Large	No signs	No signs	No	Tree Martins nesting
wpt030				Dead Unknown	15-20	>50	2+	Small, Medium & Large	No signs	No signs	No	Kestrel nesting?
wpt031	50H	381468	6314608	Marri	15-20	>50	0					
wpt032	50H		6314685		15-20	>50	2+	Small, Medium & Large	No signs	No signs	No	Internal dimensions of hollows unknown
wpt033	50H		6314679			>50	0	,	- 0 -			
wpt034	50H		6314678			>50	0					
wpt035	50H		6314679			>50	0					
wpt036	50H		6314679		15-20	>50	0					
wpt037	50H		6314688			>50	0					
wpt038				Flooded Gum		>50	0					
									l .		1	

					Tree		Number				Potential	
Waypoint	Zone	mE	mN	Tree Species	Height	DBH	of	Estimated Hollow Entrance Size	Occupancy	Chew	Cockatoo	Comments
Number	20116	1112	11111	Tree Species	(m)	(cm)	Hollows	Listillated Hollow Entrance Size	Occupancy	Marks	Nest	Comments
											Hollow	
wpt039	50H			Flooded Gum	15-20	>50	0					
wpt040	50H			Flooded Gum	15-20	>50	0					
wpt041	50H		6314724			>50	0					
wpt042	50H			Flooded Gum	15-20	>50	0					
wpt043	50H			Flooded Gum		>50	0					
wpt044	50H			Flooded Gum	15-20	>50	0					
wpt045	50H			Flooded Gum	15-20	>50	0					
wpt046	50H			Flooded Gum	15-20	>50	2+	Small & Medium	No signs	No signs	No	Internal dimensions of hollows unknown
wpt047	50H	381427	6315093	Flooded Gum	15-20	>50	0					
wpt048	50H	381428	6315097	Flooded Gum	15-20	>50	0					
wpt049	50H	381421	6315106	Flooded Gum	15-20	>50	0					
wpt050	50H			Flooded Gum	15-20	>50	0					
wpt051	50H			Flooded Gum	15-20	>50	0					
wpt052	50H	381393	6315149	Flooded Gum	15-20	>50	0					
wpt053	50H	381380	6315156	Flooded Gum	15-20	>50	0					
wpt054	50H	381389	6315162	Flooded Gum	15-20	>50	0					
wpt055	50H	381388	6315170	Flooded Gum	15-20	>50	2+	Small	No signs	No signs	No	Internal dimensions of hollows unknown
wpt056	50H	381417	6315145	Flooded Gum	15-20	>50	2+	Small	No signs	No signs	No	Internal dimensions of hollows unknown
wpt057	50H	381434	6315159	Flooded Gum	15-20	>50	0					
wpt058	50H	381440	6315161	Flooded Gum	15-20	>50	0					
wpt059	50H			Flooded Gum	15-20	>50	2+	Small	No signs	No signs	No	Internal dimensions of hollows unknown
wpt060	50H	381472	6315212	Flooded Gum	15-20	>50	0					
wpt061	50H	381482	6315213	Flooded Gum	15-20	>50	2+	Small & Medium	No signs	No signs	No	Internal dimensions of hollows unknown
wpt062	50H	381431	6315248	Flooded Gum	15-20	>50	0					
wpt063	50H	381408	6315266	Flooded Gum	15-20	>50	0					
wpt064	50H			Flooded Gum	15-20	>50	2+	Small, Medium & Large	No signs	No signs	No	Large hollows too low - Internal dimensions of hollows unknown
wpt065	50H	381451	6315317	Flooded Gum	15-20	>50	0					
wpt066	50H	381457	6315320	Flooded Gum	15-20	>50	0					
wpt067	50H	381516	6315303	Flooded Gum	15-20	>50	0					
wpt068	50H	381518	6315303	Flooded Gum	15-20	>50	0					
wpt069	50H			Flooded Gum		>50	0					
wpt070	50H	381548	6315317	Flooded Gum	15-20	>50	0					
wpt071	50H			Flooded Gum	15-20	>50	0					
wpt072	50H			Flooded Gum		>50	0					
wpt073	50H			Flooded Gum	15-20	>50	0					
wpt074	50H			Flooded Gum		>50	0					
wpt074	50H			Flooded Gum	15-20	>50	0					
wpt075	50H			Flooded Gum	15-20	>50	0					
wpt070 wpt077	50H			Flooded Gum		>50	0					
wpt077 wpt078	50H			Flooded Gum		>50	0					
wpt078	50H	381582		Flooded Gum		>50	0					
wpt079	50H			Flooded Gum		>50	1	Small	No signs	No signs	No	Internal dimensions of hollows unknown
ννρισου	JUI	201202	0313307	i iooueu Guili	13-20	/30	1	Jiliail	IAO SIRIIS	IAO 218112	INU	Internal dimensions of nonows unknown

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Hollows	Estimated Hollow Entrance Size		Chew Marks	Potential Cockatoo Nest Hollow	Comments
	50H			Flooded Gum	15-20	>50		Small	No signs	No signs	No	Internal dimensions of hollows unknown
	50H			Flooded Gum	15-20	>50	0					
<u> </u>	50H			Flooded Gum	15-20	>50	0					
	50H			Flooded Gum	15-20	>50	0					
	50H			Flooded Gum	15-20	>50	0					
	50H			Flooded Gum	15-20	>50	0					
	50H			Flooded Gum	15-20	>50	0					
	50H			Flooded Gum	15-20	>50	0					
	50H	381700	6315395	Marri	15-20	>50	0					
wpt090	50H	381689	6315363	Flooded Gum	15-20	>50	0					
wpt091	50H	381667	6315377	Flooded Gum	15-20	>50	0					
	50H	381664	6315333	Flooded Gum	15-20	>50	0					
wpt093	50H	381663	6315320	Flooded Gum	15-20	>50	0					
wpt094	50H	381664	6315319	Flooded Gum	15-20	>50	0					
wpt095	50H	381665	6315304	Flooded Gum	15-20	>50	0					
wpt096	50H	381705	6315284	Flooded Gum	15-20	>50	0					
wpt097	50H	381698	6315275	Flooded Gum	15-20	>50	0					
wpt098	50H	381692	6315266	Flooded Gum	15-20	>50	0					
wpt099	50H	381704	6315257	Flooded Gum	15-20	>50	0					
wpt100	50H	381702	6315246	Flooded Gum	15-20	>50	0					
wpt101	50H	381696	6315231	Flooded Gum	15-20	>50	0					
wpt102	50H	381687	6315237	Flooded Gum	15-20	>50	0					
wpt103	50H	381667	6315242	Flooded Gum	15-20	>50	0					
wpt104	50H	381594	6315258	Flooded Gum	15-20	>50	0					
wpt105	50H	381582	6315228	Flooded Gum	15-20	>50	0					
wpt106	50H	381598	6315227	Flooded Gum	15-20	>50	0					
	50H	381593	6315219	Flooded Gum	15-20	>50	0					
wpt108	50H	381595	6315214	Flooded Gum	15-20	>50	0					
wpt109	50H	381604	6315210	Flooded Gum	15-20	>50	0					
wpt110	50H	381604	6315212	Flooded Gum	15-20	>50	0					
wpt111	50H	381608	6315209	Flooded Gum	15-20	>50	0					
wpt112	50H	381613	6315212	Flooded Gum	15-20	>50	0					

(Appendix ORD: 12.2.1C)

FAUNA AND HABITAT ASSESSMENT – LOT 9004 & 9503 EATON DRIVE - EATON – NOVEMBER 2018 – V2

APPENDIX B

LIST OF FAUNA OBSERVED

List of Fauna Observed

LOT 9004 9503 EATON DRIVE - EATON

Compiled by Greg Harewood - Nov 2018

Class Family Species	Common Name	Conservation Status
Reptilia		
Scincidae Skinks		
Cryptoblepharus buchananii	Fence Skink	
Tiliqua rugosa	Bobtail	
Aves		
Anatidae Geese, Swans, Ducks		
Anas gracilis	Grey Teal	LC
Anas superciliosa	Pacific Black Duck	LC
Aythya australis	Hardhead	Bh LC
Chenonetta jubata	Australian Wood Duck	LC
Tadorna tadornoides	Australian Shelduck	LC
Podicipedidae Grebes		
Tachybaptus novaehollandiae	Australasian Grebe	LC
Ardeidae Herons, Egrets, Bitterns		
Ardea ibis	Cattle Egret	CA JA
Ardea novaehollandiae	White-faced Heron	LC
Threskiornithidae libises, Spoonbills		
Threskiornis molucca	Australian White Ibis	LC
Threskiornis spinicollis	Straw-necked Ibis	LC

Class Family	Common Name	Conservation Status
Species		
Accipitridae Kites, Goshawks, Eagles, Harriers		
Haliastur sphenurus	Whistling Kite	Bp LC
Falconidae Falcons		
Falco cenchroides	Australian Kestrel	LC
Rallidae Rails, Crakes, Swamphens, Coots		
Fulica atra	Eurasian Coot	LC
Columbidae Pigeons, Doves		
Ocyphaps lophotes	Crested Pigeon	LC
Streptopelia senegalensis	Laughing Turtle-Dove	Introduced
Psittacidae Parrots		
Cacatua roseicapilla	Galah	LC
Cacatua sanguinea	Little Corella	Introduced
Calyptorhynchus banksii naso	Forest Red-tailed Black-Cockatoo	S3 VU Bp LC
Calyptorhynchus baudinii	Baudin's Black Cockatoo	S2 EN Bp EN A3cde
Platycercus spurius	Red-capped Parrot	LC
Platycercus zonarius	Australian Ringneck	LC
Halcyonidae Tree Kingfishers		
Dacelo novaeguineae	Laughing Kookaburra	Introduced
Acanthizidae Thornbills, Geryones, Fieldwrens & Whitefaces		
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	Bh LC
Gerygone fusca	Western Gerygone	LC
Smicrornis brevirostris	Weebill	Bh LC

Class	Common	Conservation
Family Species	Name	Status
Pardalotidae Pardalotes		
Pardalotus striatus	Striated Pardalote	LC
Meliphagidae Honeyeaters, Chats		
Anthochaera carunculata	Red Wattlebird	LC
Dicruridae Monarchs, Magpie Lark, Flycatchers, Fantails, Droi	ngo	
Grallina cyanoleuca	Magpie-lark	LC
Rhipidura fuliginosa	Grey Fantail	LC
Rhipidura leucophrys	Willie Wagtail	LC
Campephagidae Cuckoo-shrikes, Trillers		
Coracina novaehollandiae	Black-faced Cuckoo-shrike	LC
Cracticidae Currawongs, Magpies & Butcherbirds		
Cracticus tibicen	Australian Magpie	LC
Cracticus torquatus	Grey Butcherbird	LC
Corvidae Ravens, Crows		
Corvus coronoides	Australian Raven	LC
Hirundinidae Swallows, Martins		
Hirundo nigricans	Tree Martin	LC
Mammalia		
Phalangeridae Brushtail Possums, Cuscuses		
Trichosurus vulpecula vulpecula	Common Brushtail Possum	LC
Macropodidae Kangaroos, Wallabies		

Class Family Species	Common Name	Conservation Status
Canidae Dogs, Foxes		
Vulpes vulpes	Red Fox	Introduced
Bovidae Horned Ruminants		
Bos taurus	European Cattle	Introduced
Leporidae Rabbits, Hares		
Oryctolagus cuniculus	Rabbit	Introduced

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Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy of completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

The report has been prepared for the benefit of the Client and no other party. The Author assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of the Author or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

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Black Cockatoo Habitat Tree Review



Lot 9004 and Lot 9503 Eaton Drive Eaton

November 2022 Version 1

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HABITAT TREE REVIEW - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2022 - V1

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TABLE 1: Summary of Habitat Trees Inspected

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FIGURE 1: Habitat Trees (DBH >50cm) Reviewed 2022

APPENDICES

APPENDIX A: Habitat Tree Details (trees with possible larger hollows only)

1. INTRODUCTION

This report details the results of a black cockatoo habitat tree review carried out over Lot 9004 and Lot 9503 Eaton Drive, Eaton (subject site). The subject site is situated about nine kilometres east of Bunbury in the south west of Western Australia. Lot 9004 and Lot 9503 have a combined area of about 34 hectares, most of which is cleared farmland used for or previously used for livestock grazing.

As part of an overall environmental assessment a black cockatoo breeding habitat survey was undertaken by Greg Harewood in 2018 (Harewood 2018). One hundred and twelve habitat trees (i.e. trees with a diameter at breast height >50cm) were identified within the subject site. Twenty one of these trees were observed to contain hollows or possible hollows of some type with four being assessed at the time to possibly have hollows suitable for black cockatoos to use for nesting (i.e. large enough entrance into a suitably sized and orientated branch/truck). No actual evidence (e.g. chew marks) of any hollows being used by black cockatoos for nesting (currently or previously) was seen.

To obtain up to date information on the current status of the previously identified habitat trees, the Shire of Dardanup have requested a review of the trees be undertaken. The results of this survey work are presented here.

2. SCOPE OF WORKS

The scope of works was to reinspect the 21 habitat trees containing potential hollows so as to obtain current information on their potential suitability as actual black cockatoo breeding trees.

3. METHODS

The review was carried out by Greg Harewood (Zoologist) on the 22 November 2022. The assessment involved the inspection of 21 trees previously identified as containing hollows or apparent hollows.

The assessment of hollow suitability was initially carried out from ground level, however trees assessed as containing large hollows suspected of being possibly suitable for black cockatoos were also examine and photograph at close range using a drone (DJI Mavic Mini) or a pole mounted "GoPro" camera. The photographs obtained were subsequently examined to assist in determining suitability and to aid in identifying any signs of current or previous use by black cockatoos.

Identified hollows have initially been placed into one of three categories based on the type of hollow entry:

- Chimney: the hollow entry faces directly upwards in the end of the main trunk;
- Spout: hollow entry which is at the end of a broken branch; or
- Side: the entry is directly into the side of the trunk or a branch with no protrusions.

For the purpose of this review, hollows have then been placed into one of five categories based on the observable characteristics of each hollow. The categories used were:

- Confirmed Hollow: Black cockatoos observed utilising the hollow for breeding purposes;
- Chewed Hollow: The hollow shows signs of chewing ("chipping" around or near entrance and/or internally) attributed to black cockatoo activity (in most cases indicating nesting activity, but in some cases possibly marks left by black cockatoos investigating ("prospecting") hollows);
- Unused Hollow: The hollow appears to be of a suitable size for black cockatoos to
 use for nesting, but no conclusive evidence of this activity seen. It should be noted
 that chew marks/chipping are not always evident or present on some hollows that
 have been used for nesting. Hollows classified as "unused" may therefore have been
 used for nesting but cannot be specifically classified as such. Alternatively, some
 "unused" hollows may not be suitable for black cockatoos as a range of
 characteristics, not all of which can be seen or measured, ultimately determined if a
 hollow will ever actually be used;
- Unsuitable Hollow: The hollow has been assessed, based on information obtained, as being unlikely to be suitable for black cockatoos (generally because of the entrance appearing to be too small or because the actual hollow or accommodating branch/tree trunk appears to be too small or as having an unfavourable orientation);
- No Hollow: A possible hollow was found upon closer inspection not to be present.
- Fallen Tree/No Tree: The tree has fallen over or been removed since the original survey.

4. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should also be recognised that site conditions can change with time.

5. RESULTS

A summary of the black cockatoo "habitat trees" assessed is provided in Table 1 below. The location of the trees inspected are shown in Figure 1.

Photographs and additional details of eight trees suspected of possibly containing larger hollows and assessed in more detail can be found in Appendix A.

Table 1: Summary of Habitat Trees Inspected

Tree Id	Number of Hollows	Reviewed Status	Justification
Wpt001	N/A	No tree	2018 assessment identified a dead habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. Appears to have been removed, possibly for firewood.
Wpt002	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt016	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium/large sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt018	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt020	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not suitable and status therefore changed to "No suitable hollows".

Tree Id	Number of Hollows	Reviewed Status	Justification
Wpt021	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not suitable and status therefore changed to "No suitable hollows".
Wpt022	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not suitable and status therefore changed to "No suitable hollows".
Wpt023	2+	No hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not actually present and status therefore changed to "No hollows".
Wpt024	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium/large sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt028	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. Additional large shallow hollow identified, but unsuitable for black cokatoos. No change in this status considered warranted based on 2022 review
Wpt029	N/A	No tree	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, none suitable for black cockatoos. Appears to have been removed during subdivision development.
Wpt030	N/A	No tree	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, none suitable for black cockatoos. Appears to have been removed, possibly for firewood.
Wpt032	N/A	No tree	2018 assessment identified a jarrah habitat tree with small/medium/large sized hollows, none suitable for black cockatoos. Appears to have been removed, possibly for firewood.
Wpt046	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt055	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review

Tree Id	Number of Hollows	Reviewed Status	Justification
Wpt056	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt059	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt061	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt064	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium/large sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt080	1	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt081	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review

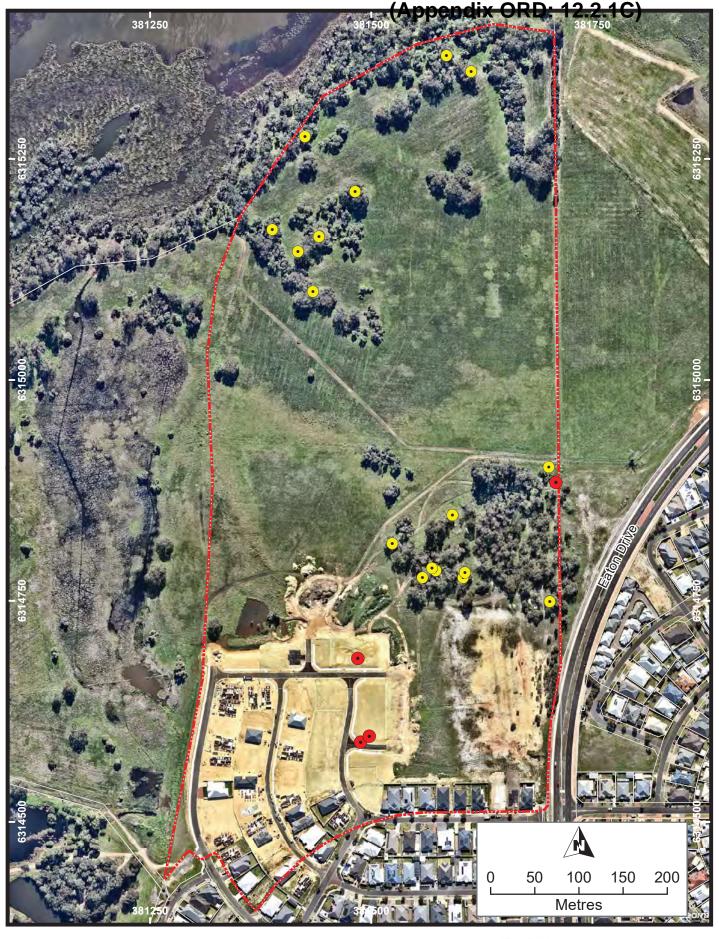
6. CONCLUSION

The assessment reported on here was undertaken to provide up to date information on the likely suitability of hollows for black cockatoos within 21 previously identified habitat trees.

Four of the 21 trees were found to no longer be present. Three of these trees appear to have been removed as part of ongoing subdivision activities. The fourth tree appears to have been removed for firewood.

Four habitat trees previously assessed as potentially containing hollows suitable for black cockatoos have been re-assessed as not containing suitable hollows a conclusion generally based on the fact that the possible hollows were found to be too small internally or non-existent when examined/photographed with a drone.

The status of the remaining 13 habitat trees was assessed as having not changed since the previous assessment in 2018 given that upon re-inspection none contained hollows suitable for black cockatoos to use for nesting purposes. In most cases these hollows appear to be too small or shallow with inadequate internal dimensions.







Habitat Tree - One or more hollows unsuitable for black cockatoos

Previously identified Habitat Tree no longer present



Lot 9004 and Lot 9503 Eaton Drive - Eaton

Habitat Trees (DBH >50cm) Reviewed 2022

Projection/Coordinate System: UTM/MGA Zone 50 | Figure: 1

7. REFERENCES

Harewood, G. (2018). Fauna and Habitat Assessment - Lot 9004 and Lot 9503, Eaton Drive, Eaton. Unpublished report prepared for Accendo Australia.

HABITAT TREE REVIEW - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2022 - V1

APPENDIX A

Habitat Tree Details (trees with possible larger hollows only)

ID	Coordinates (MGA 94/Z50)	381592 mE	6314846 mN	Tree Species	Dead (Jarrah)	Review Date	22/11/2022
16	Comments	with a drone the various or non-existent. This	ous hollows appea is consistent with	er of potential hollows in branches and trunk ared to be either too small internally and/or the original classification (Harewood 2018) ified. No conclusive evidence of use by ot	wrong orientation where no hollows	Revised Classification	Unsuitable/No Hollows.









ID	Coordinates (MGA 94/Z50)	381557 mE	6314775 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
20	Comments	hollows appeared to (Harewood 2018) ha	be either too si is therefore been o	ollows in branches. When examined with a mall internally or non-existent. The orig changed from potential hollows suitable for evidence of use by other fauna evident.	ginal classification	Revised	Unsuitable/No Hollows.











ID	Coordinates (MGA 94/Z50)	381573 mE	6314784 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
21	Comments	drone the various ho 2018) has therefore I	llows appeared to l been changed fron	nollows in branches and main trunk. When the too small internally. The original classif on potential hollows suitable for black cocka e by other fauna evident.	ication (Harewood	Revised	Unsuitable Hollows.











ID	Coordinates (MGA 94/Z50)	381568 mE	6314786 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
22	Comments	drone the various h	nollows appeared ood 2018) has the	nollows in branches and main trunk. When to be too small internally or non-existe refore been changed from potential hollows conclusive evidence of use by other fauna	ent. The original s suitable for black	Revised	Unsuitable/No Hollows.





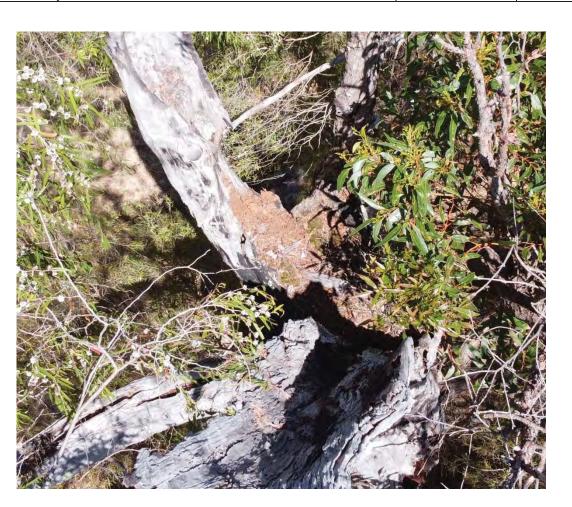






ID	Coordinates (MGA 94/Z50)	381604 mE	6314776 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
23	Comments	drone the various hole has therefore been	llows appeared to changed from po	nollows in branches and main trunk. When be non-existent. The original classification tential hollows suitable for black cockato se by other fauna evident.	(Harewood 2018)	Revised	No Hollows.







ID	Coordinates (MGA 94/Z50)	381606 mE	6314781 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
24	Comments	drone the various ho with the original class	ollows appeared to sification (Harewoo	nollows in branches and main trunk. When to be too small internally or non-existent. and 2018) where no hollows suitable for blacks by other fauna evident.	This is consistent	Revised	Unsuitable/No Hollows.











ID	Coordinates (MGA 94/Z50)	381702 mE	6314749 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
28	Comments	the single large hollo black cockatoos. T	ow was found to be his is consistent v	ollows in branches and trunk. When exame relatively shallow and has been assessed with the original classification (Harewood ere identified. No conclusive evidence of the state of the sta	d as unsuitable for d 2018) where no	Revised	Unsuitable Hollow.







ID	Coordinates (MGA 94/Z50)	381424 mE	6315275 mN	Tree Species	Flooded Gum	Review Date	22/11/2022
64	Comments	Flooded gum with very large side entry type hollow located low on main trunk. This hollow was examined using a pole mounted camera. The pictures obtained show that the hollow unsuitable for black cockatoos as it has no base and continues downwards to another opening in the main truck at about ground level. This is consistent with the original classification (Harewood 2018) where no hollows suitable for black cockatoos were identified. No conclusive evidence of use by other fauna evident. Revised Classification					Unsuitable Hollow.







HABITAT TREE REVIEW - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2022 - V1

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Black Cockatoo Habitat Tree Review



Lot 9004 and Lot 9503 Eaton Drive Eaton

November 2022 Version 1

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HABITAT TREE REVIEW - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2022 - V1

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TABLES

TABLE 1: Summary of Habitat Trees Inspected

FIGURES

FIGURE 1: Habitat Trees (DBH >50cm) Reviewed 2022

APPENDICES

APPENDIX A: Habitat Tree Details (trees with possible larger hollows only)

1. INTRODUCTION

This report details the results of a black cockatoo habitat tree review carried out over Lot 9004 and Lot 9503 Eaton Drive, Eaton (subject site). The subject site is situated about nine kilometres east of Bunbury in the south west of Western Australia. Lot 9004 and Lot 9503 have a combined area of about 34 hectares, most of which is cleared farmland used for or previously used for livestock grazing.

As part of an overall environmental assessment a black cockatoo breeding habitat survey was undertaken by Greg Harewood in 2018 (Harewood 2018). One hundred and twelve habitat trees (i.e. trees with a diameter at breast height >50cm) were identified within the subject site. Twenty one of these trees were observed to contain hollows or possible hollows of some type with four being assessed at the time to possibly have hollows suitable for black cockatoos to use for nesting (i.e. large enough entrance into a suitably sized and orientated branch/truck). No actual evidence (e.g. chew marks) of any hollows being used by black cockatoos for nesting (currently or previously) was seen.

To obtain up to date information on the current status of the previously identified habitat trees, the Shire of Dardanup have requested a review of the trees be undertaken. The results of this survey work are presented here.

2. SCOPE OF WORKS

The scope of works was to reinspect the 21 habitat trees containing potential hollows so as to obtain current information on their potential suitability as actual black cockatoo breeding trees.

3. METHODS

The review was carried out by Greg Harewood (Zoologist) on the 22 November 2022. The assessment involved the inspection of 21 trees previously identified as containing hollows or apparent hollows.

The assessment of hollow suitability was initially carried out from ground level, however trees assessed as containing large hollows suspected of being possibly suitable for black cockatoos were also examine and photograph at close range using a drone (DJI Mavic Mini) or a pole mounted "GoPro" camera. The photographs obtained were subsequently examined to assist in determining suitability and to aid in identifying any signs of current or previous use by black cockatoos.

Identified hollows have initially been placed into one of three categories based on the type of hollow entry:

- Chimney: the hollow entry faces directly upwards in the end of the main trunk;
- Spout: hollow entry which is at the end of a broken branch; or
- Side: the entry is directly into the side of the trunk or a branch with no protrusions.

For the purpose of this review, hollows have then been placed into one of five categories based on the observable characteristics of each hollow. The categories used were:

- Confirmed Hollow: Black cockatoos observed utilising the hollow for breeding purposes;
- Chewed Hollow: The hollow shows signs of chewing ("chipping" around or near entrance and/or internally) attributed to black cockatoo activity (in most cases indicating nesting activity, but in some cases possibly marks left by black cockatoos investigating ("prospecting") hollows);
- Unused Hollow: The hollow appears to be of a suitable size for black cockatoos to
 use for nesting, but no conclusive evidence of this activity seen. It should be noted
 that chew marks/chipping are not always evident or present on some hollows that
 have been used for nesting. Hollows classified as "unused" may therefore have been
 used for nesting but cannot be specifically classified as such. Alternatively, some
 "unused" hollows may not be suitable for black cockatoos as a range of
 characteristics, not all of which can be seen or measured, ultimately determined if a
 hollow will ever actually be used;
- Unsuitable Hollow: The hollow has been assessed, based on information obtained, as being unlikely to be suitable for black cockatoos (generally because of the entrance appearing to be too small or because the actual hollow or accommodating branch/tree trunk appears to be too small or as having an unfavourable orientation);
- No Hollow: A possible hollow was found upon closer inspection not to be present.
- Fallen Tree/No Tree: The tree has fallen over or been removed since the original survey.

4. SURVEY CONSTRAINTS

No seasonal sampling has been carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should also be recognised that site conditions can change with time.

5. RESULTS

A summary of the black cockatoo "habitat trees" assessed is provided in Table 1 below. The location of the trees inspected are shown in Figure 1.

Photographs and additional details of eight trees suspected of possibly containing larger hollows and assessed in more detail can be found in Appendix A.

Table 1: Summary of Habitat Trees Inspected

Tree Id	Number of Hollows	Reviewed Status	Justification
Wpt001	N/A	No tree	2018 assessment identified a dead habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. Appears to have been removed, possibly for firewood.
Wpt002	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt016	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium/large sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt018	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt020	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not suitable and status therefore changed to "No suitable hollows".

Tree Id	Number of Hollows	Reviewed Status	Justification
Wpt021	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not suitable and status therefore changed to "No suitable hollows".
Wpt022	2+	No suitable hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not suitable and status therefore changed to "No suitable hollows".
Wpt023	2+	No hollows.	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, some possibly suitable for black cockatoos. 2022 review suggests hollows are not actually present and status therefore changed to "No hollows".
Wpt024	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium/large sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt028	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. Additional large shallow hollow identified, but unsuitable for black cokatoos. No change in this status considered warranted based on 2022 review
Wpt029	N/A	No tree	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, none suitable for black cockatoos. Appears to have been removed during subdivision development.
Wpt030	N/A	No tree	2018 assessment identified a dead habitat tree with small/medium/large sized hollows, none suitable for black cockatoos. Appears to have been removed, possibly for firewood.
Wpt032	N/A	No tree	2018 assessment identified a jarrah habitat tree with small/medium/large sized hollows, none suitable for black cockatoos. Appears to have been removed, possibly for firewood.
Wpt046	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt055	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review

Tree Id	Number of Hollows	Reviewed Status	Justification
Wpt056	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt059	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt061	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt064	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium/large sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review.
Wpt080	1	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review
Wpt081	2+	No suitable hollows.	2018 assessment identified a habitat tree with possible small/medium sized hollows, none suitable for black cockatoos. No change in this status considered warranted based on 2022 review

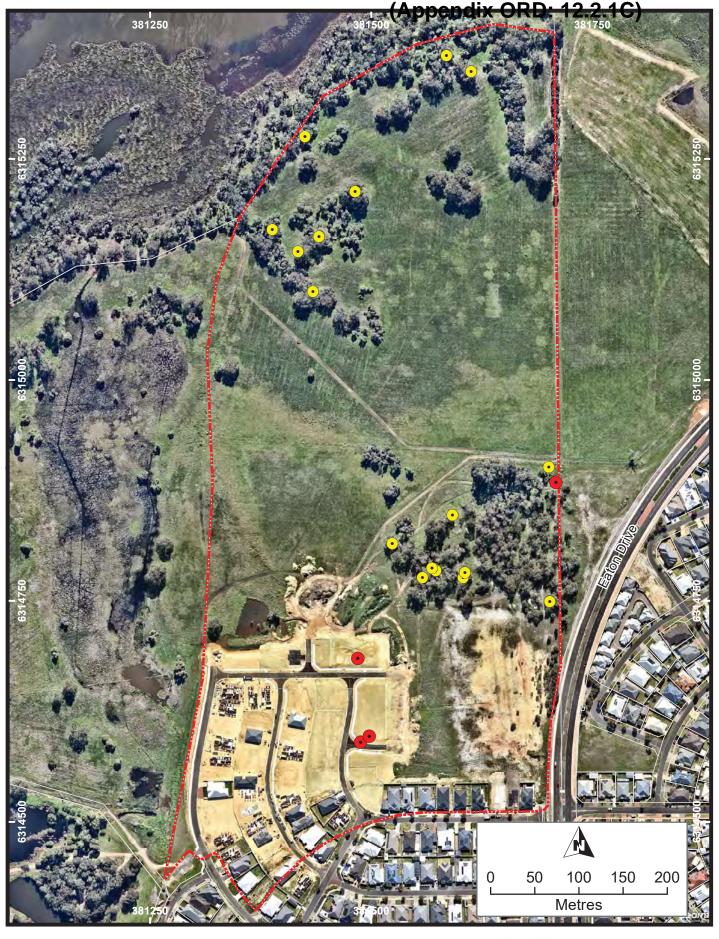
6. CONCLUSION

The assessment reported on here was undertaken to provide up to date information on the likely suitability of hollows for black cockatoos within 21 previously identified habitat trees.

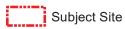
Four of the 21 trees were found to no longer be present. Three of these trees appear to have been removed as part of ongoing subdivision activities. The fourth tree appears to have been removed for firewood.

Four habitat trees previously assessed as potentially containing hollows suitable for black cockatoos have been re-assessed as not containing suitable hollows a conclusion generally based on the fact that the possible hollows were found to be too small internally or non-existent when examined/photographed with a drone.

The status of the remaining 13 habitat trees was assessed as having not changed since the previous assessment in 2018 given that upon re-inspection none contained hollows suitable for black cockatoos to use for nesting purposes. In most cases these hollows appear to be too small or shallow with inadequate internal dimensions.







Habitat Tree - One or more hollows unsuitable for black cockatoos

Previously identified Habitat Tree no longer present



Lot 9004 and Lot 9503 Eaton Drive - Eaton

Habitat Trees (DBH >50cm) Reviewed 2022

Projection/Coordinate System: UTM/MGA Zone 50 | Figure: 1

7. REFERENCES

Harewood, G. (2018). Fauna and Habitat Assessment - Lot 9004 and Lot 9503, Eaton Drive, Eaton. Unpublished report prepared for Accendo Australia.

HABITAT TREE REVIEW - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2022 - V1

APPENDIX A

Habitat Tree Details (trees with possible larger hollows only)

ID	Coordinates (MGA 94/Z50)	381592 mE	6314846 mN	Tree Species	Dead (Jarrah)	Review Date	22/11/2022
16	Comments	with a drone the various or non-existent. This	ous hollows appea is consistent with	r of potential hollows in branches and trunk red to be either too small internally and/or the original classification (Harewood 2018) ified. No conclusive evidence of use by ot	wrong orientation where no hollows	Revised Classification	Unsuitable/No Hollows.









ID	Coordinates (MGA 94/Z50)	381557 mE	6314775 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
20	Comments	hollows appeared to (Harewood 2018) ha	be either too sr s therefore been o	ollows in branches. When examined with a mall internally or non-existent. The origonal internally or non-existent. The origonal internal internal internal internal evident in the content	jinal classification	Revised	Unsuitable/No Hollows.











ID	Coordinates (MGA 94/Z50)	381573 mE	6314784 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
21	Comments	drone the various hol 2018) has therefore t	lows appeared to loeen changed from	nollows in branches and main trunk. When be too small internally. The original classif n potential hollows suitable for black cocka e by other fauna evident.	ication (Harewood	Revised	Unsuitable Hollows.











ID	Coordinates (MGA 94/Z50)	381568 mE	6314786 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
22	Comments	drone the various h	nollows appeared ood 2018) has the	nollows in branches and main trunk. When to be too small internally or non-existe refore been changed from potential hollows conclusive evidence of use by other fauna	ent. The original s suitable for black	Revised	Unsuitable/No Hollows.











ID	Coordinates (MGA 94/Z50)	381604 mE	6314776 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
23	Comments	drone the various ho has therefore been	llows appeared to lochanged from po	nollows in branches and main trunk. When the non-existent. The original classification tential hollows suitable for black cockato e by other fauna evident.	(Harewood 2018)	Revised	No Hollows.







ID	Coordinates (MGA 94/Z50)	381606 mE	6314781 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
24	Comments	drone the various ho with the original class	ollows appeared to sification (Harewoo	nollows in branches and main trunk. When be too small internally or non-existent. and 2018) where no hollows suitable for blacuse by other fauna evident.	This is consistent	Revised	Unsuitable/No Hollows.











ID	Coordinates (MGA 94/Z50)	381702 mE	6314749 mN	Tree Species	Dead (unknown)	Review Date	22/11/2022
28	Comments	the single large hollo black cockatoos. T	w was found to be	ollows in branches and trunk. When exame relatively shallow and has been assessed with the original classification (Harewoodere identified. No conclusive evidence of the contract of the cont	d as unsuitable for d 2018) where no	Revised	Unsuitable Hollow.







ID	Coordinates (MGA 94/Z50)	381424 mE	6315275 mN	Tree Species	Flooded Gum	Review Date	22/11/2022
64	Comments	examined using a poblack cockatoos as i at about ground leve	le mounted camer t has no base and l. This is consister	ry type hollow located low on main trunk a. The pictures obtained show that the hole continues downwards to another opening at with the original classification (Harewook ere identified. No conclusive evidence of under the contract of the	llow unsuitable for in the main truck od 2018) where no	Revised Classification	Unsuitable Hollow.







HABITAT TREE REVIEW - LOT 9004 & 9503 EATON DRIVE - EATON - NOVEMBER 2022 - V1

DISCLAIMER

This fauna assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Greg Harewood ("the Author"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

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The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.



APPENDIX D | LOCAL WATER MANAGEMENT PLAN

(Appendix ORD: 12.2.1C)

Oversby

Consulting

Revised Local Water Management Strategy

DOCUMENT QUALITY CONTROL

Project R	eference	B22049
Ver No.	Purpose	Date
V1	Client Review	May 2023
V2	Submission for approval	May 2023
V3	Submission for approval – revised layout	February 2025



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Post development Monitoring21

Figure 12

Figure 13

1 EXECUTIVE SUMMARY

The Robusta Road Revised Local Water Management Strategy (LWMS) has been developed to accompany the updating of the Structure Planning for the subject land. It provides an update to the approved Lot 9004 Eaton Drive Local Water Management Strategy and highlights how water is to be managed in response to the revised layout.

The current subject land is shown in Figure 2. It is located west of Eaton Drive and east of Collie River. A location plan for the site is provided in Figure 1. This updated LWMS also considered the larger foreshore area that was analysed as part of the original structure planning and approved LWMS. This is identified as the original investigation area in Figure 1.

The majority of the undeveloped subject land is cleared and seeded with grass and pasture species with minimal to sparse tree and understorey species. The landform of the site consists of undulating sand dunes with a low lying swampy area in the centre of the site within the Collie River floodplain. A high point exists in the original structure planning area's south western corner, adjacent to the Collie River which will be developed at a later date.

Winter groundwater levels at the site are approximately 3 m from the surface at the eastern boundary sloping steeply towards the Collie River, in line with surface topography. The objective of this LWMS is to detail the updated best management practices approach to water management that will be undertaken for this development, in accordance with Better Urban Water Management (WAPC, 2008). This will include managing, protecting and conserving the total water cycle of the local environment and the greater catchment. The practices will involve:

- Stormwater management that incorporates the latest's water sensitive urban design practices;
- Groundwater resource management;
- Protection and enhancement of ecosystems dependent on water resources from the subject land;
- Sustainable water servicing.

The effectiveness, efficiency and benefits provided by the best management practices require a collaborative effort between local governments, developers and relevant regulatory authorities. Further summary of the practices to be undertaken for the subject land can be found in the Key Elements section.

1.1 PLANNING SUMMARY

Under the Greater Bunbury Region Scheme the developable portion of the subject land is zoned 'Urban', with the balance zoned 'Regional Open Space'. This corresponds with the 'Development' and 'Regional Open Space' land zonings mapped in the Shire of Dardanup's Town Planning Scheme No.3.

Land zoned 'Development' requires that a Local Structure Plan (LSP) be prepared and endorsed by both the Local Authority and the Western Australian Planning Commission (WAPC) prior to subdivision and development. This LWMS is prepared in support of the LSP for the Subject Land, in accordance with overarching planning requirements.

The current LSP was approved by the Western Australian Planning Commission on 1st October 2019. The LSP Amendment seeks to reconfigure the proposed Public Open Space and Residential cells. The LSP area will accommodate low and medium density residential housing, and outlines a land use and movement network framework for the development of the subject site.

The southern portion of the original subject land has been developed and was designed and constructed in line with the approved Urban Water Management Plan (UWMP) (*Parkridge Estate Stages 3 & 4 UWMP*). This portion is included in the overall Structure Plan Map to provide clarity on connection through the overall area, including interactions from a drainage perspective.

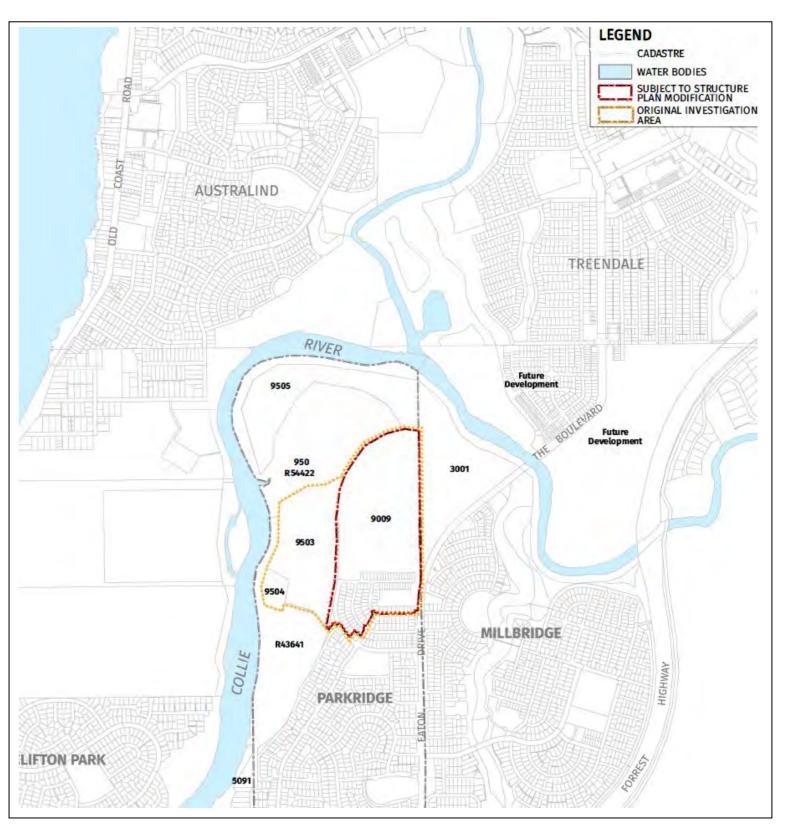


Figure 1 Location Plan and investigation area

2 KEY ELEMENTS PLAN

Water management strategies for the subject land are based on best practice water sensitive urban designs that integrate sustainability and the provision of attractive communities. The strategies will be achieved through the synthesis of planning and designs to manage, protect and conserve the total water cycle. The plans and designs for the development are appropriate for the subject land's residential development, surrounding environment and local drainage characteristics.

A summary of the WSUD elements that will be implemented within the development to achieve best management practices are outlined below:

Water Conservation and Servicing

All houses are to be provided with a mains potable water (through Water Corporation).

Each lot is to be connected to a gravity sewer system, managed by the Water Corporation.

Stormwater Management

- Stormwater detention systems, combined with treatment systems including a perimeter bioretention basin will
 capture and treat stormwater flows. All flows leaving the site up to the 20% AEP event match or are below the
 pre development rate.
- Consistent with Shire policy CP060, soakage devices will be provided on lots where the aggregate impervious
 area including roofs, carparks, driveways, carports and patio's exceeds 250m² or where the lot size is less than
 400m². Modelling assumes 1 m³ of storage for every 65 m² of connected impervious area to be conservative

Flood Protection

All finished floor levels will be designed to maintain a clear separation of 300mm between the habitable floor level and the 1% Average Event Period (AEP) event flood level, generated on site;

All finished floor levels will be designed to maintain a clear separation of 500mm between the habitable floor levels and the 1% Average Event Period (AEP) event flood level of the Collie River of 3.61mAHD.

Ecosystem Protection

- New habitat will be created within the perimeter bioretention basin, through the use of locally native plant species;
- The WSUD elements used on site will treat stormwater and groundwater, improving the water quality prior to it entering the downstream ecosystems of Collie River
- Flows to the Collie River will be managed to predevelopment rates for all events up to and including the 20% AEP, minimising changes to the current flows to this ecosystem.
- Existing habitat within the Collie River foreshore area will be retained as Regional Open Space (ROS) as part
 of the Kalgulup Regional Park and is subject to future planning. Any land use in this area will take into account
 the Collie River flood regime and need for ecological management.
- All drainage infrastructure is located more than 50m from the Eelup/Elbow Conservation Category Wetland within the foreshore area.

(Appendix ORD: 12.2.1C)

- The landscaping will utilise nutrient and waterwise practices to minimise contamination of the groundwater.
- Eelup Wetland is to be vested in the Conservation and Parks Commission to provide long term protection.

Groundwater Management

- Filling of building pads and roads will be used to manage groundwater so that adequate clearance is maintained between maximum estimated groundwater level and finished surface level.
- A subsoil drainage system is to be used in areas where clearance to groundwater is minimal.
- Inflows to the groundwater system will be treated through the perimeter bioretention system.
- A change in land use from livestock grazing to sewered residential will reduce nutrient loading to groundwater.

Monitoring And Maintenance

- Monitoring is to be undertaken through the construction phase of each stage for surface water and potential groundwater in relation to possible contamination;
- Post development monitoring is to consider surface and groundwater quality, ecosystem enhancement and WSUD structural performance

Implementation And Governance

- Developers are to undertake detailed UWMP's to provide the necessary information for management of water across the subject land;
- Developers are to undertake detailed Foreshore Management Plans to provide guidance on land management within the Collie River foreshore area.
- The Shire of Dardanup, the Department of Biodiversity, Conservation and Attractions and the Department of Water and Environmental Regulation are to continue to provide guidance, direction and assistance so that the targets outlined in this report are able to be realised.

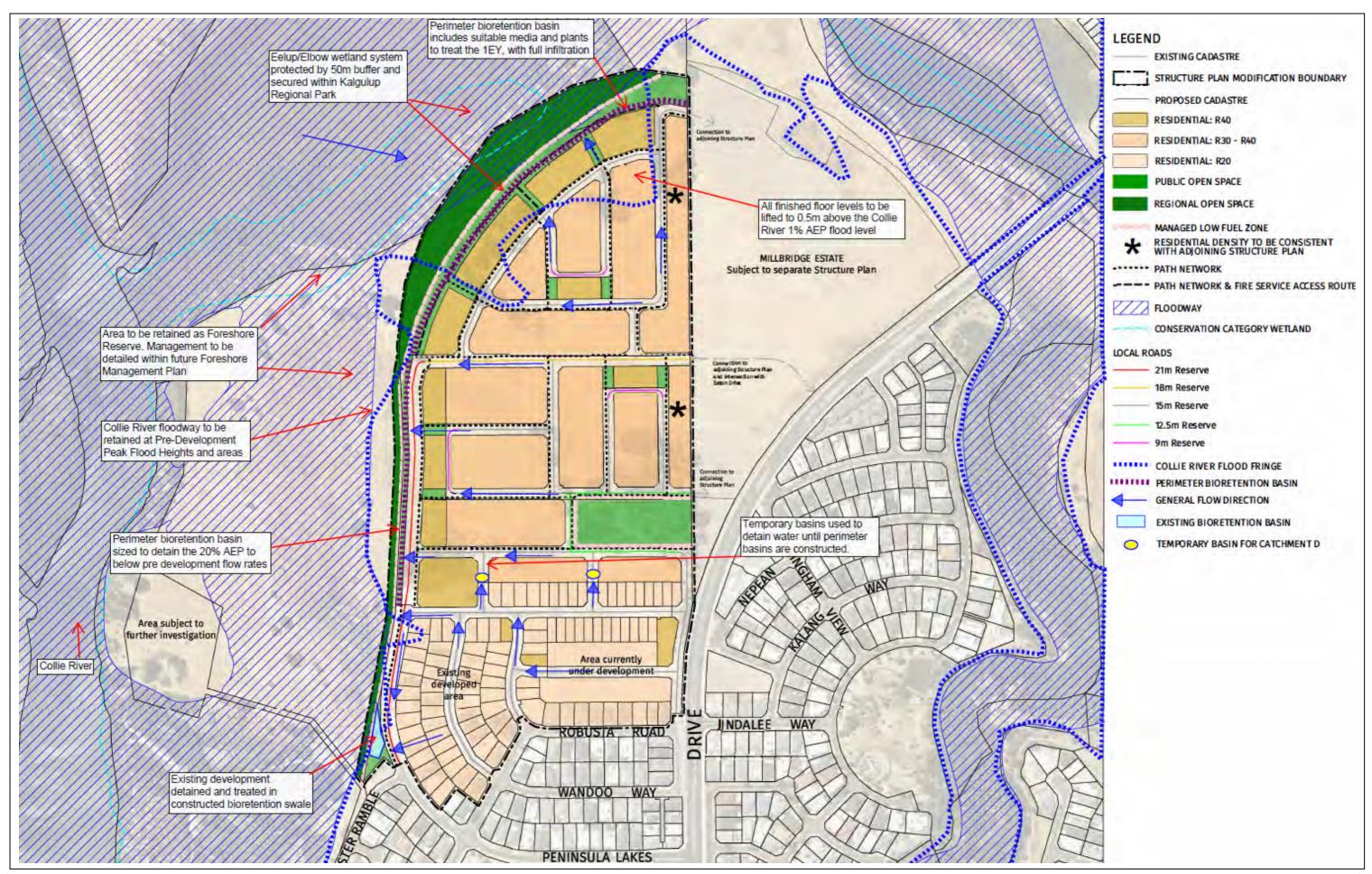


Figure 2 Key Elements Plan

3 GEOTECHNICAL

Golders completed a geotechnical investigation and preliminary acid sulphate soils investigation of the subject land in December 2005. The investigation included the installation of ten boreholes (BH01 to BH10) to a depth of 4m and the excavation of 35 soil investigation pits (TP01 to TP35) to approximately 2.5m deep (Figure 5).

Shortly after the investigation, a small area in the south-eastern corner of the site labelled the 'Borrow Area' was used for fill material. TME Brown completed an additional Geotechnical investigation in 2010 which focused on the Borrow Area and the extension to Peninsular Drive in the west. The investigation included 12 test holes in the Borrow Area and 3 test holes excavated within the future Peninsula Drive extension.

Test locations are shown on Figure 3.

3.1 GEOLOGY

The Bunbury-Burekup Sheet of the 1:50,000 Urban Geology Series maps (GSWA, 1986) indicates the surface geology across the site is characterised by Bassendean Sands (Qpb) overlying fine sandy clays of the Guildford Formation (Qpa). Alluvium sediments associated with river terraces are located adjacent to the subject land within the Collie River flood plain (Figure 4). Surface geology mapping is generally consistent with both geotechnical studies (Golders, 2005 and TME Brown, 2010).

3.2 SUBSURFACE CONDITIONS

As part of Golders geotechnical investigation for the site, subsurface conditions have been separated into 3 groups:

Group 1 (BH03, BH04, BH05 and BH06): A top layer of silty sand overlying fine to medium grained orange/grey sand to a depth of 3m.

Group 2 (BH01, BH02 and BH07) Sand overlying fine to medium grained clayey sand overlying medium grained brownish yellow sand to a depth of 1.7m to 4.0m.

Group 3 (BH08, BH09 and BH10) Silty sand top layer overlying medium to high plasticity mottled clayey sand to a depth of 1m to 3.7m.

Subsurface conditions noted in the TME Brown investigation were generally silty topsoil, overlying sand and sandy clay/ clayey sand to a depth of 2.30m. This agrees with the descriptions provided by Golders.

3.3 SOIL PERMEABILITY

As part of Golders geotechnical investigation, double ring infiltrometer testing was undertaken at two locations (TP05 and TP17). Results indicated soil infiltration rates in this area range between 0.43 to 0.50 m/day. The low permeability is likely due to the underlying clay layer found across the site.

No infiltration testing was completed as part of the TME Brown investigation.

3.4 ACID SULFATE SOILS

Acid Sulfate Soil (ASS) risk mapping of the Swan Coastal Plain shows the majority of the site has moderate to low risk of ASS occurring within 3 m of soil surface. A small section in the south-west corner has been mapped as having high to moderate risk of ASS forming in the first 3m of soil surface. This can be seen in Figure 3.

Results of the preliminary acid sulfate soils assessments from both Golders and TME Brown (2005 and 2010) indicate actual acid sulfate soils can generally be expected to be encountered at depths of 3m or greater across the site and in soil material that has a high clay content.

Towards the northern section of the site, actual acid sulphate soils were encountered by Golders in BH08 to a depth of 1.25m with expected depths in this area even closer to surface. Iron flocing was also observed in ponded surface water in the area of BH08, BH09 and BH10, which is a field indicator of ASS.

(Appendix ORD: 12.2.1C)

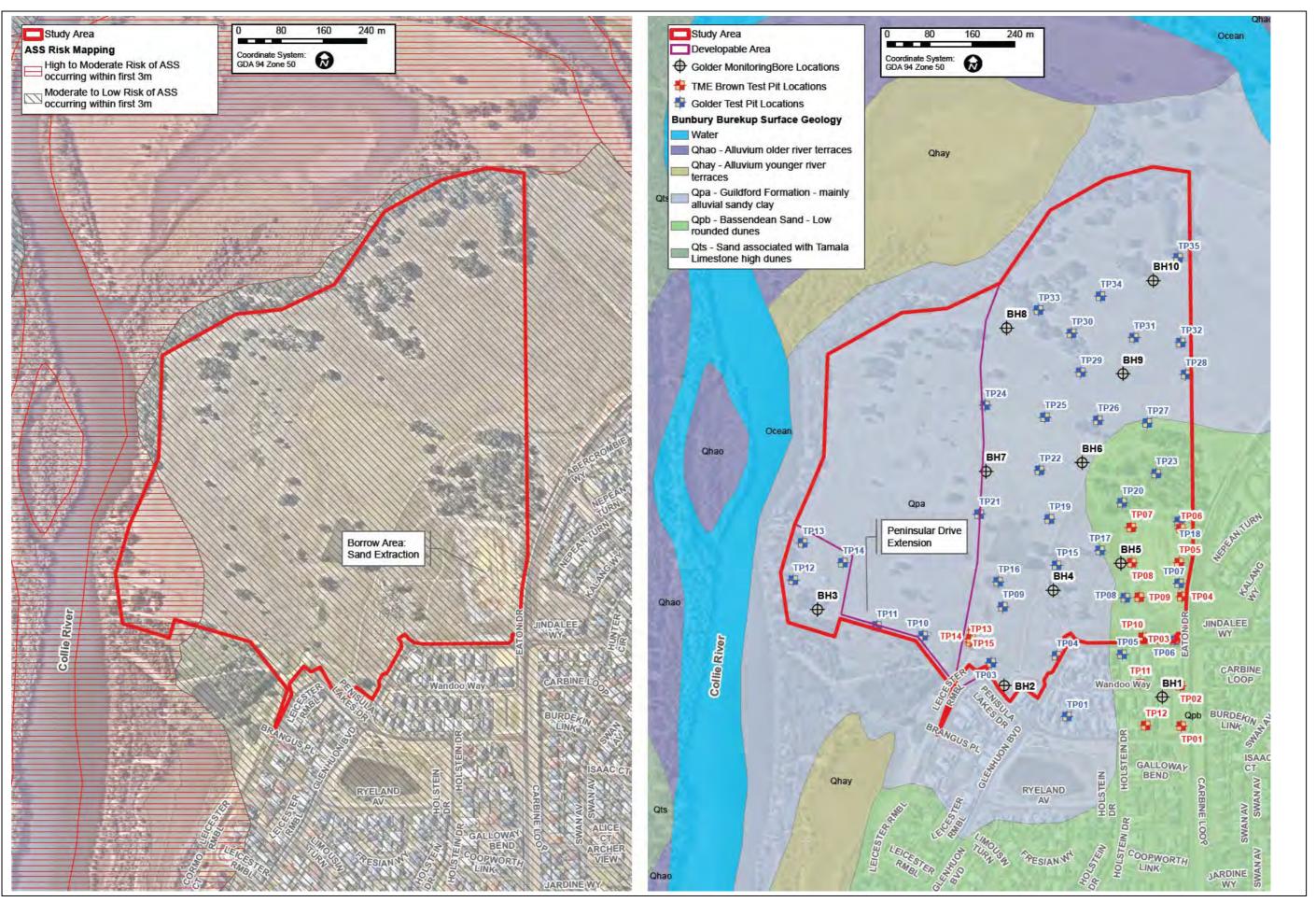


Figure 3 Surface Geology, ASS and Test Locations

4 LANDFORM AND ENVIRONMENTAL CONDITIONS

4.1 LANDFORM

The landform of the study area slopes east to west towards the Collie River at an average gradient of 1:100 (v:h). Undulating sand dunes and swampy low lying areas are evident across the site consistent with the geomorphology of the Collie River. Surface elevations range from 10.50mAHD in the south-eastern corner to 1.30mAHD along the northern boundary within the Collie River floodplain.

4.2 WETLANDS & VEGETATION

A large portion of the study area has been classified as Multiple Use wetland (UFI 1542 and 1383), which does not preclude urban development. Two Conservation Category wetlands (CCW) exist along the northern boundary of the subject land (UFI 1543, 1545). This includes the Eelup /Elbow Wetland system. A 50m buffer has been applied to the CCW areas with all development, associated with the subject land, located outside the buffer area.

Vegetation within the subject land has predominately been cleared and seeded with grass for pasture. There are sparse stands of riparian natives, including *Juncus* spp, *Melaleuca rhaphiophylla*, *Eucalyptus rudis* and *Casuarina obesa*. A large area of degraded *Corymbia callophylla* and *Agonis flexuosa* was noted on the eastern boundary of the subject land, which will be retained within the future POS.

There is some riparian revegetation, outside of the western boundary, along the Collie River. The broader study area includes wetland vegetation in reasonable condition, predominately within he Eelup/Elbow Wetland system.

4.3 WATERWAYS

The subject land is presently serviced by the Collie River on the western boundary. The Collie River discharges south into the Leschenault Estuary and ultimately into the Indian Ocean (Figure 4).

4.4 KALGULUP REGIONAL PARK

The subject land is borders the Kalgulup Regional Park along the north and west boundaries. The park extends to the Colie River. The park is managed for conservation and recreational purposes.

4.5 CONTAMINATED SITES

A review of the Department of Water and Environmental Regulation's (DWER) Contaminated Sites Database (DWER, 2018) was undertaken with no known sites found within or in the vicinity of the subject land.

(Appendix ORD: 12.2.1C)



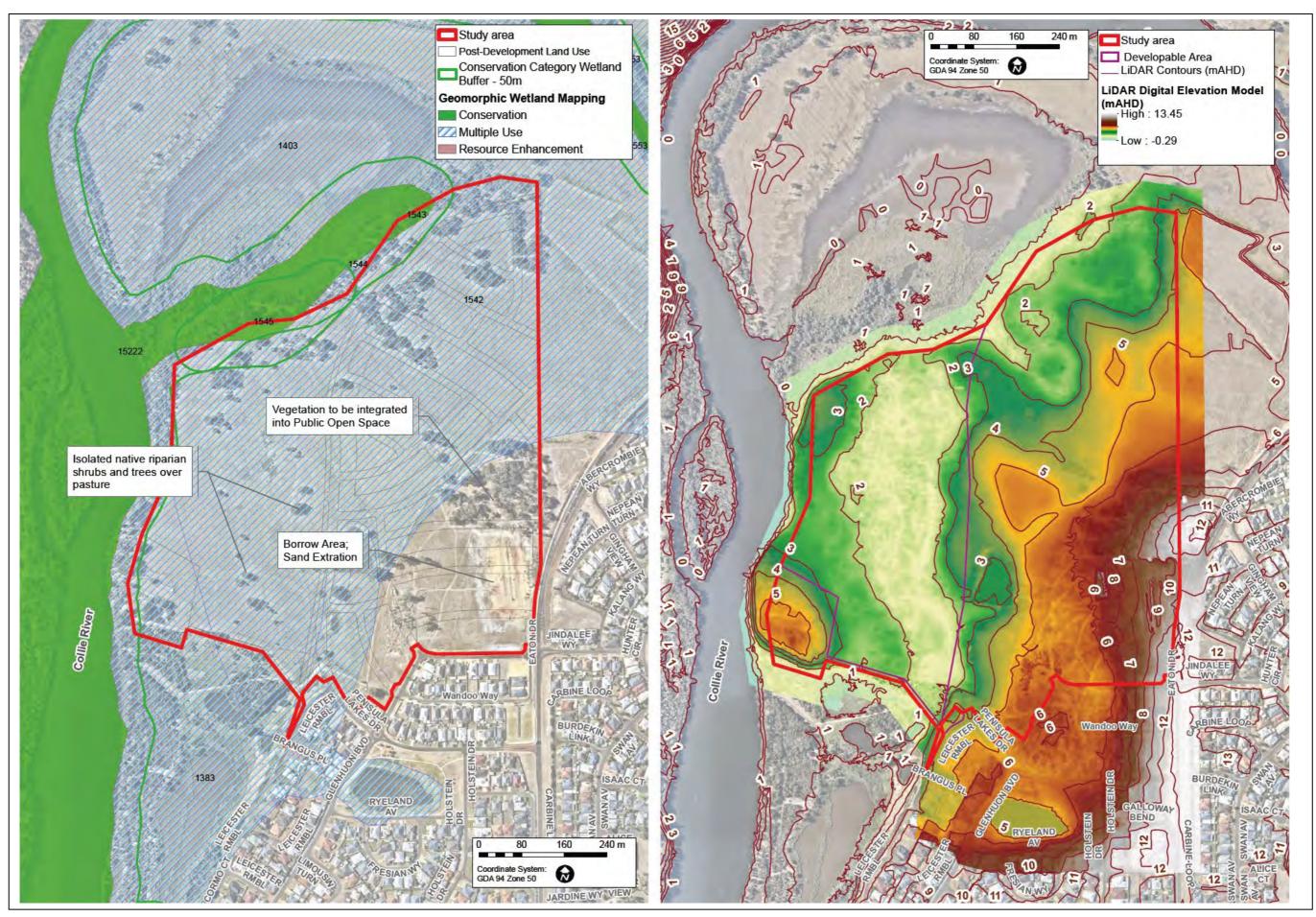


Figure 4 Landform and Wetlands

5 PRE DEVELOPMENT SURFACE WATER SITUATION

5.1 COLLIE RIVER FLOOD SUMMARY

Mapping of the 1% AEP Collie River floodplain and flood height contours was provided to Calibre by the Department of Water and Environmental Regulation. Inundation extents, the floodway and flood levels for the current subject land are shown on Figure 5, with Figure 6 showing the broader floodplain. The peak flood elevation adjacent to the subject land drops from approximately 2.9mAHD in the north to 2.7mAHD in the south. These values have been used as a constant backwater condition in the pre-development modelling for the subject land, summarised below.

5.2 ORIGINAL INTERNAL CATCHMENT ASSESSMENT

The original pre-development modelling involved the division of the site and hydrologically connected areas into 8 pre-development catchments, A through H, ranging in size from 0.75 ha to 16.10 ha. The catchment extents focused on the developable areas within the site and excluded the low-lying floodplain area in the western portion of the subject land. The catchments can be seen in Figure 6.

An analysis of the surrounding development area found Eaton Rd currently acts as a catchment boundary with internal drainage within the road discharging north via an extensive pit and pipe network, towards Collie River. East of Eaton Drive, the existing development discharges towards Millbridge Creek, a tributary of the Collie River.

A small portion of existing development south of the subject land has its own treatment network of roadside bioretention gardens and is noted as Cat-F (Figure 7). Runoff coefficients for Cat-F are based on average lot size, with residential lots assumed to infiltrate the 1 in 1 storm event on site and overflow into the road reserve in larger storm events. A small grouped housing site in the south- east corner of CAT-F is assumed to have a direct lot connection to the Wandoo Way road drainage network. This water is directed to the south west and away from the future development areas.

Roughness coefficients and corresponding runoff coefficients were then assigned to each catchment based on the breakdown of land uses (digitally identified from aerial imagery), surface geology and surface slope towards Collie River. Peak flood elevations within the Collie River were utilised as constant backwater conditions within the model.

Table 1 provides a summary of these catchments, their corresponding land usages by area and peak flow rates for critical storm durations. Table 2 provides a summary of the roughness values used in the modelling of pre-development catchment conditions.

5.3 REFINEMENT FOR CATCHMENT AREAS THAT DON'T FEED EXISTING BUILT BASINS

Further modelling was undertaken to reflect the areas of the current structure plan that do not feed to existing drainage basins. This was to allow for a comparison of pre and post development flows that will discharge to future treatment and detention systems. The catchment areas used for this analysis can be seen in Figure 5, with the results outlined in Table 3. The new modelled areas are effectively a subset of the original catchments Cat-A to Cat-C (29.85ha). The new Catchment D1 is partially constructed and is being drained to temporary basins. It will ultimately feed through to the proposed perimeter bioretention swale. The updated modelling assumed that all areas that are currently developed and discharging to temporary basis were still in a pre development state. DRAINS was used for the refinement modelling. Further modelling assumptions include:

- Soil Factor 2.85 used (Moderate surface infiltration with shallow confining layers)
- Antecedent Moisture Condition 3 used (12-25mm of rainfall in preceding 5 days)
- Catchments 98% pervious

In the critical 20% AEP storm, the pro rata flow rate from the original modelling would have been 0.297m3/s. The revised modelling discharge rate is 0.309m3/s, which has a difference of less than 10% and therefore suitable for comparing pre and post development flow rates for the revised Structure Plan Area.

The 1EY critical events were the 1.5hour event, with the 20% AEP peaking in the 2-hour event and the 1% AEP peaking in the 25min event.

(Appendix ORD: 12.2.1C)

5.4 SURFACE WATER QUALITY

The subject area sits within the Leschenault Estuary Catchment and as such is covered by the Leschenault Estuary Water Quality Improvement Plan (WQIP). The Estuary and its tributaries are also a Management Area proclaimed under the Waterways Conservation Act 1976 and a catchment included in the state government's Regional Estuary initiative.

The subject area discharges west towards the Collie River and ultimately the Leschenault Estuary.

No surface water quality monitoring has been undertaken specifically for this project. There have been some water quality monitoring results recorded as part of the Leschenault Estuary WQIP. The average winter water quality for Total Nitrogen and Total Phosphorus within the Lower Collie River 1 catchment is 1.5 mg/L and 0.18 mg/L, respectively.

In general, the elevated nutrient levels, for the waterways linked to the site, are due to current farming practices (beef and dairy). The Lower Collie River 1 catchment is considered a recovery catchment in the WQIP, due to elevated nutrient levels. This classification specifies a target Total Nitrogen and Total Phosphorus concentration of 1.0 mg/L and 0.1 mg/L, respectively.

Table 1 Original Pre-Development Internal Catchment Areas and Peak Flows

	Avoc	Pea	ık Flow (m³/s)	
Catchment	Area (ha)	1EY	20% AEP	1% AEP
А	16.10	0.074	0.170	0.305
В	12.40	0.070	0.146	0.273
С	1.35	0.013	0.025	0.047
D	12.55	0.075	0.152	0.281
Е	2.20	0.020	0.038	0.074
F	3.55	0.067	0.090	0.168
G	5.00	0.037	0.073	0.141
Н	0.75	0.004	0.008	0.016
TOTAL	53.90	0.360	0.702	1.305

Table 2 Pre-Development Manning's Roughness N' and Runoff Assumptions by Land Use

Land Use	Runoff A	Assumptions	Mannings n			
	Initial Loss (mm) Runoff Percentage (%)		Impervious Roughness	Pervious Roughness		
Cleared (Pasture)	-	25	0.020	0.035		
Vegetation	-	20	0.020	0.040		
Open Water	-	90	0.014	0.030		
Residential (R2)	11	70	0.014	0.030		
Grouped Housing	-	80	0.014	0.030		
Road Reserve	-	80	0.014	0.030		

Table 3 Revised Pre-Development Internal Catchment Areas and Peak Flows

	Area	Pea		
Catchment	Catchment (ha)		1EY 20% AEP	
A1	8.4132	0.002	0.098	1.31
B1	5.1777	0.001	0.059	0.804
C1	7.5683	0.003	0.094	1.19
D1	4.8141	0.001	0.058	0.754
Total	25.9733	0.007	0.309	4.058

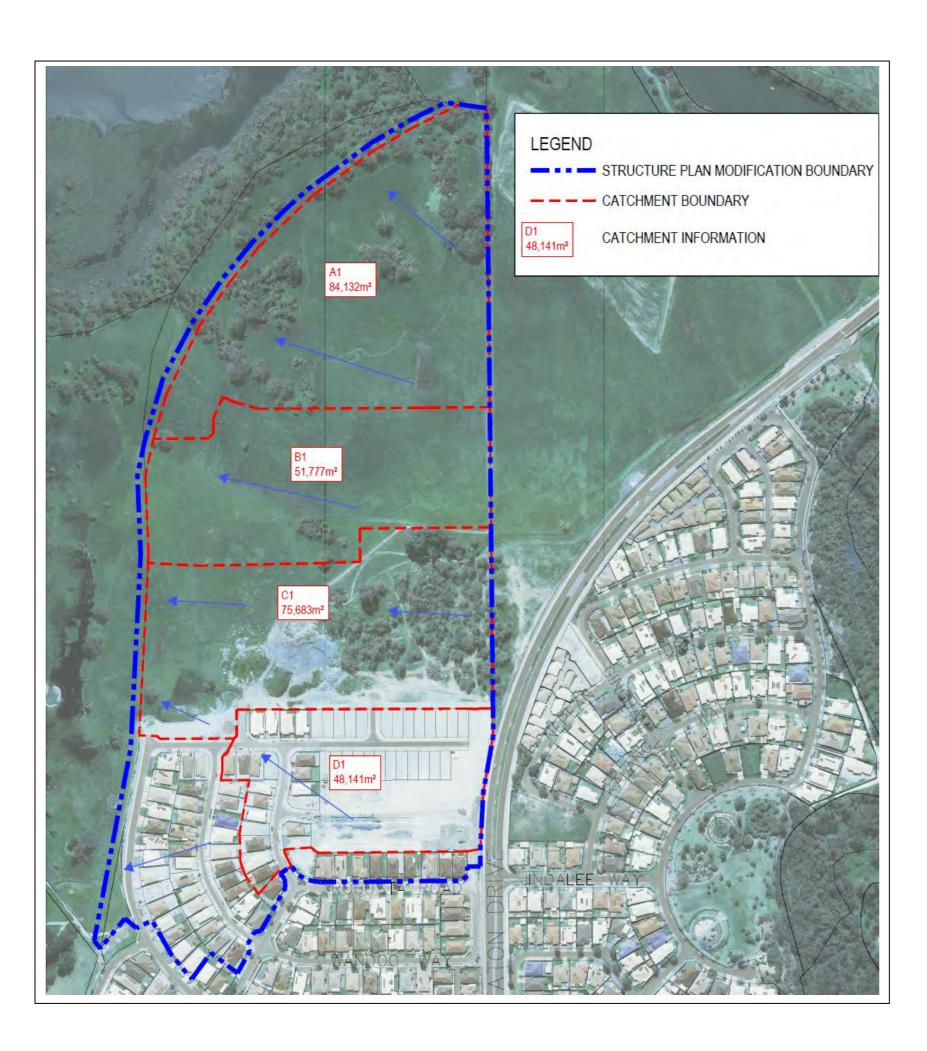


Figure 5 Revised catchments for future perimeter basins

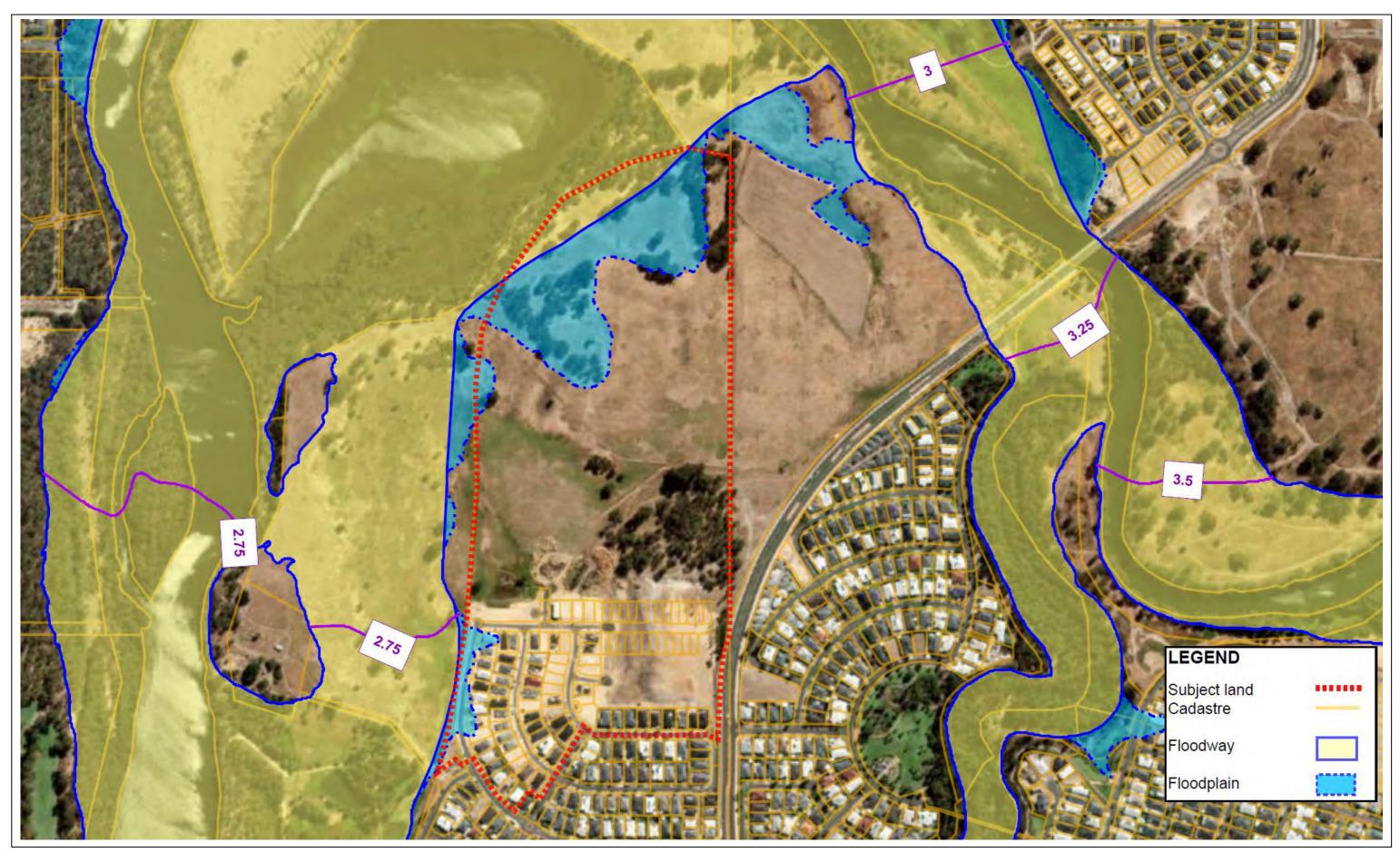


Figure 6 Current subject land with floodway and floodplain mapping

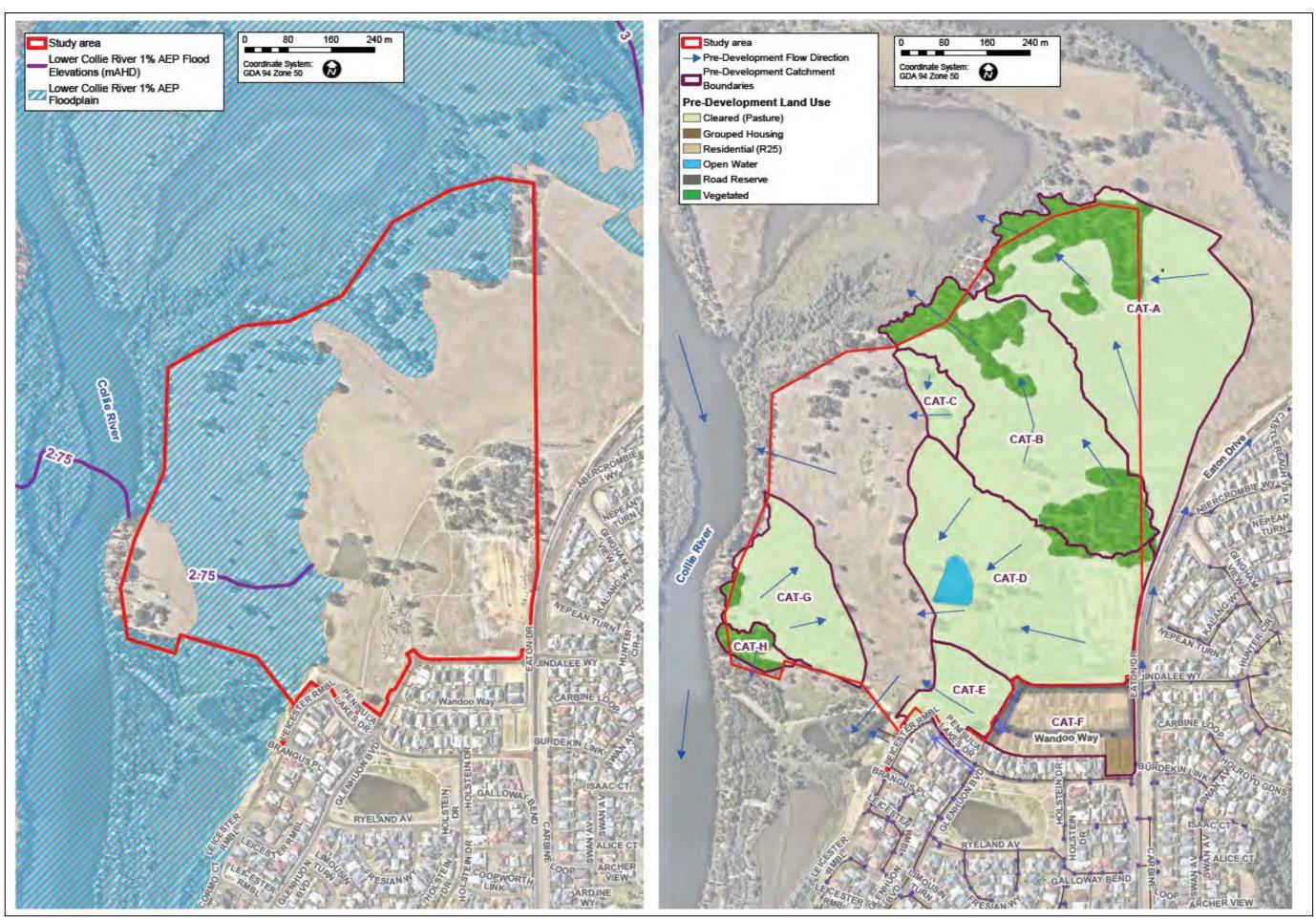


Figure 7 Pre development catchments and Collie River flood extents

6 GROUNDWATER (PRE DEVELOPMENT)

6.1 GROUNDWATER LEVELS

To determine likely seasonal maximum groundwater levels across the subject land, onsite groundwater level monitoring was undertaken by Calibre (as TME) between May 2009 and October 2010. The investigation included the installation of 23 monitoring bores across the site, to a depth of approximately 2.1m Below Natural Surface (BNS).

As required by DWER groundwater levels were measured across two winter periods, with a total of 10 monitoring events for each bore. The maximum recorded groundwater level occurred in 2009, which coincides with an above average rainfall year (1975 to 2017, Rainfall Station No. 009657).

Maximum groundwater levels, estimated maximum groundwater contours and depth to groundwater are shown on Figure 8. Groundwater levels generally fall towards the low lying areas of the Collie River floodplain, from east to west with depth to groundwater ranging from above surface to 5.6m BNS.

Groundwater level hydrographs, taken from the monitoring report, are included in Figures 6 and 7.

Groundwater was also found in 27 of the 35 test pits as part of the Geotechnical Investigation (Golder Associates, 2005). Groundwater depth ranged between 0.3 and 2.0 m BNS, consistent with Calibre monitoring results. The rate of groundwater inflow into the test pits was generally observed to be very slow or slow in areas with clayey material at shallow depth. This was considered to be related to perched groundwater sitting above semi-impermeable clayey material and the associated low permeability of the clayey material.

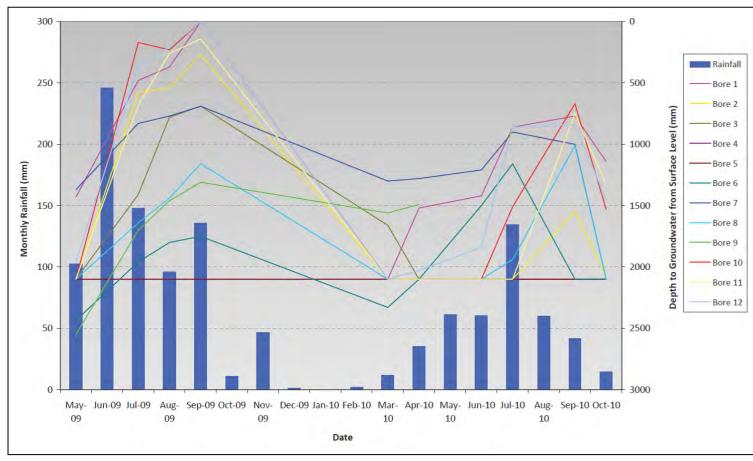


Figure 8 Groundwater Level Hydrographs: Monitoring Bores 1 to 12

6.2 GROUNDWATER QUALITY

Groundwater quality sampling has not been undertaken to date. It is likely that the groundwater will be typical of Swan Coastal Plain Bassendean sand farmland. As such it is likely to have elevated levels of nutrients, be high in Iron and Aluminium and slightly acidic.

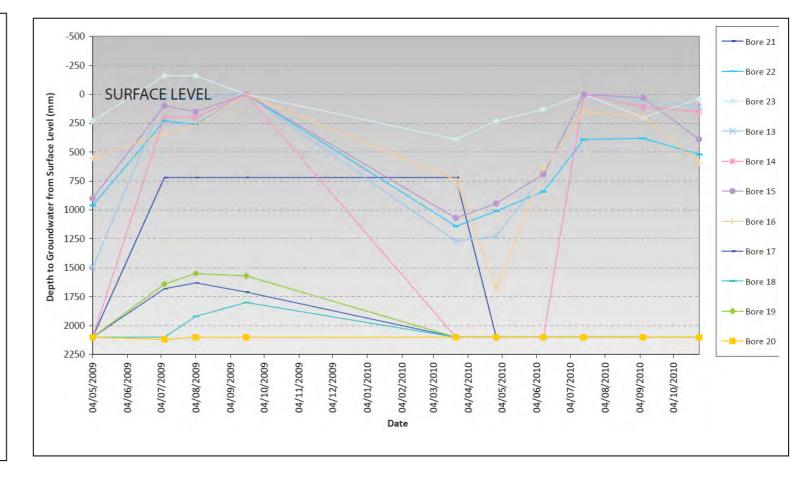


Figure 9 Groundwater level hydrographs: Monitoring Bores 13 to 23

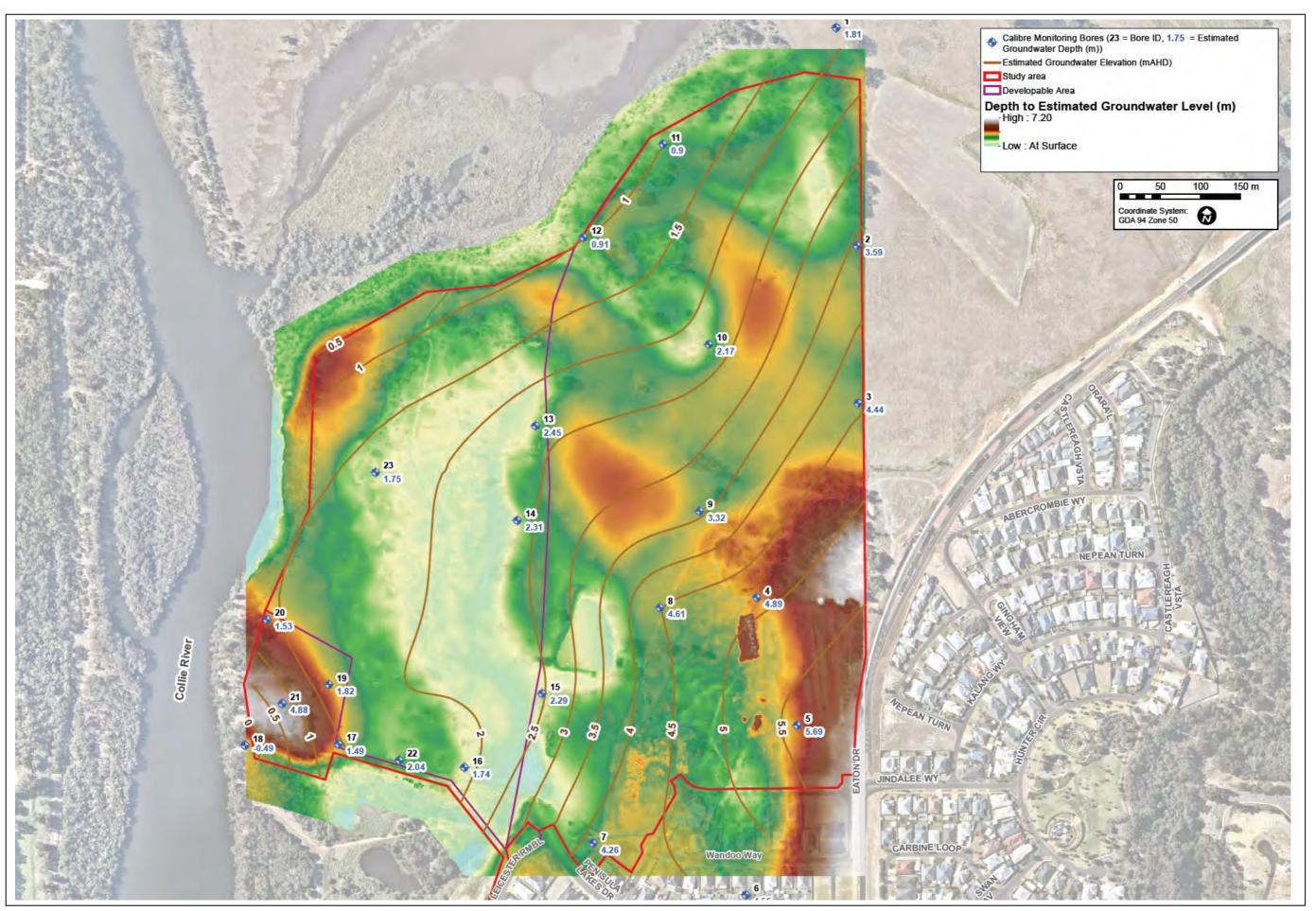


Figure 10 Groundwater depths and monitoring bore locations

7 DRAINAGE MANAGEMENT STRATEGY OVERVIEW

7.1 SUMMARY

The aim of Drainage Management for the subject land is to generally manage the water flows so that water treatment is achieved and that the major storms are controlled prior to release.

All flows up to the 1EY are to be treated to reduce nutrients, sediments and other contaminant prior to discharge offsite. Above the 1EY, the main function is to control the flow of drainage water throughout the subject land and its release from the subdivision. This water will predominately be captured and infiltrated while protecting lots from internally generated flooding and regional floods from the Collie River.

Figure 11 shows the catchment boundaries, including the areas already finalised as well as the partially constructed areas draining to temporary basins.

The following sections show in more detail how water is treated and conveyed in three different AEP scenarios;

- 7.3 1EY
- 7.4 20%AEP
- 7.5 1% AEP

This builds on the previous assessment undertaken as part of the approve LWMS and takes into account the changed catchment boundaries and road layout. It also considers the works approved as part of the Parkridge Estate Stages 3 & 4 Urban Water Management Plan. Any areas remaining the same as the approved LWMS or dealt with in the UWMP in detail were not remodelled. The original LWMS also showed Catchment F flows going into Catchment C1/D1, however this water is now directed to the south west, bypassing the Structure Pan area. Figure 11 show the general flow direction of each of the remodelled catchments.

7.2 MODELLING

The proposed development is designed to achieve a water sensitive design outcome for the 1EY, 20% AEP and 1% AEP. The system has been designed so that it achieves these outcomes while also controlling groundwater rise via subsoils.

The post development modelling has been updated from the approved LWMS to take into account the revised catchment areas due to the new layout (where relevant). The outflow rates have been designed to match the previously approved outflow rates and the revised pre development modelling (see Section 5). The permitter bioretention swale has been retained for the area developed as part of the approved UWMP. The future development areas will also drain to a new perimeter swale. The original catchments A-D have been refined into 4 catchments A1-D1, with D1 representing the area already partially constructed. The catchment boundaries and future perimeter bioretention gardens are shown in Figure 11. While it is likely that some of the pocket parks higher in the catchment will contain bioretention gardens, to be conservative, these have not been included in the drainage modelling. Their impact will be analysed as part of the relevant future UWMP.

Each catchment has been further divided in the model to reflect the roads and lots as different entities, as well as the POS areas. This allows for modelling of the lots for onsite detention. The catchment details can be seen in Table 4.

Catchment	Catchment areas (Ha)							
Catchinent	Lots POS		Road Total		Discharge point			
A1	5.6792	0.9364	1.7976	8.4132	Basin 1 (northern basin within perimeter POS)			
B1	3.2835	0.1354	1.7588	5.1777	5			
C1	4.396	1.1446	2.0277	7.5683	Basin 2 (southern basin adjoining perimeter road)			
D1	3.5042	0	1.3099	4.8141				
Total	16.8629	2.2164	6.894	25.9733				

Table 4 A1 – D1 Catchment details

(Appendix ORD: 12.2.1C)

The key modelling assumptions and characteristics are as follows:

- Catchments were designed to be logical areas of stormwater capture and discharge.
- Areas previously developed and not contributing to new detention systems were not remodelled.
- Lots were assumed to be 70% impervious, of which 10% flowed to pervious areas as overland flow.
- Road areas were assumed to be 80% impervious (road and footpath).
- Directly connected impervious areas had an assumed retardance coefficient of 0.01, while indirectly connected impervious areas had an assumed retardance factor of 0.13.
- Pervious surfaces (eg areas of grass or landscaping) were assumed to have a conservative retardance coefficient
 of 0.1.
- Lots are assumed to detain the stormwater in soakwells at 1m³ of storage for every 65m² of impervious area. Above this they are assumed to discharge to the roadside gutter as overland flow.
- On lot infiltration was assumed to be 2m/day and be from 1.2m deep soakwells.
- The bioretention media is assumed to have a hydraulic conductivity of 2m/day which is a conservative estimate to account for potential clogging of the bioretention media (3.6-7.2m/day is in line with FAWB guidelines).
- The final storms modelled were the 5min,10min,15min, 20min,25min, 30min, 45min, 1 hr, 1.5hr 2hr, 3hr, 4.5hr and 6 hr. Longer events were not modelled as the peak events were generally between 0.3hours and 2 hours. These were modelled for the 1EY, 20% AEP and 1% AEP.
- Earlier runs looked at 48hr and 72hr scenarios but due to the small catchment sizes these were never close to critical events. The modelling used ARR rainfall figures for Bunbury.
- The bioretention gardens have been modelled as per Table 5. Both bioretention systems are assumed to be connected with balance pipes once fully developed.

	Basin details									
Basin	Total height (m)	Low flow Outlet pit level (m)	Overflow weir height (m)	Width (m)	Length (m)	Surface area (m2)	Volume to weir (m3)	Side slope		
1	0.6	0.2	0.55	4.2	545	1428	785.4	Straight block		
2	0.6	0.2	0.55	4.2	340	2289	1258.95	Straight block		
Total					885	3717	2044.35			

Table 5 Basin details for catchment A1- D1

Note: Heights are from basin base.

7.3 1EY STORM EVENT AND WATER QUALITY

The 1EY detention and treatment will use a combination of on lot infiltration and the perimeter bioretention basins. The design parameters for treatment and attenuation of minor storms (up to the 1EY event), will be to provide treatment area within the bioretention gardens (exceeds the minimum 2% of the effective road impervious area). Further bioretention system may be installed within the pocket POS areas as part of detailed design of the relevant stage.

The treatment areas have been maximised and exceed the 2% minimum area for bioretention areas per effective impervious catchment due to also being the base of the basins for the 20% AEP.

The outlet pipe is set so that the entire 1EY event is infiltrated through the bioretention media.

For bioretention basins will be layered with bioretention media and planted with appropriate species to assist with treatment of low flows. These species will be composed of *Ficinia nodosa* and *Juncus subsecundus* under a range of Melaleuca species.

The bioretention areas are designed according to the latest FAWB Adoption Guidelines for Filter Media in Biofiltration Systems and the Stormwater Management Manual for WA design guidelines. The design for the gardens is composed of a filter media of amended soils to 500mm below the surface, with an average particle size of 0.5mm. The plants will also assist with nutrient absorption because of the surface area provided by their roots for the formation of bio-films and nutrient uptake.

In summary the media will:

- have a hydraulic conductivity of 100-300mm/hr
- have the top 100mm to be ameliorated with appropriate organic matter and trace elements to assist plant establishment (see table 1 in the attachment)
- have a transition layer to be a washed sand (100mm deep)
- have impermeable side barriers eg plastic to stop water flowing sideways preferentially and not being treated.

The bioretention areas should only require sporadic tankering irrigation during the initial 2 to 3 years of establishment when there is extended dry weather. They should require no fertiliser application and irrigation demands should be met by stormwater alone, after this initial establishment period. The gardens will be designed to assist in the removal of nutrients, sediments and other potential contaminants from stormwater as the water infiltrates through to the groundwater. A subsoil line is to be laid below the bioretention gardens to assist with taking treated water away and controlling localised groundwater mounding.

7.4 DRAINAGE MANAGEMENT PLAN - 20%AEP

Key points for the design of the major drainage system are as follows:

Peak outflow discharging into the Collie River floodplain will equal or be less than pre-development 20% AEP flows. The outlet pipes will have a rock spreader and then discharge to densely planted area to assist with erosion, while also improving habitat and water quality. There is no weir flow out in the 20% AEP.

In events greater than the 20% AEP, up to the 1% AEP stormwater runoff will discharge into the Collie River floodplain via a combination of the outlet pipe and overflow weirs.

The rural area adjacent to the north-eastern boundary of the subject land is currently hydrologically connected to Catchment A1. In the post-development scenario, flow generated within the retained rural area will discharge towards the Catchment A1 development boundary where a spoon drain adjacent to the imported fill will guide flows towards the Collie River. This will continue until such time as the land to the east is developed.

Details of the 20% AEP stormwater storage and discharge are provided Table 6. The discharge is conservatively below the pre development 20% AEP, allowing for refinement of storage areas as part of detailed design. A comparison can be seen in Table 7.

Quality

It is not an objective of managing the 20% AEP events to treat for water quality, but the bioretention systems, combined with the on lot soakwells will allow for some trapping and settling of suspended sediments, especially after the flood peak has passed. This is primarily due to the residence time in the storage structures. All water infiltrating through the soil profile during the 20% AEP event will receive treatment as it moves through the bioretention media or soil profile.

Table 6 Post development storage and discharge details for catchments A1 – D1.

	1EY				20% AEP				1% AEP			
Catchment	Flow rate (m³/s)	Critical event	Water height (m)	Volume (m3)	Flow rate (m³/s)	Critical event	Water height (m)	Volume (m3)	Flow rate (m³/s)	Critical event	Water height (m)	Volume (m3)
A1	0	NA	0.13	299.4	0.267	2hr	0.52	1179.8	1.382	1.5	0.68	1566.7
B1, C1, D1	0	NA	0.14	194.3	0	NA	0.52	741.6	1.74	30min	0.7	1037.2
Total	0			493.7	0.267			1921.4	3.122			2603.9

Note: 1% AEP storage volume includes minor flooding (less than 0.1m deep of POS area around basin)

(Appendix ORD: 12.2.1C)

7.5 DRAINAGE MANAGEMENT PLAN – 1%AEP

7.5.1 Regional flood modelling

The proposed development currently lies within the Collie River 1% AEP flood extent. To determine how filling and development within the floodplain affects the hydrology of the Collie River, a flood impact assessment was completed by SKM (SKM, 2007). The assessment included a 2 dimensional hydraulic model of the site, which was calibrated against existing flood extents provided by DWER. The model was created within the MIKE-21 flood modelling package, utilising channel cross-sections used in the Public Works Department (1981) flood study.

The model replicated three development scenarios with each measured in relation to the change in water level at key locations downstream and upstream of the site. This LWMS represents development Scenario 1, which is currently approved. Results of Scenario 1 indicates no change in the 1% AEP top water level upstream or downstream of the site and a 1cm rise in the river channel adjacent to the site.

The area of fill has not changed since the original LWMS was approved, so there has been no change in flood impacts.

7.5.2 On site flood modelling

The Subject area has been designed to safely manage the 1% AEP flood event so that impacts on the subject land and downstream infrastructure, the environment and people's safety are minimised.

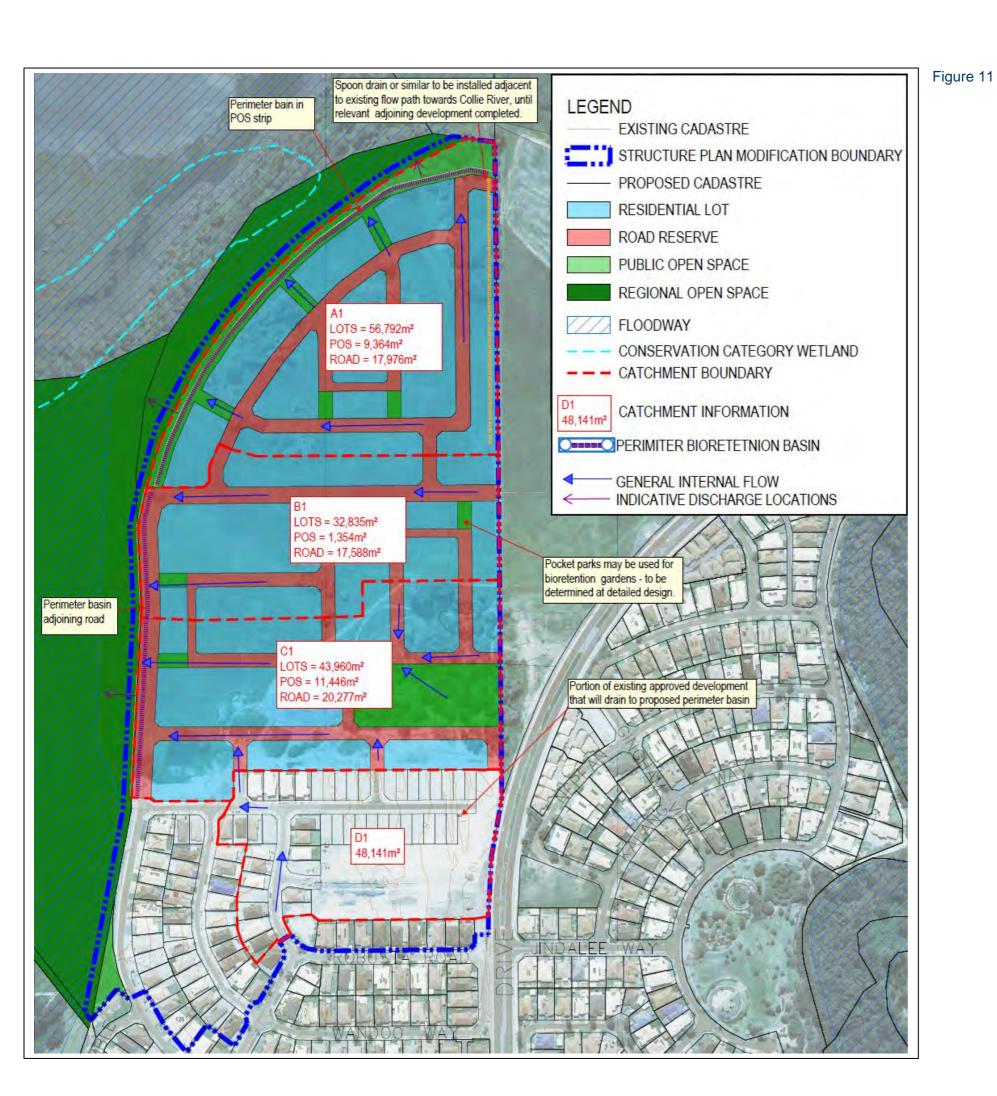
All floor levels will be set a minimum of 500mm above the relevant adjoining 1% AEP flood level of the Collie River and 300mm above internally generated flows. For the flood separation from the Collie River flood, the finished floor levels will be a minimum of 3.2mAHD in the south, grading through to 3.4mAHD in the north.

In the 1% AEP event, the 1EY system and 20%AEP systems will fill to overflowing. Water will then flow along the roads to the perimeter bioretention basin. This will fill and spill over the broad weirs to disperse the flow. Spillways will be treated with rock pitching to prevent erosion. The stored volume and discharge rate can be seen in Table 6.

While there is not a need to detain to pre development levels in the 1% AEP, due to adjoining the Collie River, the detention provided for the 20% AEP means that the post development flow in the 1%AEP post development scenario is less than the Pre development situation. A comparison can be seen in Table 7.

Table 7 Pre vs Post development flow summary for catchment A1-D1

Scenario	Discharge rate (m³/sec)							
	1EY	20% AEP	1% AEP					
Pre development	0.007	0.309	4.058					
Post Development	0.0	0.267	3.122					



Post Development Drainage Plan

8 GROUNDWATER MANAGEMENT STRATEGY

Groundwater management for the subject land has been prepared in line with the Stormwater Management Manual for Western Australia (DWER, 2007).

Groundwater management objectives are as follows:

- Subsoil pipes will discharge directly into the internal drainage network to be treated in the perimeter bioretention swale prior to discharging into the Collie River.
- Manage groundwater levels to protect infrastructure and assets.
- Maintain groundwater regimes for the protection of groundwater dependant ecosystems.
- Protect the value of groundwater resources.
- Adopt nutrient load reduction design objectives for discharges to groundwater.

8.1 GROUNDWATER LEVEL MANAGEMENT

Key points for the management of groundwater levels are as follows:

- A minimum separation of 1.5m from lots to the estimated pre-development groundwater levels or impermeable clay layer will be maintained post-development. Where this separation does not already exist, imported fill and a subsoil pipe network will be utilised. Areas where groundwater is within 2m of pre-development surface is shown on Figure 12. Extents shown are generally consistent with areas containing an underlying impermeable layer.
- Subsoils will be set predominately at the estimated pre-development groundwater level. Subsoil pipes will be laid at a minimum 1:400 grade and will be located within the road reserve. They are to have a free flowing outlet.
- Mounding will occur between the subsoil pipes, with a maximum of 500mm below houses after a 20% AEP event
 in the wettest month of the year. Mounded groundwater will rapidly drain to the subsoil system, reducing the
 mounding elevation below residential lots. The use of free draining fill and the distance between subsoil pipes
 throughout the development will assist in reducing mounding of groundwater. The permeability of all sand fill is
 to be a minimum of 4m/day with this to be tested insitu.
- All bioretention basins are to be a minimum of 300mm above the groundwater and include subsoil systems where pre development groundwater is within 500mm.
- All lot soak wells are to be shallow in nature so that their infiltration rate is not adversely influenced by high groundwater levels.
- Wherever possible water will be infiltrated on site to maintain similar overall infiltration volumes to the predevelopment scenario. This is to be achieved through the use of pervious surfaces, bioretention gardens and soakwells, which are designed to infiltrate water.

(Appendix ORD: 12.2.1C)

8.2 GROUNDWATER QUALITY

Key points for the management of groundwater quality are as follows:

- Due to the removal of stock and the use of a main sewer system and smaller lots, nutrients and other potential
 pollutants will mainly be restricted to uses associated with house gardens. Information on nutrient wise gardening
 is to be provided to lot purchasers to assist with minimising nutrient inputs. This will include information currently
 available through the Shire.
- POS areas will be vegetated using mainly native vegetation with limited nutrient application used.
- All stormwater up to the 1EY storm event will be treated in bio-retention gardens. This means that water entering the subsoil system from the filtered stormwater should be treated to DWER guidelines. The bioretention gardens will be designed and constructed according to the latest FAWB Adoption Guidelines for Filter Media in Biofiltration Systems and the Stormwater Management Manual for WA design guidelines.
- Roof runoff directed to soakwells is another major source of groundwater. This water is relatively clean, which will
 assist with keeping groundwater pollutant concentrations within acceptable limits.
- Suitable soil amelioration products will be laid within gardens and turf areas in POS, to assist with binding nutrients
 in the soil profile. This will reduce potential movement of nutrients to the groundwater.
- The subsoil network from all new development areas is to discharge into the perimeter bioretention basin for treatment.

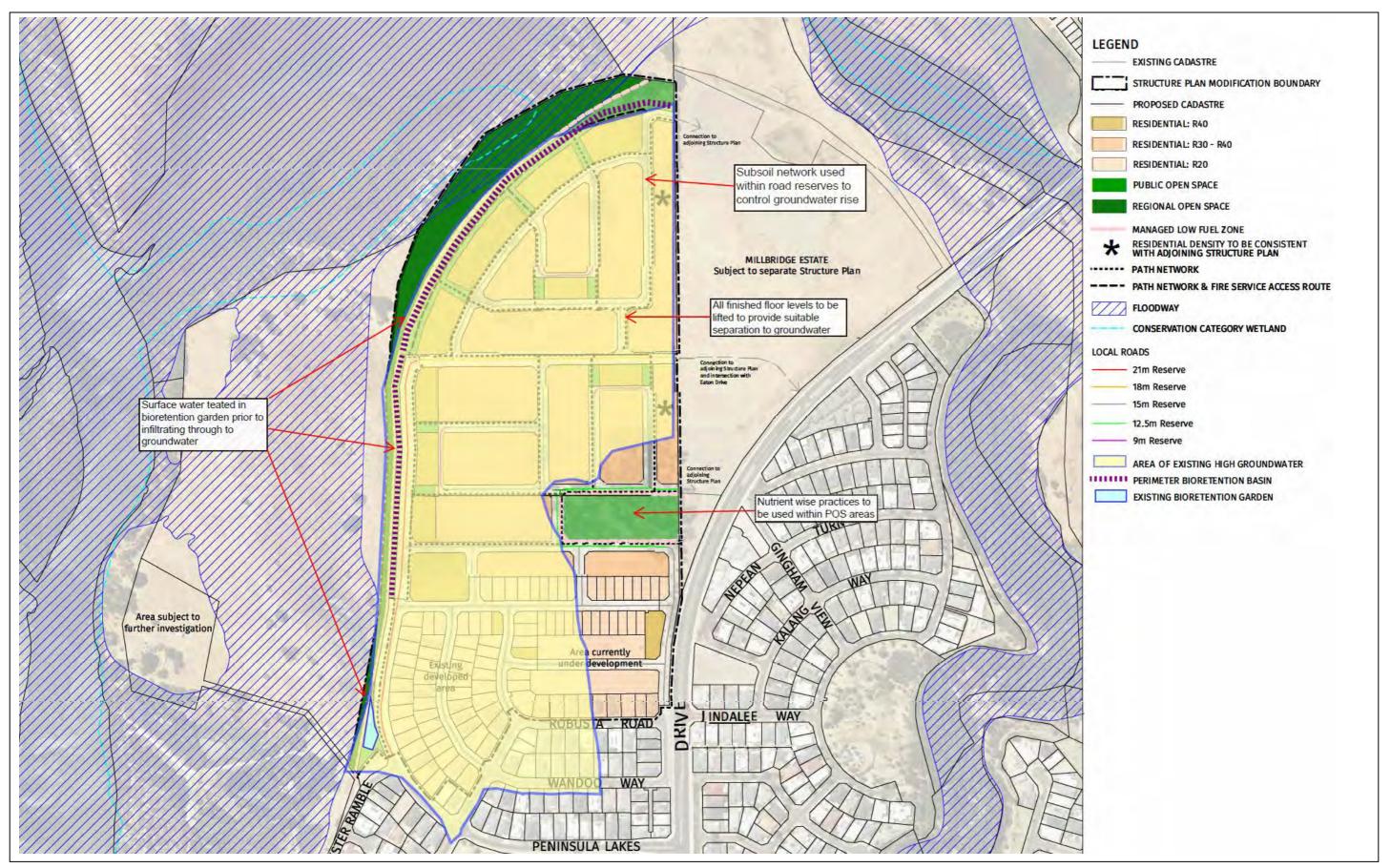


Figure 12 Post development groundwater management

9 WATER SERVICING AND SUSTAINABLE USAGE STRATEGY

9.1 LANDSCAPING

Landscaping will use suitable native species and other waterwise species throughout consistent with the Shire's landscaping requirements. The objective of the landscaping is to implement strategies that minimise the quantity of irrigation required including mulching, low use of slow-release fertilisers, retention of native trees where possible and new plantings of native species.

The landscaping has taken into account the stormwater management, with a focus on shedding stormwater to the planted bioretention basins where possible. This will provide a significant portion of the irrigation requirement for the landscaping. Top up water will be provided as required during establishment, with this water applied via a water tanker. No permanent irrigation is proposed.

9.2 FIREFIGHTING WATER SUPPLY

Firefighting water supply will be provided by way of hydrants designed and installed to Australian Standard AS 2419.1-

2005.

9.3 POTABLE WATER

The proposed subdivision will connect to existing adjacent Water Corporation water mains.

Water Corporation have previously confirmed that adequate water capacity exists to serve the proposed development.

9.4 WASTEWATER MANAGEMENT

The Site is currently serviced by a surrounding 150mm PVC sewer from Peninsula Lakes Drive at varying invert levels. This southern part of the proposed development will be directed to the existing sewer reticulation network via the gravity sewer. This part of the catchment will be directed to the existing wastewater pump station located in the south-western area of the Site.

The remainder of the Site will be directed to the vacuum sewer that services this part of the Site via Millbridge. The Water Corporation has confirmed that this strategy is the intention. The Water Corporation has confirmed that no prefundable infrastructure is required for the vacuum sewer area.

(Appendix ORD: 12.2.1C)

10 WATER DEPENDENT ECOSYSTEMS MANAGEMENT STRATEGY

There are two main focuses for the management of water dependent ecosystems (WDE) as part of the subject land's future development: firstly protection and enhancement of the adjoining Collie River and associated foreshore ecological system and secondly the creation of new WDE habitat associated with the subject land's bioretention systems, which will also treat water prior to discharge into the downstream existing ecosystems.

10.1 ON SITE ECOSYSTEMS

The bioretention systems constructed as part of this development will provide some ephemeral and seasonal riparian type habitat to generalist riparian species. The location and planting of these basins will maximise this effect. The use of locally native plants that occur within wetland and river systems will provide food, as well as locating the main bioretention basin adjoining to the foreshore areas, with its existing habitats will allow for ease of movement of fauna into this new ecosystem. This will be complemented by utilising native plantings in surrounding POS and streetscape areas.

As such, these areas can act as areas for future colonisation by a variety of small fauna and assist with fauna movement between larger natural system that are being retained in the surrounding reserves. The bioretention systems are to include both an understorey of sedges and rushes as well as an overstory of wetland shrubs, while taking into account bushfire management. Species should be chosen from the Vegetation guidelines for stormwater biofilters in the south west of Western Australia (Monash University, 2015), or similar publications related to bioretention systems and local riparian networks.

10.2 COLLIE RIVER ECOSYSTEM PROTECTION AND ENHANCEMENT

The Collie River and its associated foreshore wetlands and floodplain is contained within a foreshore reserve separate to the current subject land. This includes the Eelup/Elbow Conservation Category Wetland. This foreshore area was annexed from the original landholding as part of earlier development processes, with this area now included in the Regional Open Space. The foreshore areas are now also contained within the Kalgulup Regional Park, with the Eelup/Elbow Wetland to be vested in the Conservation and Parks Commission.

All development, including drainage infrastructure is set a minimum of 50m from the mapped Conservation Category wetland boundary, to provide a buffer to this ecosystem. The setback to the river itself is over 300m at its closest point, which provides a large foreshore floodplain for ecological functioning. These areas are to be managed so that they complement and enhance the ecological functioning of the River and associated wetland systems. This will include weed control, planting of native species and management of stormwater within the ROS areas and road reserves, with associated creation of new riparian habitat.

Revegetation and regeneration of the foreshore area is expected to be slow and non-uniform with some areas over time likely to establish into low open forest. As a precautionary approach and in line with the bushfire management plan the foreshore area and adjacent ROS are classified as a Class A forest, with the development setting infrastructure back accordingly.

The POS strip provides a further distance buffer between the foreshore area and the future houses and roads, with this area be predominately planted with appropriate locally native species.

To further guide management and ecological principles to be implemented within the foreshore reserve, a Foreshore Management Plan will be developed at detailed design stage. The Foreshore Management Plan will be consistent with the bushfire management strategy for the subject land and take into account the relevant management practices outlined within the Kalgulup Regional Park Management Plan. This will include liaison with the Department of Biodiversity, Conservation and Attractions as to appropriate revegetation and other works.

11 MONITORING & MAINTENANCE

Monitoring within the subject land and the contingency actions to address any related problems are shown in Table 8. The following is a summary of the monitoring that has been and will be undertaken in relation to water management.

11.1 PRE-DEVELOPMENT

11.1.1 Groundwater

Pre-development monitoring of groundwater levels was undertaken between 2009 and 2010 by Calibre. The full details can be seen in the previous groundwater sections.

11.1.2 Surface Water

Surface water monitoring for water quality is not considered necessary, given there are no natural flowing water systems or expressed groundwater, associated with wetlands, found within the current subject land.

11.2 CONSTRUCTION PHASE

Installation of drainage control structures ahead of the construction phase of the development will be utilised. This will include the use of Water Sensitive Urban Design techniques such as sediment curtains, hydro mulching and temporary detention basins to maintain the quality of the water leaving the development area during construction. The bioretention gardens and basins will be monitored for any damage, including compaction, sediment build up, oils, and litter during and at the completion of construction to ensure the structure's effectiveness is not diminished. Sediment and litter on roads will be monitored, with removal completed as necessary with street sweeping.

To minimise issues with degradation of vegetated treatment systems, it is recommended that planting should be delayed until the risk of high sediment loads has passed. The systems should be stabilised with geofabric or similar in the interim. Once the risk has passed, the accumulated sediment and geofabric should be removed and the system vegetated.

Construction monitoring and maintenance regimes are to be developed and finalised within the relevant UWMP.

11.3 POST- DEVELOPMENT

11.3.1 Groundwater

Post-development groundwater monitoring is to be undertaken for a further 2 years after 80% completion of subdivisional works. Monitoring is to be monthly for levels and quarterly for quality.

Trigger values set at 10% above the pre-development rates will be set in place. Should these trigger values be reached, contingency actions will be undertaken to rectify the issue.

Indicative monitoring locations are shown on Figure 13. Pre-development bores located within the Collie River floodplain will be utilised in the post-development monitoring program. The exact location and monitoring regime is to be determined as part of the relevant UWMP's. These locations will be determined in consultation with the relevant entity in which he land will be vested or managed and will include the Shire of Dardanup and the Department of Biodiversity, Conservation and Attractions.

(Appendix ORD: 12.2.1C)

11.3.2 WSUD and other infrastructure

Performance monitoring of WSUD elements will be completed to ensure the system is working effectively. Indicators will be used as a cost effective method to evaluate the adequacies of WSUD performance. It can be assumed that if the WSUD elements operate in accordance to design, then the desired management objectives are being met.

The key WSUD elements to be monitored will include:

- Ensuring the inlet and outlet structures are free of debris through regular removal of material and control of catchment generated debris eg. street sweeping, leaf removal, appropriate locating of rubbish bins to reduce rubbish:
- Vegetative cover of the systems is maintained;
- Sediment build up is not impeding the functionality (note, design vegetated systems so that excessive short term sediment in early stages is not an issue eg do not plant until high risk sediment movement has passed);
- Erosion is not present;
- Soils are not compacted;
- Litter is removed;
- Excessive hydrocarbons are not present in the system;
- Weeds controlled:
- Infiltration of stormwater is maintained to reduce standing water (in non-wetland systems);
- Flows are not excessively detained;
- Stormwater pipes are flowing freely;
- o Gross Pollutant Traps are functioning and are not blocked; and
- Subsoil pipes are flowing freely (should they be required in localised areas).

Compared to traditional engineered structures for stormwater runoff management, the WSUD elements require different

routine maintenance and these are generally of a landscape maintenance nature. The most common maintenance is the removal of weeds, debris and siltation. The most time intensive period of maintenance for a vegetated WSUD system is during plant establishment (which typically includes two growing seasons), when supplementary watering, plant replacement and weeding may be required. The WSUD elements will be constructed and utilised in different stages so that the functions of the WSUD elements are protected from elevated pollutant loads generated from a developing catchment.

It is recommended that vegetated WSUD elements are monitored by personnel with floristic knowledge and/ or qualifications and be capable of identifying evasive species within the natively vegetated WSUD systems. Furthermore, personnel in charge of monitoring should have a good understanding of principles and the functional design of the WSUD elements and the treatment system. The maintenance activities prompted through monitoring activities will generally require coordination between landscape and civil services.

The pit and piped network will also require maintenance to ensure they continue to function as designed. This will include rodding, removal of sediments and other debris, as well as the replacement of broken components due to general longterm corrosion and wear.

Maintenance inspections should be conducted after significant storm events (mobilised sediments and coarse material). Inspections should focus on ponding time for the different systems, unequal surface flow distribution and scouring.

A key focus should also be on the control of litter and sediment that is often generated during the house/building construction phase. This is the most common time when systems are degraded or fail, due to large volumes of pollutants such as nonbiodegradable litter, cement fines, direct vehicle compaction, sand movement and other sedimentation issues. Compliance aspects will need to be discussed with the Local Authority, so that rectification of the source problems can be achieved.

11.4 REPORTING

All information collected from the monitoring programs should be recorded and provided in a report, prepared by the developer, to the Department of Water and Environmental Regulation and Local Government. The report will compare monitoring results with target design and performance criteria to ascertain what, if any, actions may be required, and will provide ongoing assessment of the suitability of monitoring and reporting strategies. If a trigger value for a contingency action is reached, a more detailed report on the occurrence, its impact and proposed action to prevent recurrence is to be compiled by the developer and submitted to the Local Authority and Department of Water and Environmental Regulation. After 2 years of monitoring for the relevant Stage by the developer, the local authority will become responsible for any further monitoring they wish to undertake.

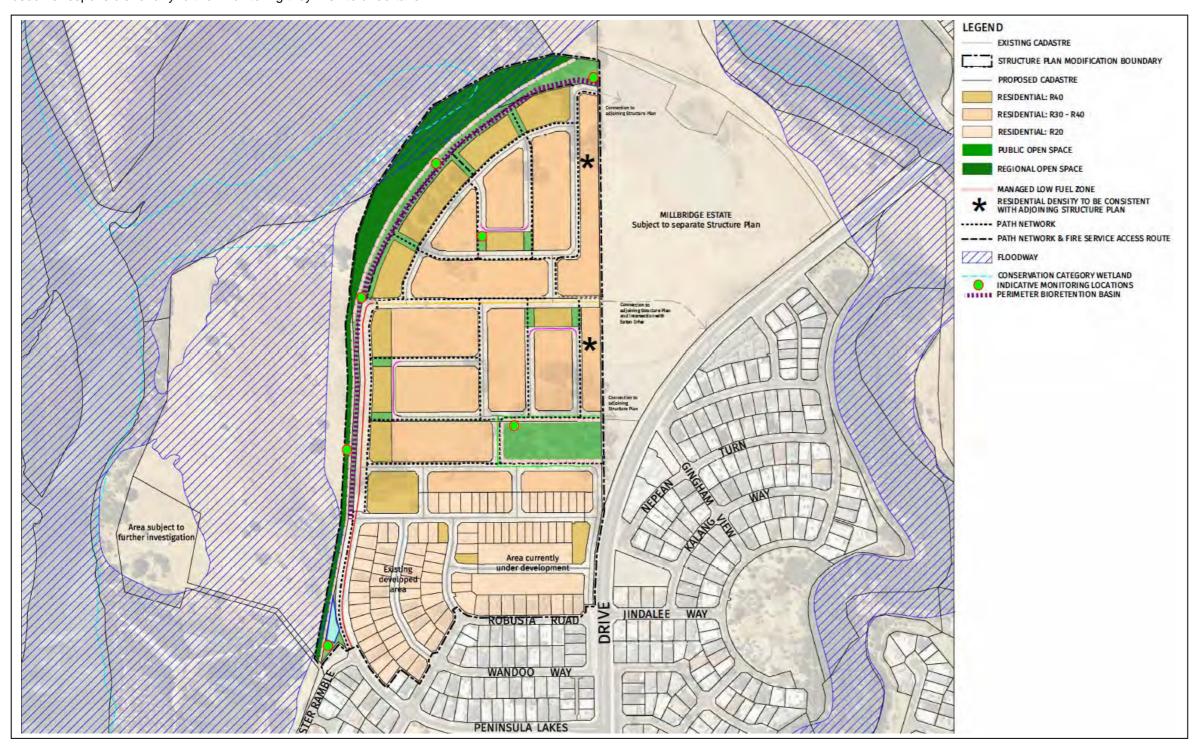


Figure 13 Post development Monitoring

Table 8 Monitoring and Maintenance Schedule

Function	Item to Monitor	Purpose of Monitoring	Trigger for Immediate Action	Maintenance Action Required	Monitoring Frequency	Responsibility
	Structural Effectiveness (inlets, traps and outlets)	Inspection for debris, litter and sediments surrounding structural components.	Debris, litter or sediments causing blockages or impairing functions.	Remove any debris or blockages. Inspect system for any erosion related issues.	Every 3 months	Developer until handover to Council
	Erosion	Inspection for erosion.	Presence of severe erosion or erosion impairing functions.	Investigate, identify and rectify the cause of the erosion. Replace filter media as required.	Every 3 months	Developer until handover to Council
	Sediment Build Up	A) Inspection for sediment accumulation within pits, on the surface of swale systems and within soakwells. B) Inspection of sediment build up on roadways.	A) Accumulation of large volumes of sediments in swale or on the surface or greater than 50% of the swale/basin's depth. B) Accumulation of sediment on roadway	A) Investigate, identify and stabilise cause of sediment source. Remove accumulated sediments and replace filter media or plants removed. B) Street sweeping to remove sediment	Every 3 months	Developer until handover to Council
Drainage Management Systems	Weeds	Inspection for the presence of weeds.	Weeds are noxious or highly invasive or if weeds cover more than 25% of area.	Manual removal or targeting herbicide application, with waterway approved products.	Monthly	Developer until handover to Council
	Plant Condition	Inspection of vegetation health and cover, and presence of dead plants.	Plants dying or a pattern of plant deaths.	Investigate cause of plant deaths and rectify. Infill plantings may be required.	Monthly	Developer until handover to Council
	Organic Litter	Inspection for the presence of organic litter (e.g. leaves) on surface.	Litter coverage is thick or extensive, or detracting from the visual appearance of the system.	Investigate source of litter and undertake appropriate response, e.g. alter landscaping maintenance practices, community education). Remove litter.	Monthly	Developer until handover to Council
	Rubbish/Litter	Inspection for the presence of litter.	Litter is blocking structures or detracting from the visual appearance of the system.	Identify source of litter and undertake appropriate responses. Remove litter.	Monthly	Developer until handover to Council
Groundwater	Pre development levels	To acquire baseline for wetland protection and to allow for effective post development management strategies. Eg fill levels	NA	NA as pre development base line.	Monitoring has been completed to DWER requirements already.	Developer (has already undertaken monitoring).
Surface Water/Wetlands	Wetland revegetation work	Determine if revegetation has been successful.	A) Death of plants above 20%. B) Weed invasion at a level where it hinders native regeneration, species composition maintained.	A) Replanting of native vegetation, irrigation if necessary. B) Removal of weeds,	Every 3 months (for 2 years after practical completion)	Developer until handover to Council
	Levels pre development	Provides baseline for wetland and drain water levels	Extreme levels of flooding	Investigate and identify source of flooding. Undertake appropriate responses to rectify the flooding if not due to extreme rainfall.	Monthly for at least 1 year	Developer
	Levels post development	Allows for assessment of wetland and drain levels in comparison to predevelopment state	Results above agreed upon standards and or 10% variation from pre development monitoring results	Investigate and identify source of change. Undertake appropriate responses to rectify the level change if not due to extreme weather conditions.	Quarterly for two year after final stage of construction.	Developer until handover to Council

12 IMPLEMENTATION PLAN

The developer is committed to undertaking the water management strategies outlined in this report. Implementation of the strategies outline in this report will be undertaken prior to developmental works, as part of subdivisional works and into the post development phase. To assist with this implementation, an Urban Water Management Plan (UWMP) will be completed as part of subdivisional works. The UWMP will provide more detailed information on the relevant implementation of the water management aspects. This is to include:

- Detailed WSUD treatment design, including full calculations to rationalise water quality treatment sizing and location.
- Clearly identify geotechnical requirements for imported fill to meet assumptions of surface and groundwater modelling.
- Prepare detailed lot stormwater management requirements for the proposed residential and commercial lots.
- Identify interim management measures for stormwater and groundwater if necessary.

The following is a summary of activities and responsibilities that are to happen as part of the remaining development process.

COMMITMENTS BY DEVELOPER

- Construction of the bioretention systems.
- Construction of overall drainage system.
- The maintenance of the bioretention systems until handover to the Council.
- Appropriate fill used across the site, with in situ testing of compacted imported fill to be undertaken to confirm modelling assumptions.
- o Provide lot owners with information regarding Waterwise practices inside and outside the house.
- Provide lot owners with information regarding nutrient wise practices and designs for gardens.
- o Produce and implement a landscaping plan based on Waterwise and Nutrient wise principles.
- o Undertake further detailed drainage analysis of the site as a part of subdivisional work.
- The preparation of Urban Water Management Plans as part of subdivision conditions.
- Monitoring of the site's water as outlined in the monitoring regime.
- Sediment control during construction.
- Preparation and implementation of Foreshore Management Plan for adjacent Collie River foreshore reserve.

COMMITMENTS BY DEPARTMENT OF BIODIVERSITY, CONSERVATION AND ATTRACTIONS

- Review the Foreshore management plan and provide advice as required.
- Management of foreshore areas in combination with Shire.

(Appendix ORD: 12.2.1C)

COMMITMENTS BY THE SHIRE OF DARDANUP

- Responsibility for the maintenance of the stormwater system installed, after a mutually agreed upon time period
 after construction. The Shire will monitor and maintain the system as per their asset management programs and
 legal requirements.
- o Ongoing encouragement of Waterwise and nutrient wise practices for residents.
- o Approval of drainage design and other water management works.
- o Approval of building licences including appropriate finished floor levels.
- Management of foreshore areas in combination with DBCA.

COMMITMENTS BY DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION

- Assist the Shire of Dardanup in relation to assessing the UWMP as required.
- o Review the Foreshore management plan and provide advice as required.

COMMITMENTS BY THE WATER CORPORATION

- Responsibility for the management of the sewer system.
- Responsibility for the management of the potable water supply to residents.

LOT OWNERS

Implement on lot water management in keeping with the guidelines set out in the UWMP.

13 REFERENCES

- Australian and New Zealand Environment and Conservation Council (ANZEEC), 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1: The Guidelines
- Standards Australia, 2005, AS 2419.1-2005 Fire Hydrant Installations
- Department of Water and Environmental Regulation, 2007, Stormwater Management Manual for Western Australia, Perth
- Department of Water and Environmental Regulation, 2009, Identification and Investigation of Acid Sulfate Soils and Acidic Landscapes, Perth
- Department of Water and Environmental Regulation, 2015, Geomorphic Wetland Mapping of the Swan Coastal Plain Department of Water and Environmental Regulation, 2010, Leschenualt Estuary Water Quality Improvement Plan, Bunbury Draft Country Sewerage Policy (2003). WA State Government.
- Geological Society of Western Australia (1986) Bunbury-Burekup Urban Geology Mapping Golders, 2005, Lot 9004 Geotechnical Investigation and Preliminary Acid Sulfate Soil Study
- Loh, M. and Coghlan, P (2003) Domestic Water Use Study In Perth, WA 1998 2001. Water Corporation. SKM (2007) Parkridge Estate Flood Assessment
- TME Calibre (2010) Parkridge Estate Further Geotechnical Investigation
- Western Australian Planning Commission, 2008, Better Urban Water Management, Perth

(Appendix ORD: 12.2.1C)

Appendix C GEOTECHNICAL REPORT

(Appendix ORD: 12.2.1C)

CONTACT US

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APPENDIX E | BUSHFIRE MANAGEMENT PLANS

(Appendix ORD: 12.2.1C)





BUSHFIRE MANAGEMENT PLAN Parkridge Estate, Robusta Rd, Eaton

CLIENT: Harley Dykstra

SITE LOCATION: Robusta Rd Eaton

DATE: 24/02/2025

SHIRE/CITY: Shire of Dardanup

FIRE CONSULTANT: David Deeley

CLIENT CONTACT # Kylie Shaw

BFW FILE #: 20241206

VERSION #: 1.0



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Bushfire Management Plan Coversheet



This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details					
Site address / Plan reference:	Parkriage Estate Structure Plan				
Suburb:	Robusta Street Eaton	State:	WA	Postcode:	6330
Local government area:	Snire of Dardanup				
Description of the planning proposal:	Multil-lot structure plan				
BMP / Reference number:	20241206	Version:	1.0	Date of issue:	02/25
Client / Business name:	Harley Dykstra				

Reason for referral to DFES ¹	Yes	No
Has the BAL been calculated by a method other than Method 1 as outlined in AS3959? (Tick <i>No</i> if AS3959 Method 1 has been used to calculate the BAL)		✓
Have any of the bushfire protection criteria elements been addressed through the use of an outcomes-based approach?		✓
Strategic planning proposal (including rezoning applications)		✓
Local planning scheme amendment containing supplementary provisions, additional to the deemed provisions for bushfire risk management		✓
Where a bushfire local planning policy, or variation to the acceptable solutions or the APZ is proposed		✓
Where there is a conflict of opinion between the decision maker and proponent		✓
Expert technical advice on bushfire behaviour, emergency management, or other occasions where bushfire technical advice is required to support planning decision-making		✓
Expert technical advice on bushfire matters referred to State Administrative Tribunal (SAT) or Development Assessment Panel (DAP)		✓
Comments on future buildings' compliance with FES Commissioner's operational requirement guidelines		✓
Decision maker discretionary referral, (e.g. renewable energy, hazardous materials, vulnerable land use)		✓

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name David Deeley	Accreditation Level BPAD Level 2	Accreditation No. 37575	Accreditation Expiry September 2025
Company Bush Fire Works		Contact No. 0438 527 446	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct.

Signature of Practitioner Date 24/02/2025

¹ For more information please refer to DFES Referral to DFES Checklist

Document control

Property address: Parkridge Estate Robusta Road Eaton WA 6232

Lot size: 24.75 ha (current development stage).

Landowner: C/- Harley Dykstra
Development Application ref: TBA

Prepared by: David Deeley

Client:

Report version	Purpose	Author/reviewer and accreditation details	Date submitted
Draft 1.0	Document for review	Susan Deeley	23/02/2025
Final 1.0	Edits and lot layouts modified	David Deeley	24/02/2025

I hereby declare that I am a BPAD Accredited bushfire practitioner.
Accreditation No. 37575

Signature

Date 24/02/2025

Disclaimer

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959 – Building in Bushfire prone Areas, WAPC / DFES Guidelines for Building in Bushfire Prone areas (State Planning Policy 3.7) and CSIRO's research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

Section 1: Proposal Details

This Bushfire Management Plan is for a modification to the previously-approved Parkridge Estate Structure Plan. Earlier stages are either completed with established residential areas or currently undergoing development after approval. The current stage is the final 27.45 ha of the Parkridge development. It is proposed to create a range of lots including areas of R20, R30-40 and R40. Areas of POS and ROS have also been identified and are to be set aside (Figure 1). The proposed development is surrounded by the Collie River foreshore reserve and floodway on its northern and western boundaries and these areas contribute most of the ROS. The Millbridge Estate structure plan is currently under review and joins Parkridge Estate development along its eastern boundary.

The subdivision design reflects previously-approved regional and local structure plans with direct access onto Eaton Drive/The Boulevard, a significant regional connector that offers egress to multiple destinations. This stage of Parkridge Estate also connects to Glenhuon Boulevard which provides a second egress option south.

The development area has been classified a bushfire prone because of the unmanaged grazing pastures and remnant forest and woodland scattered through the development area (Figure 2). The topography of the site is generally flat but the NW portion of the development area slopes downward to the NW and the W toward the Collie Rive (Figure 3).

The property has been previously cleared of much of its original vegetation which has been replaced by pastures (G. Grassland 26). There are plots of A. Forest and B. Woodland to the SE and stands of A. Forest in the NW of the property associated with the Collie River floodway.

It has been determined that future dwellings will be able to achieve ratings of ≤BAL-29. This includes modest boundary setbacks for several lots in close proximity to the areas of POS around the NW boundary. The 'Acceptable Solutions' described in this BMP will ensure bushfire risks are appropriately managed and that the development conforms to all relevant policies and standards, as required by SPP 3.7 for an FDI of 80, including the latest WAPC Guidelines Version 2024.

This BMP document and the recommendations contained within it are aligned to the following:

- Consistency with SPP 3.7 and the planning requirements for local government;
- Identification of bushfire risks using vegetation types and slopes as in AS3959 2018;
- Identification of assets at risk including: life, property, infrastructure and the environment;
- Identification of bushfire risk mitigation measures as acceptable solutions within SPP 3.7 and the WAPC Guidelines Version November 2024;
- Allocation of responsibilities to persons / entities for the implementation of recommendations and management measures; and,
- Compliance with the Shire of Dardanup's firebreak and fuel hazard reduction notice (Appendix 3).

Section 2: Environmental Considerations

The current stage of the development of 27.45 ha is to occur within largely cleared grazing paddocks. There is a requirement to remove or modify during subdivision up to 3.49 ha or 77.4% of the 4.52 ha of remnant A. Forest vegetation remaining within the development boundary and 1.07 ha or 77.7% of the 1.37 ha of remnant B. Woodland remaining.

Subsection 2.1: Native Vegetation – modification and clearing

A search of DBCA on-line mapping resources found no priority fauna, flora or TECs within the area. This included Threatened and Priority Flora (DBCA-036), Threatened and Priority Fauna (DBCA-037) and Threatened Ecological Communities (DBCA-038). The scale of clearing or modification of A. Forest vegetation is considered minor and is therefore not considered as a constraint to the subdivision proceeding.

Subsection 2.2: Re-vegetation/Landscape Plans

Any future re-vegetation or landscaping within the nominated APZs will need to be to Low-threat specifications of Schedule 1 (Appendix 1). Any future re-vegetation or landscaping elsewhere within either lot will need to be consistent with the Shire of Nannup's bushfire risk compliance notice (Appendix 3)

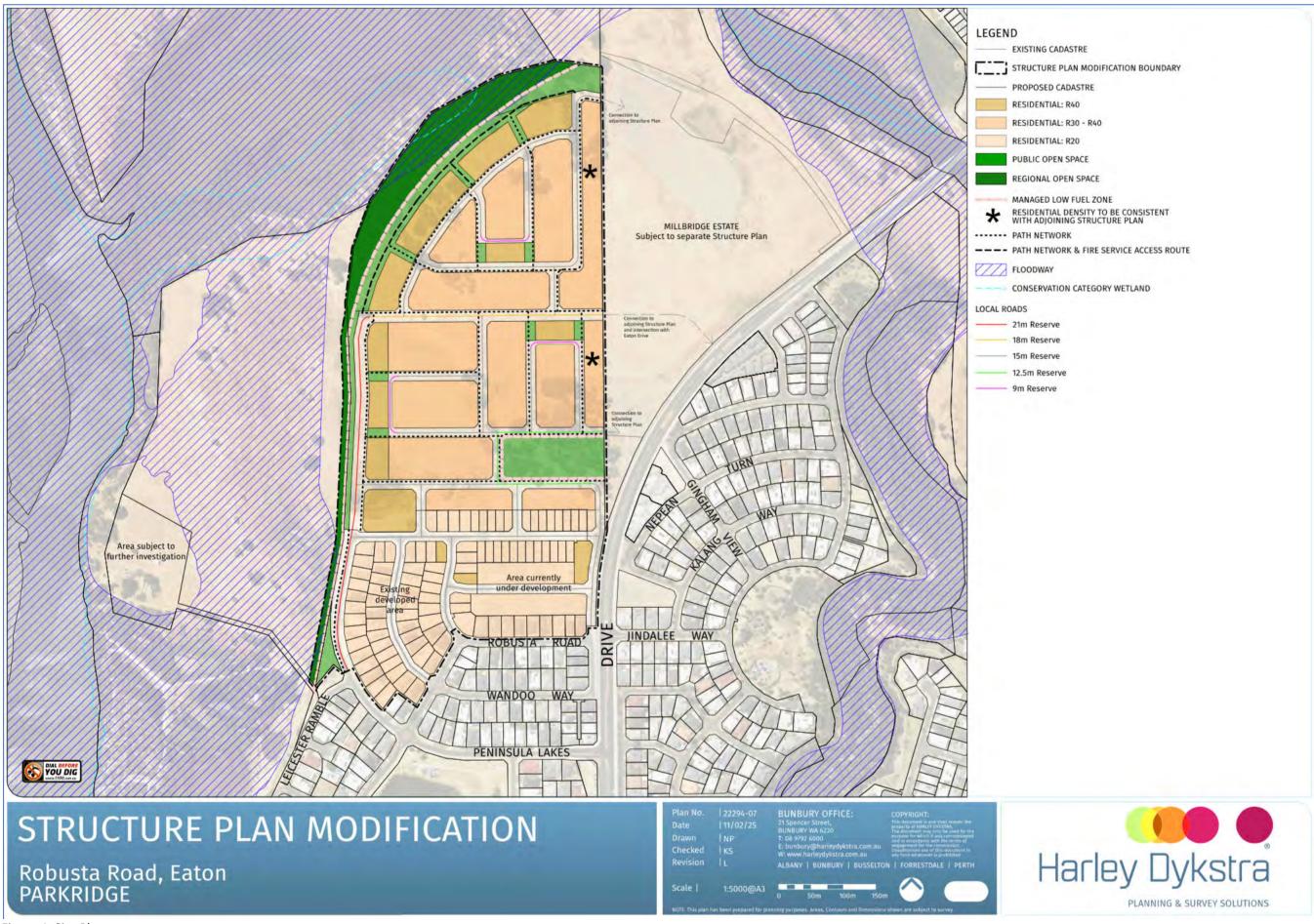


Figure 1 Site Plan

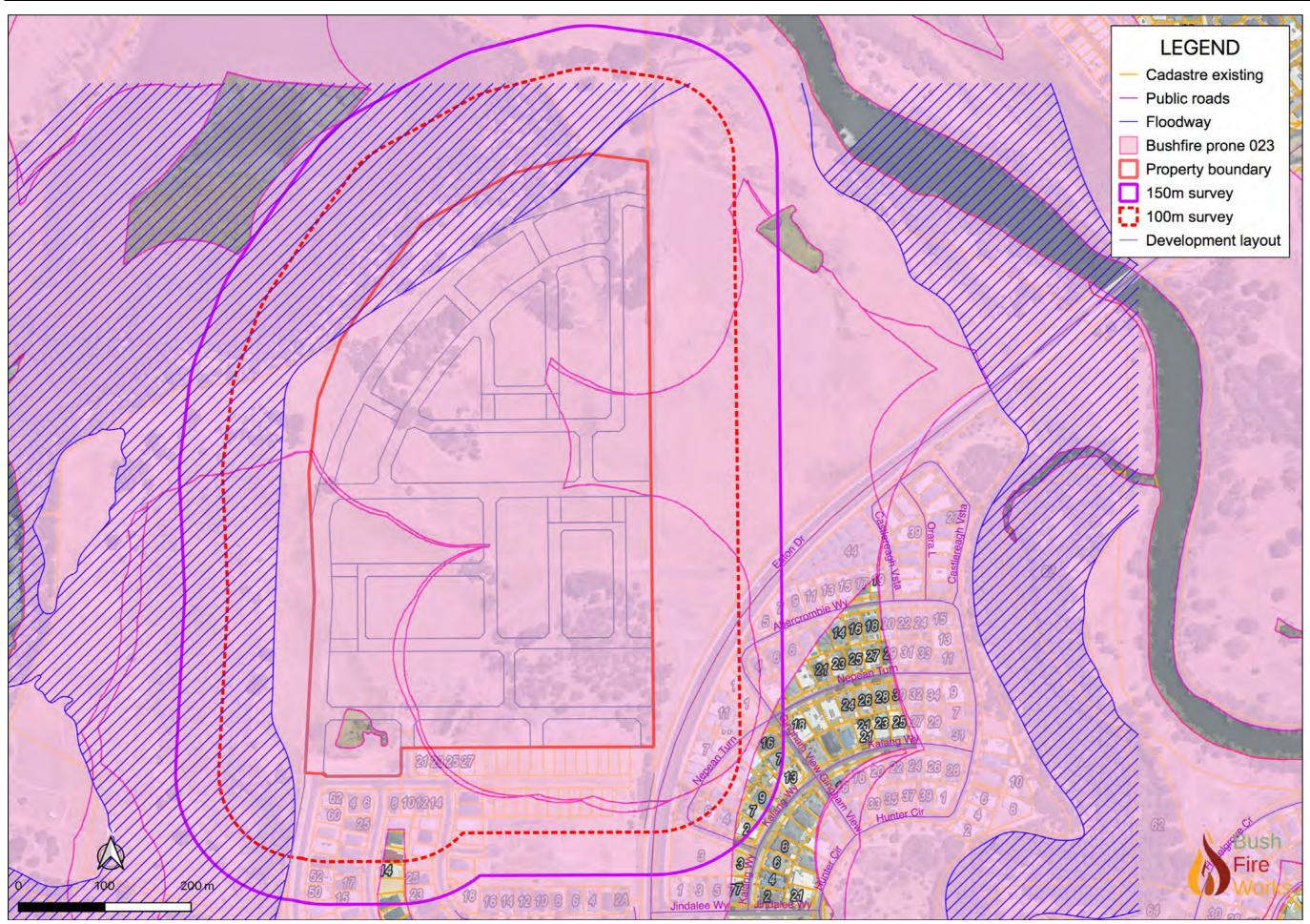
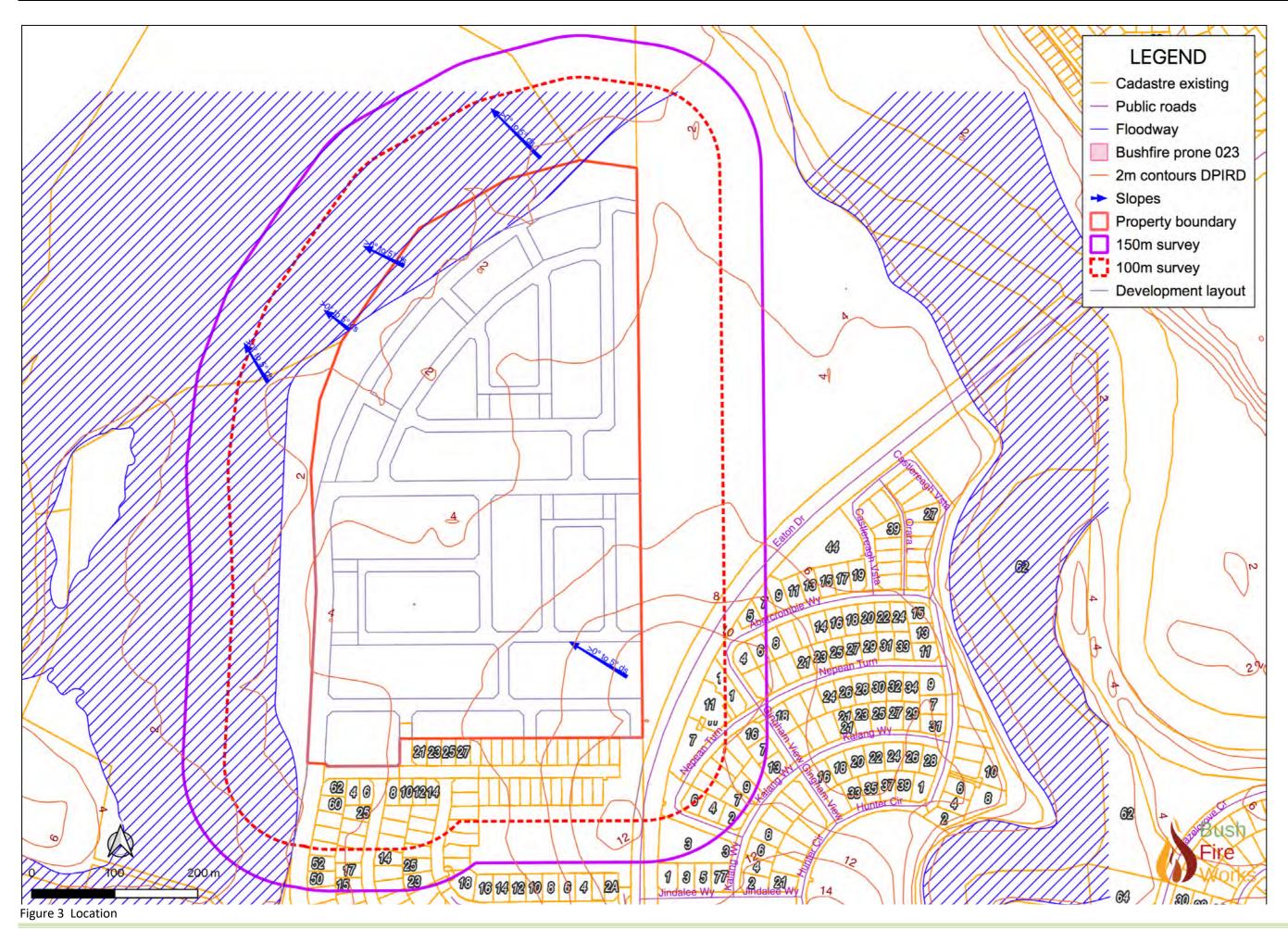


Figure 2 Bushfire prone areas



Section 3: Bushfire Assessment Results

A site visit and Bushfire Attack Level assessment were completed on the 24th January 2025. Photo points were established across the site (Figure 4, Section 7).

Subsection 3.1: Simplified BLA

YES The subject site is within a kilometre of an urban area as a suitable destination.

YES The road pattern from the development to the closest urban area is direct.

YES The majority of vegetation is managed Class G Grassland, within the broader landscape assessment area.

YES The planning proposal is exposed to two or less aspects with external bushfire hazards (excluding Class G Grassland).

The development area as Broader Landscape Type A.

Subsection 3.2: BAL Contour Map Inputs

All vegetation within 150 m of the project site has been classified (Figure 5) in accordance to AS 3959:2018, Construction of Buildings in bushfire-prone areas Table 2.3 and the WA Department of Planning Visual guide for bushfire risk assessment in Western Australia. Seven (7) different classes of vegetation were recorded (Table 1), including:

- Plot 1 A. Forest 03 (Open forest 03) >0° to 5° ds, to the NW of the subject property associated with the Collie River floodway;
- Plot 2 A. Forest 03 (Open forest 03) flat land, to the NW and SE of the subject property;
- Plot 3 Class B. Woodland 05 (Woodland) upslope/flat land, to the SE of the subject property;
- Plot 4 D. Scrub (Open scrub 14) upslope/flat land, two small stands in the S;
- Plot 5 Class G. Grassland (Tussock grassland 22) flat land, to the NW of the property associated with the Collie River floodway;
- Plot 6 Class G. Grassland 26 (Sown pasture) upslope/flat land, across much of the subject property and within the cleared areas surrounding it;
- Plot 7 Excluded (Clause 2.2.3.2e) as being non-vegetated areas.

Table 1 Pre-development BAL assessment

Plot	Vegetation Classification	Effective Slope	Separation (m)	BAL
1	A. Open forest 03	>0° to 5° ds	0	BAL-FZ
2	A. Open forest 03	Upslope / Flat	0	BAL-FZ
3	B. Woodland 05	Upslope / Flat	0	BAL-FZ
4	D. Open scrub 14	Upslope / Flat	0	BAL-FZ
5	G. Tussock grassland 22	Upslope / Flat	110	BAL-LOW
6	G. Sown pasture 26	Upslope / Flat	0	BAL-FZ
7	Non veg Ex 2.2.3.2(e) N/A N/A		BAL-LOW	
Determin	ned Bushfire Attack Level		BAI -	F <i>7</i>

Determined Bushfire Attack Level	BAL - FZ

Subsection 3.3: BAL Contour Map Outputs

The property is to be fully developed leaving a modest area of POS in the SE corner (Table 2, Figure 5).

Table 2 Post-development BAL assessment

Plot	Vegetation classification	Effective slope °	Current separation (m)	Current rating	Achievable rating	Total separation required (m)
1	A. Tall open forest 03	>0° to 5° ds	0	BAL-FZ	BAL-12.5	62.5
2	A. Open forest 03	Upslope / Flat	0	BAL-FZ	BAL-40*	18
3	B. Woodland 05	Upslope / Flat	0	BAL-FZ	BAL-12.5	62.5
4	D. Open scrub 14	Upslope / Flat	0	BAL-FZ	BAL-LOW	110
5	G. Tussock grassland 22	Upslope / Flat	110	BAL-LOW	-	-
6	G. Sown pasture 26	Upslope / Flat	0	BAL-FZ	BAL-12.5	18
7	Non veg Ex 2.2.3.2(e)	N/A	N/A	BAL-LOW	-	-
8	Low threat Ex 2.2.3.2(f)	N/A	N/A	BAL-LOW	-	-5
Deter	Determined Bushfire Attack Level				BAL-29	& BAL- 40

Note BAL-40*: Lots adjoining Plot 1, A. Forest 03 can achieve BAL-29 with 9 m building setbacks from their WNW boundaries.

Post development BAL contour analysis (Figure 7), confirmed ratings of ≤BAL-29 as being achievable for all lots with APZs contained within respective lot boundaries and modest building setbacks for several lots adjacent to areas of POS in the NW.

Section 4: Identification of bushfire hazard issues

The subject lots are bounded by the Collie River foreshore reserve and floodway to the NW. This represents an 'Extreme' BHL. There are and will be residential areas on all other aspects which will provide adequate egress opportunities in the event of an evacuation and/or bushfire suppression emergency.

The acceptable solutions described in the BMP means the development is able to comply with the Bushfire Protection Criteria.

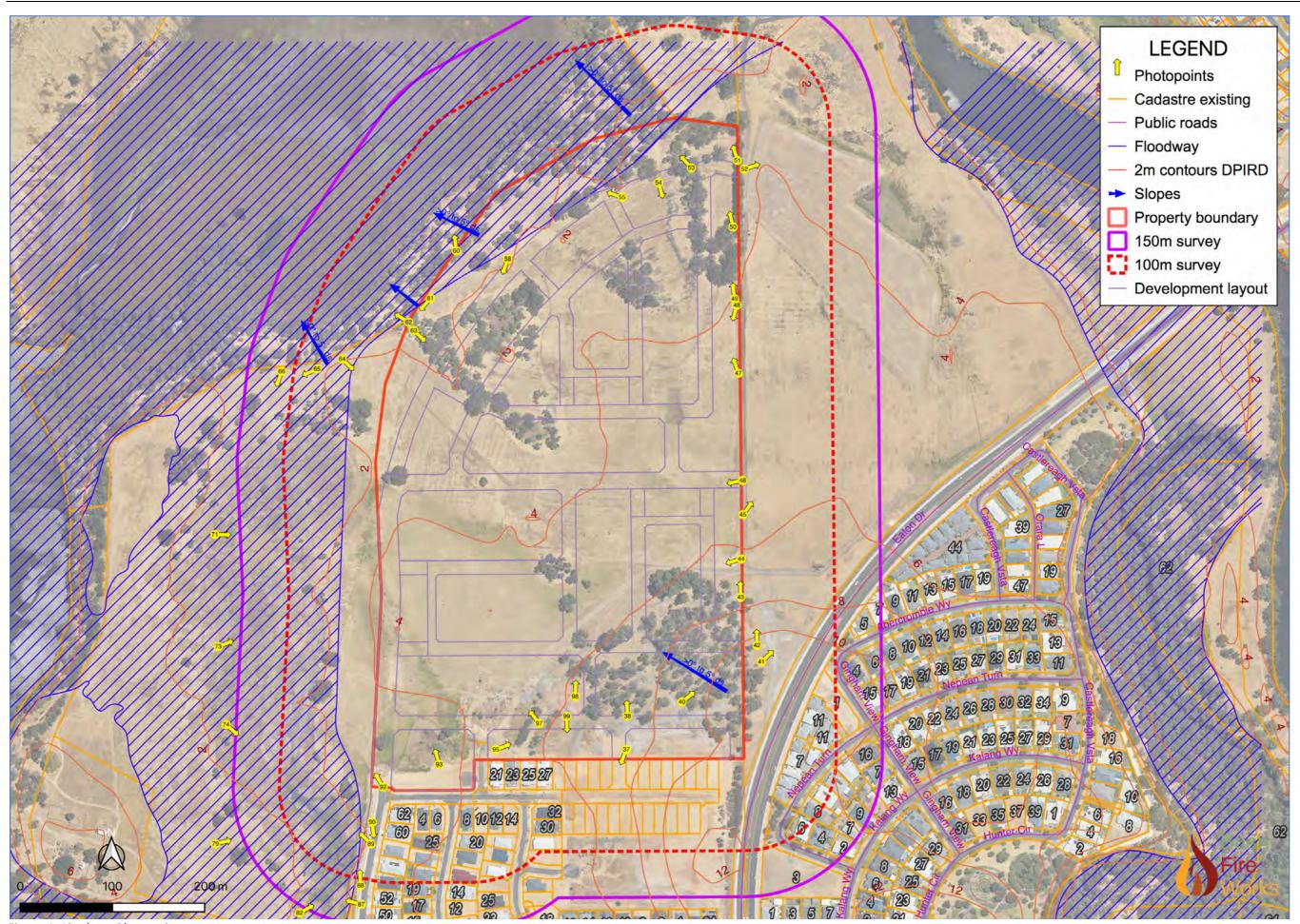


Figure 4 Air photo Photopoints

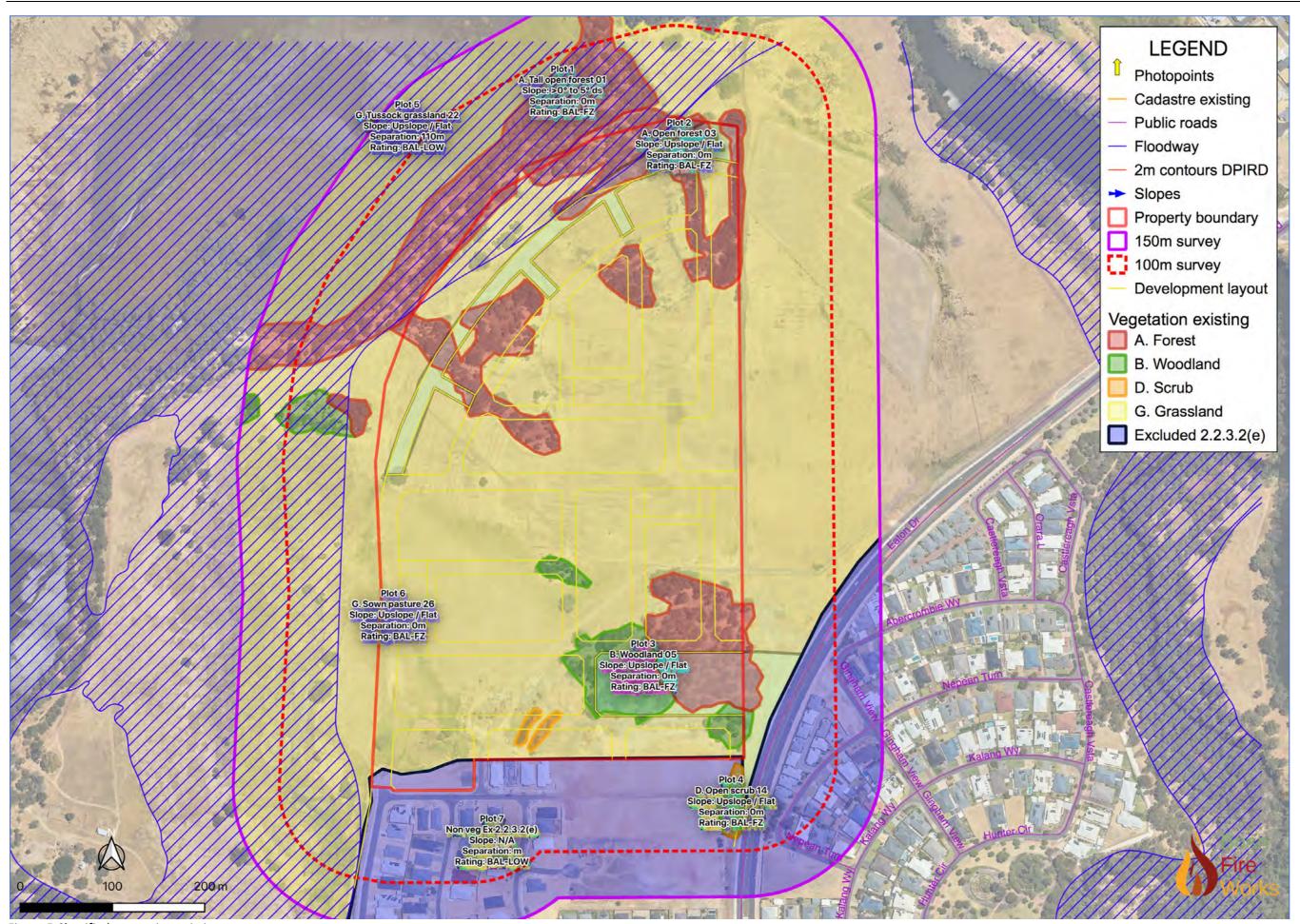


Figure 5 Classified vegetation existing

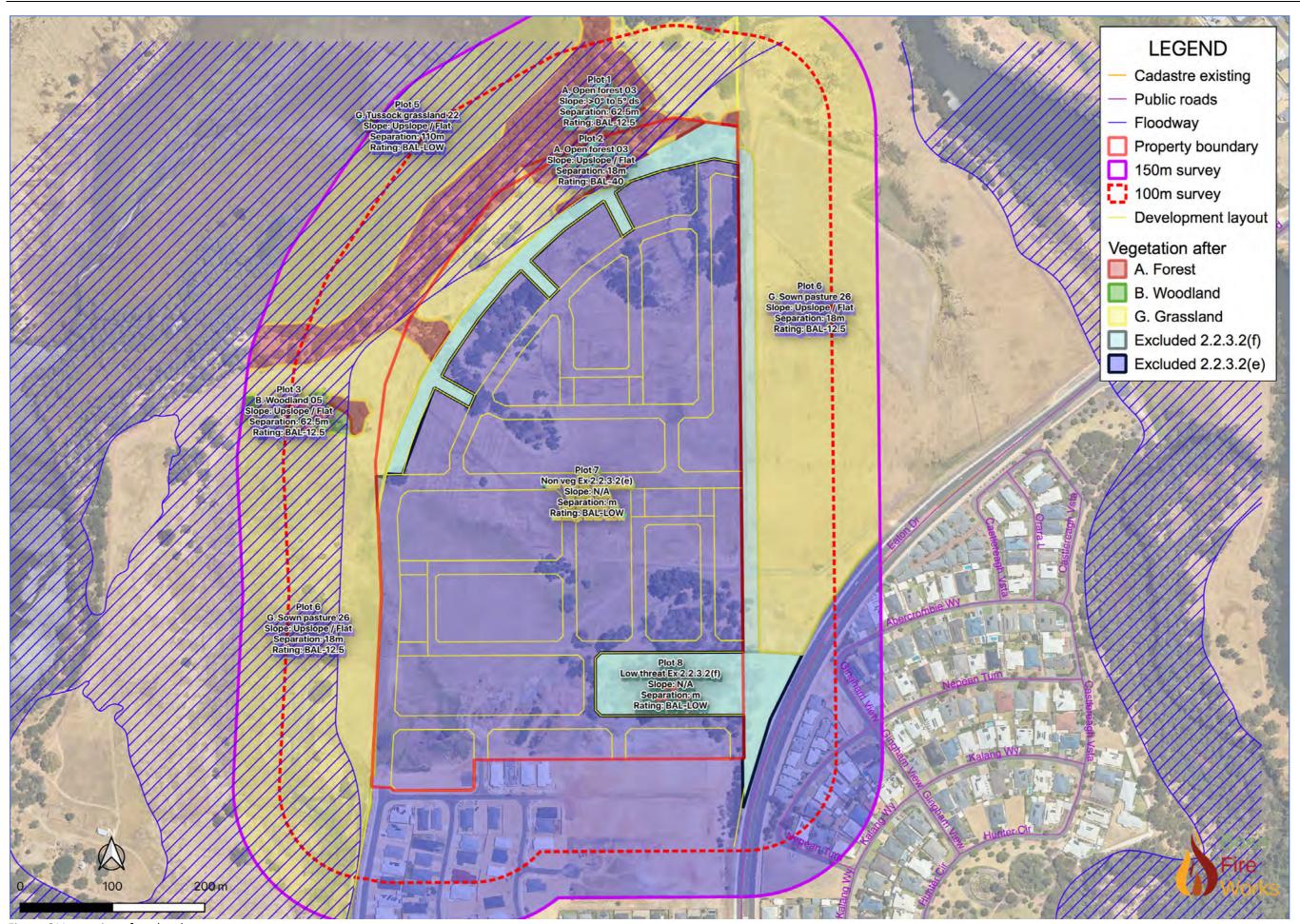


Figure 6 Vegetation after development

Section 5: Assessment against the Bushfire Protection Criteria

Subsection 5.1: Compliance

Bushfire protection	Method of compliance	Proposed bushfire management strategies
criteria	Acceptable solutions	
Element 1: Location	A1.1 Broader landscape type A A simplified BLA analysis (Section 3.1 above) confirmed the development area as Broader Landscape Type A. This meets the intent of Element A1.1.	Access/egress is directly on to the public road network that provides the option of two separate destinations. Scheme water is available.
Element 2: Siting and design	A2.1 Siting and design The proposed development and this BMP is a modification of previously-approved regional and local structure plans. This meets the intent of Element A2.1.	The subdivision layout provides adequate permeability and opportunities for egress to two destinations.
	A2.1 Asset Protection Zone On completion for dwellings built within the nominated lots, ratings of ≤BAL-29 can be achieved. This meets the intent of Element A2.1.	Several lots in the NW and adjacent to the POS areas will require 9 m building setbacks from their front boundaries to provide a separation of 27 m to the A. Forest >0 to 5° downslope within the Collie River floodway such that they will achieve ratings of ≤BAL-29 (Figure 8).
	A2.3 Clearing of native vegetation There is a requirement to remove or modify during subdivision, up to 3.49 ha of remnant A. Forest vegetation remaining within the development boundary. This meets the intent of Element A2.3.	The development area of this final stage of the Parkridge Estate is 27.45 ha and it is to occur within largely cleared grazing paddocks. The loss of native vegetation has been minimised and an area of POS will be retained in the SE including remnant native vegetation.
Element 3: Vehicular access	A3.1 Public roads Public roads within the development will be constructed to the required standards. This meets the intent of Element A3.1.	Public roads will be built to Table 10 column 2 specifications (Appendix 3).
	A3.2 Access routes Multiple access routes are available for all lots. This meets the intent of Element A3.2.	It is anticipated that the Millbridge Estate main entrance onto Eaton Drive and its internal road network will be constructed prior to the time of planned lot sales and dwelling occupation at Parkridge Estate. A slashed buffer along Parkridge's eastern boundary and a temporary EAW to Eaton Dve will be provided in the unlikely event that this does not happen in time (Figure 8). Direct access is also available for all Parkridge lots south, onto Glenhuon Bvd (Figure 8).
	A3.3a No-through roads N/A A3.3b No through road requirements N/A.	There are no non-through roads.
	A3.4 Emergency access routes Existing private and public roads provide adequate emergency access. This meets the intent of Element A3.4.	A temporary EAW to Eaton Dve will be provided should the Millbridge Estate main entrance to Eaton Rd currently being assessed through its structure plan is delayed.

(Appendix ORD: 12.2.1C) Bushfire Management Plan – Complex Development Application

Bushfire	Method of compliance	Proposed bushfire management strategies
protection criteria	Acceptable solutions	
	A3.5a Perimeter road The equivalent of a perimeter road is available. This meets the intent of Element A3.4a.	A fire service access road is to be established at the NW edge of Parkridge Estate along the proposed POS.
	A3.5b Fire service access route This meets the intent of Element A3.4a	A fire service access road is to be established at the NW edge of Parkridge Estate along the proposed POS.
	A3.6 Battle-axe legs N/A Of the 21 proposed lots, three lots require short battle axe legs, necessitated by the subdivision design and the road and parent lot layout. There is no alternative. This meets the intent of Element A3.5.	Three lots (1, 9, & 20), have short battle axe legs from 20 m to 59 m long. Lots 10, 11, 19 and 21 will have shared reciprocal rights of access along the battle-axe legs.
Element 4: Water	A4.1 Identification of future water supply N/A A4.2 Provision of water for fire-	A scheme water supply is available.
	fighting purposes Scheme water is to be provided to all lots to the required standard. This meets the intent of A4.2.	
Element 5: Vulnerable Tourism Land Uses	A5 Provision of Vulnerable Tourism Land Uses N/A	If in the future, any lot was to be changed for Vulnerable Tourism Land Uses, this would need to be addressed during future planning stages.

Subsection 5.2: Bushfire Mitigation Measures

Should the approval of the adjoining Millbridge Estate Development currently being assessed by the WAPC stall for some unforeseen reason, the developer of the Millbridge Estate has provided in-principal support for a 17m-wide managed grass buffer be established and maintained along the Parkridge Estate's eastern boundary so that BAL-29 will be achievable for all lots along said eastern boundary.

Additionally, a temporary EAW will be constructed on the proposed alignment of the main entrance of the two developments, providing direct access onto Eaton Drive (Figure 8). It should connect to at least two Parkridge Estate internal roads thus providing two egress routes out of Parkridge Estate for all lots.

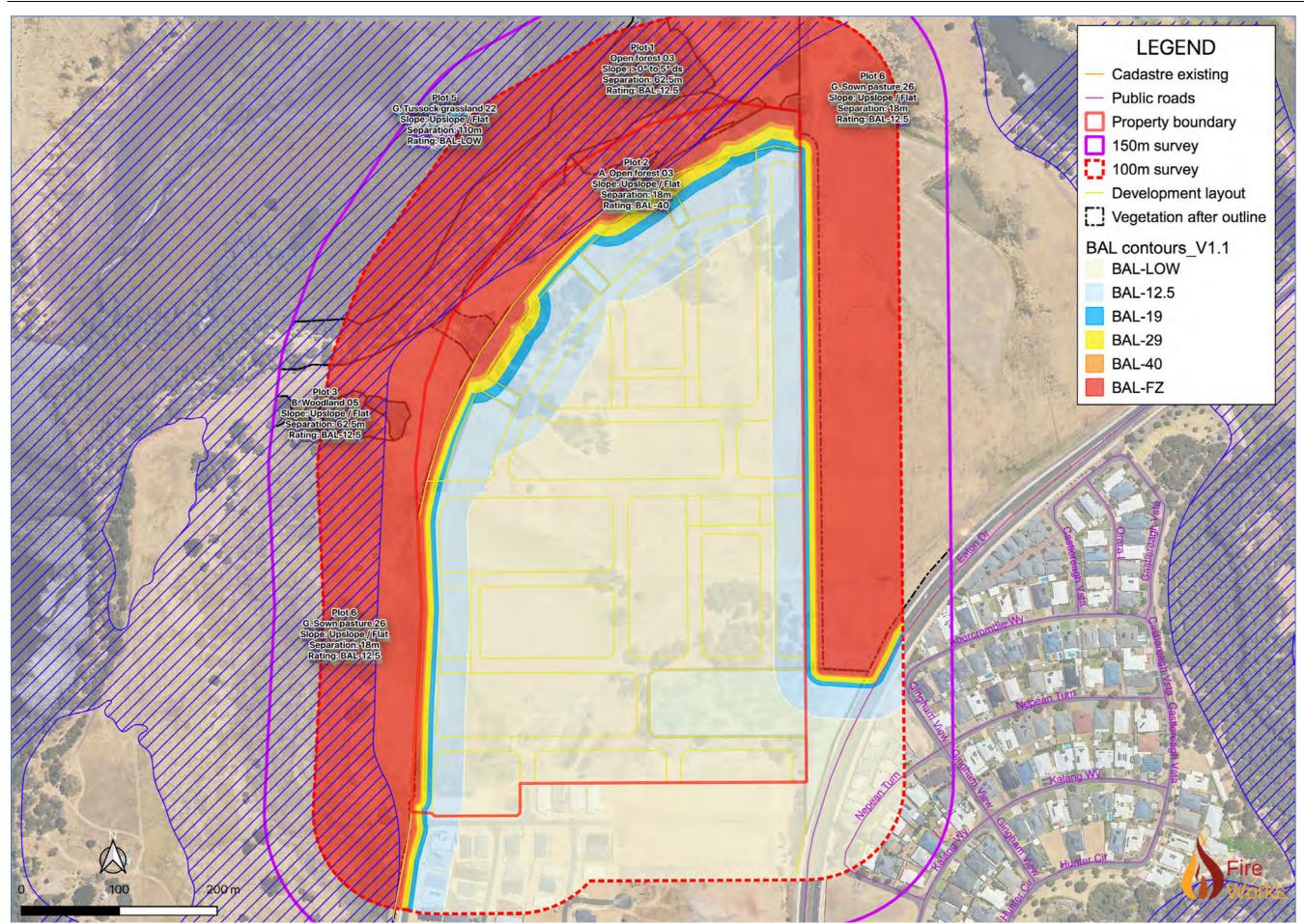


Figure 7 BAL contours after development

Section 6: Responsibilities for Implementation and Management of the Bushfire Measures

DEV	ELOPER/LANDOWNER – PRIOR TO SUBDIVISION, SALE OR OCCUPANCY				
No.	Implementation Action				
1	Provide public roads and cross overs up to the boundaries of all lots to the standard stated in the BMP.				
2	Provide a scheme water connection to all lots.				
3	Manage any vegetation on the subdivided lots in a low-threat condition up to the point of sale and/or hand over.				
4	Provide and manage areas of POS to the standard stated in the BMP.				
5	Establish the Fire Service Access Route around the NW of the development to complete the perimeter road network as stated in the BMP.				
6	Should the WAPC review of the Millbridge Estate Structure Plan be stalled for any reason: 6a Establish a formal agreement with the Millbridge Estate Developer to establish a 17 m- wide slashed grass buffer along the length of the Parkridge Estate eastern boundary. 6b Establish a formal agreement with the Millbridge Estate Developer to construct a temporary EAW on the alignment of the proposed Millbridge Estate main entrance. This should connect to at least two of the Parkridge Estate internal roads and be maintained until such time that the Millbridge Estate main entrance and internal road network have been completed.				

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT							
No.	Management Action						
1	Construct and maintain private driveways up to any dwelling the standard stated in the BMP.						
2	Maintain the Asset Protection Zone (APZ) around any dwelling to the standard stated in the BMP.						
3	Connect to the provided scheme water supply.						
3	Comply with the relevant local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.						

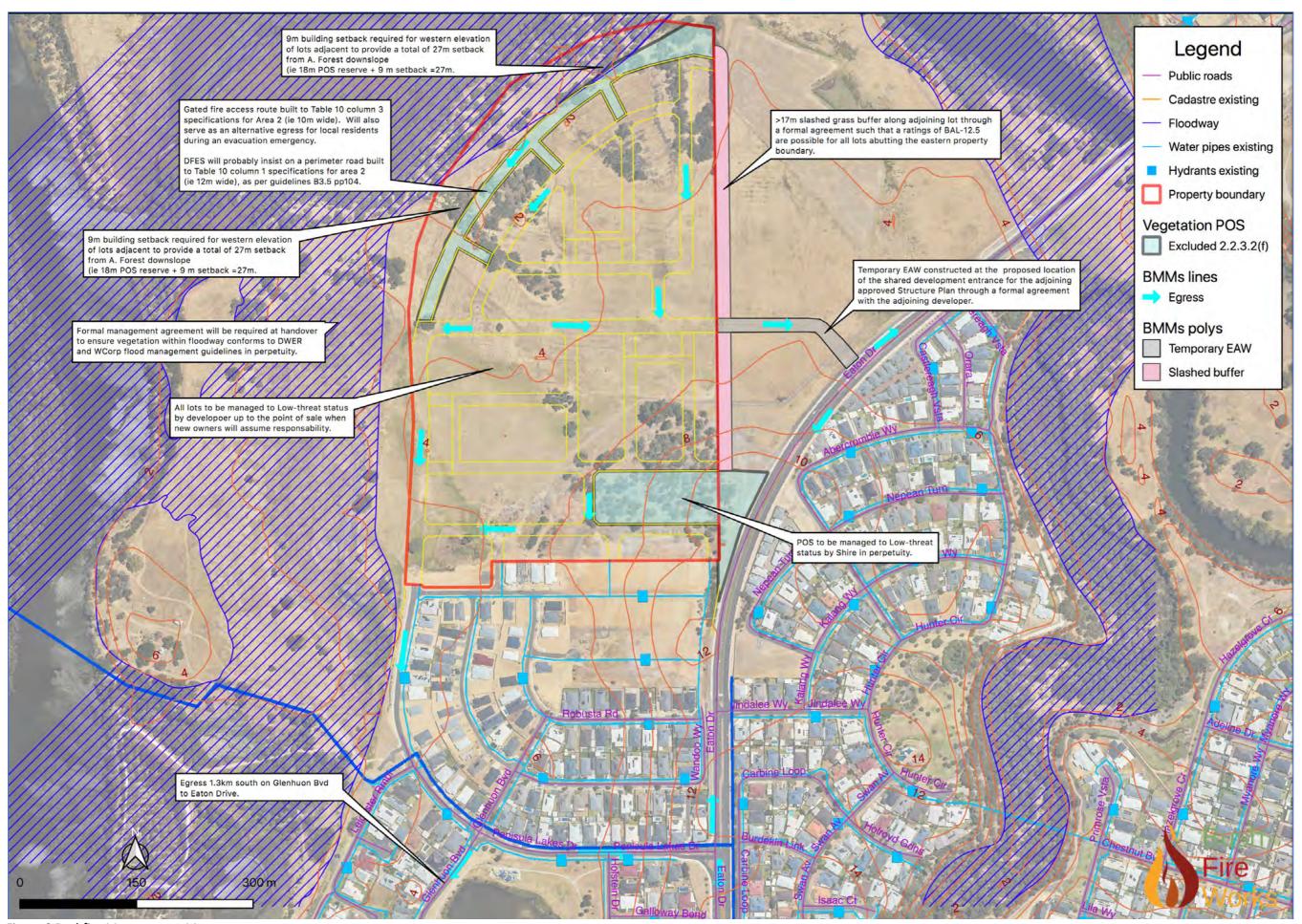
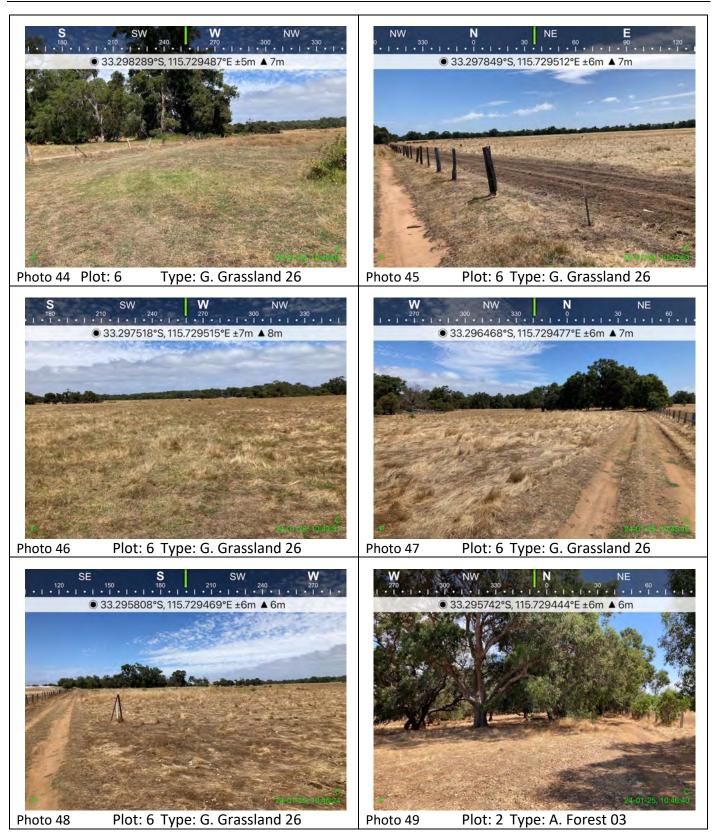


Figure 8 Bushfire Management Measures

Section 7: Photographs



Bushfire Management Plan – Complex Development Application



Bushfire Management Plan – Complex Development Application











Appendices

Appendix 1: Specifications for Asset Protection zones

Table 9: Asset Protection Zone (APZ) technical requirements

OBJECT	REQUIREMENT							
Fences within the APZ	Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).							
Fine fuel load	Should be managed and removed on a regular basis to be maintained as low threat vegetation							
(combustible, dead	Should be maintained at less than two tonnes per hectare (on average) Mulches should be non-combustible such as stone, gravel, shells, rock or crushed mineral earth or wood mulch more than five millimetres in thickness. Trunks at maturity should be a minimum distance of six metres from all elevations of the building							
vegetation matter less than 6 mm in thickness]								
Trees* (more than 6 m in height)								
Shrub* and scrub* (0.5 m to 6 m in height). Shrub and scrub more than 6 m n height are to be treated	Should not be located under trees or within three metres of buildings Should not be planted in clumps more than five square metres in area Clumps should be separated from each other and any exposed window or door by at least 10 metres.							
as trees. Ground cover* (less than 0.5 m in height. Ground cover more than 0.5 m in height is to be treated as shrub)	 Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above Can be located within two metres of a structure but three metres from windows or doors if more than 100 mm in height. 							
Grass	 Grass should be maintained at a height of 100 mm or less, at all times Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation. 							
Defendable space	Within three metres of each wall or supporting post of a habitable building; the area is kept free from vegetation but can include ground cover, grass and non-combustible mulches as prescribed above.							
Liquid petroleum gas cylinders	Should be located on the side of a building farthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building The pressure relief valve should point away from the house No flammable material within six metres from the front of the valve Must sit on a firm, level and non-combustible base and be secured to a solid structure.							

Appendix 2: Vehicle access technical requirements

"Table 6" - Vehicle access technical requirements.

Table 10: Vehicular access technical requirements

	PERIMETER ROADS		PUBLIC ROADS		EMERGENCY ACCESS WAY ³		FIRE SERVICE ACCESS ROUTE ³		BATTLE-AXE & PRIVATE DRIVEWAYS ¹		
TECHNICAL REQUIREMENTS											
MAP OF BUSH FIRE PRONE AREAS DESIGNATION	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	
Minimum horizontal clearance (metres)	12	8	Seen	note 5	10	6	10	6	6		
Minimum vertical clearance (metres)	4.5										
Minimum weight capacity (tonnes)	15										
Maximum grade unsealed road?			Seë note 5		1 10 (10% or 6°)						
Maximum grade sealed road ^{2 a}	See note 5				1-7 (14.3% or 8°)						
Maximum average grade sealed road					1 10 (10% or 6°)						
Minimum inner radius of road curves (metres)						8.5					

Notes

- Driveways and battle-axe legs to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision where not required to comply with the widths in this Appendix or the Guidelines.
- Dips must have no more than a 1 in 8 (12.5% 7.1 degrees) entry and exit angle
- 3 To have crossfalls between 3 per cent and 6 per cent.
- 4 For sealed roads only the maximum grade of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50 metres is permissible, except for short constrictions to 3.5 metres for no more than 30 metres in length where an obstruction cannot be reasonably avoided or removed.
- As outlined in the Institute of Public Works Engineering Australasia (IPWEA) subdivision guidelines, Liveable Neighbourhoods, Austroads Standards. Main Roads standard, supplement, policy or guideline and/or any applicable or relevant local government standard or policy.

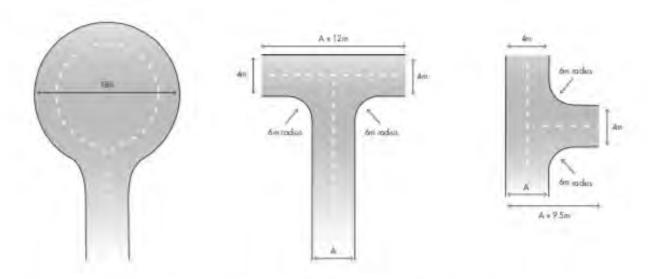


Figure 24: Turn-around area dimensions for a no-through road

Appendix 3: Local authority annual firebreak and fuel reduction notice

The Local authority annual firebreak and fuel reduction notice can be accessed by clicking on the following link:

https://www.dardanup.wa.gov.au/Profiles/dardanup/Assets/ClientData/Documents/Fire___Emergency/2024-2025 SoD Fire Prevention Order Combined - current.pdf



2024-2025 FIRE PREVENTION ORDER

FIRST AND FINAL NOTICE

With reference to Section 33 of the Bush Fires Act 1954, you are required to carry out fire prevention work on land owned or occupied by you, in accordance with the provisions of this order.

This order is valid for the period 1 July – 30 June <u>annually</u>.

Work must be completed by the 30 November <u>annually</u> and <u>maintained</u> until the close of the entire Restricted and Prohibited Burning Periods.

PLEASE READ THIS NOTICE CAREFULLY

If you do not understand this notice, please contact Emergency and Ranger Services (08) 9724 0000 or your local Fire Control Officer.

Persons who fail to comply with the requirements of the order may be issued with an infringement notice penalty (\$250) or prosecuted with an increased penalty (maximum penalty \$5,000). Additionally, the Shire of Dardanup may carry out the required work at cost to the owner/occupier.

Shire of Dardanup | PO Box 7016 | 1 Council Drive Eaton WA 6232 (08) 9724 0000 | records@dardanup.wa.gov.au | dardanup.wa.gov.au



APPENDIX F | TRAFFIC MANAGEMENT REPORT

Parkridge Structure Plan Modification

Transport Impact Assessment



Prepared for:

Parkridge Group Pty Ltd

Prepared by:

Stantec Australia Pty Ltd

28 January 2025

Project/File: 300305774

Stantec Australia Pty Ltd

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
001	Update	SC	28/01/2025	DH	28/01/2025	RJC	28/01/2025
А	Final	SA	20/03/2023	DH	20/03/2023	RJC	20/03/2023

The conclusions in the Report titled Parkridge Structure Plan Modification are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Prepared by	Sur				
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	Desmond Ho				
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Approved by	71.201				
11, 2, 22, 27	Signature				
	Richard Isted				
	Printed Name				

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1 Introduction

1.1 Background

Stantec has been commissioned by Parkridge Group Pty Ltd to prepare a Transport Impact Assessment for the proposed modification of the Parkridge Structure Plan located in Eaton, within the Shire of Dardanup.

The original structure plan was approved in 2019. Since then, the development of 71 lots located on the southern end of the structure plan has been completed. Modification of the remaining structure plan area to the north is proposed to include 354 lots: 25 (R20) lots, 296 (R30) lots, and 33 (R40) lots.

This report aims to assess the impact of the proposed structure plan modification on the surrounding road network. The report will focus on access, public transport, pedestrian and cycle networks, and road network performance.

This Traffic Impact Assessment (TIA) report was prepared in accordance with the WAPC TIA Guidelines Volume 2 – Planning Schemes, Structure Plans and Activity Centre Plans, with the checklist attached in **Appendix A**.

2 Structure Plan Proposal

2.1 Regional Context

The proposed structure plan is located in Eaton, Shire of Dardanup. It is located approximately 9km east-northeast of Bunbury (see **Figure 2-1**), and about 150km south of Perth.

Figure 2-1 Regional Context



Source: Metromap

2.2 Proposed Land Uses

The proposed structure plan modification is illustrated in **Figure 2-2**. It shows that the modification includes the southern part of the original structure plan as these are already developed. The structure plan originally approved in 2019 includes a total area of 32.1533ha, with an anticipated total yield of 436 lots and an estimated population of 1090 persons. From the approved structure plan, 71 lots have already been developed (as shown in red hatch in **Figure 2-2**). A high-resolution version of the structure plan modification area is provided in **Appendix B**.

The proposed structure plan modification includes the following:

- Residential R20 25 lots
- Residential R30 296 lots
- Residential R40 33 lots
- Public and Regional open spaces

Table 2-1 shows the table of land use and quantities proposed within the modified structure plan compared with the original structure plan. The total area covered by the structure plan modification is 28.7215ha with an anticipated yield of at least 354 lots. In the modified structure plan, there is an anticipated decrease of 11 lots from the original structure plan. This is approximately equivalent to a decrease of 27 persons in terms of the total population of the area.

LEGEND EXISTING CADASTRE STRUCTURE PLAN MODIFICATION BOUNDARY PROPOSED CADASTRE RESIDENTIAL: R40 RESIDENTIAL: R30 - R40 RESIDENTIAL: R20 PUBLIC OPEN SPACE REGIONAL OPEN SPACE PROPOSED MANAGED LOW FUEL ZONE RESIDENTIAL DENSITY TO BE CONSISTENT WITH ADJOINING STRUCTURE PLAN PATH NETWORK Proposed SP FLOODWAY Modification CONSERVATION CATEGORY WETLAND Area subject to Developed section DRIVI INDALEE ROBUSTA of the Original SP WANDOO PENINSULA LAKES YOU DIG

Figure 2-2 Proposed Structure Plan Modification

Source: Harkey Dykstra (December 2024)

Table 2-1 Land Uses and Quantities

		Origi	Original SP		Modified SP		
Item	Units	Total	Developed	Updated Sections Only	Including 'Developed' sections	Difference from Original SP	
Area	Hectares	32.1533	3.4318	28.7215	32.1533	0	
Number of Lots	Lots	436	71	354	425	-11	
Population	People	1090*	178*	885*	1063*	-27	

^{*} Approximate based on ABS 2021 Eaton Data of 2.5 persons per household

Figure 2-3 shows the developed lots on the southern section of the original structure plan. The latest aerial image below indicates that the majority of the residential dwellings within the developed area has already been built. At the time when this TIA report was originally prepared in 2023, it was noted that 51 lots (of the 71 lots) were still undeveloped, meaning no dwelling units have been built yet. Considering the figure below, this updated TIA report now considers the then-undeveloped 51 lots to contribute to the current traffic generation in the area, details of which are further discussed in **Section 7.2**.

Figure 2-3 Aerial Image of Developed Lots



Source: Metromap (2024)

3 Existing Situation

3.1 Existing Land Uses within Structure Plan

The approved Structure Plan illustrated in **Figure 3-1** shows the existing land uses within the proposed Parkridge Structure Plan area. The land uses within the proposed Parkridge Structure Plan Site are 'Residential', 'Public Open Space', and 'Regional Open Space'. The southern section of the original structure plan has already been developed as illustrated in **Figure 2-3**.

LOT BOUNDARY STRUCTURE PLAN BOUNDA RESIDENTIAL: ROS - RAS RESIDENTIAL: RISO Lists requiring Local I PUBLIC OPEN SPACE \$188% REGIONAL OPEN SPACE ROPOSED MANAGED LOW FUEL ZONE (In WETTH) VEGETATION TO BE RETAINED NORTH STAG RESIDENTIAL DENSITY TO BE CONSISTENT WITH ADJOINING STRUCTURE PLAN INDICATIVE LOT YIELD RESIDENTIAL R20 - R40: 247 LOTS SOUTH STAGE RESIDENTIAL R20 - R40 RESIDENTIAL RAD. SOUTH STAGE SETTE ROBUSTA WANDOO

Figure 3-1 Original Structure Plan

Source: Parkridge Estate Structure Plan (2019)

3.2 Existing Land Uses within 800m of Structure Plan Area

The latest aerial image shown in **Figure 3-2** indicates the existing land uses within 800m from the proposed structure plan modification area. Existing surrounding areas are mostly comprised of residential and public open spaces.

Figure 3-2 Surrounding Land Uses



Source: Metromap (2024)

3.3 Existing Road Network within Structure Plan Area

In the most recent aerial image of the Site, the extensions of Robusta Road, Wandoo Way (Tukidale Street), and Peninsula Lakes Drive within the South Stage of the original structure plan are already laid out. Other roads including Guernsey Street, Shiraz Street, and Camargue Street have also been constructed, as shown in **Figure 3-3**.



Figure 3-3 Existing Roads within the Structure Plan

Source: Metromap (2024)

The proposed Parkridge Structure Plan area is easily accessed from the south via Eaton Drive. The newly constructed bridge on Collie River also provides good connectivity from the north. Trips heading in the east/west direction are anticipated to utilise Forrest Highway. Therefore, the proposed Parkridge Structure Plan area is considered to be adequately connected to the surrounding transport networks.

Existing Road Network within 2 (or 5) km of 3.4 Structure Plan Area

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

- Primary Distributors (light blue): Form the regional and inter-regional grid of Main Roads WA traffic routes and carry large volumes of fast-moving traffic. Some are strategic freight routes, and all are National or State Roads WA.
- Regional Distributors (red): Roads that are not Primary Distributors, but which link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas. They are managed by Local Government.

- **District Distributor A (green):** These carry traffic between industrial, commercial and residential areas and connect to Primary Distributors. These are likely to be truck routes and provide only limited access to adjoining properties. They are managed by Local Government.
- **Distributor B (dark blue):** Perform a similar function to District Distributor A but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.
- Local Distributors (orange): Carry traffic within a cell and link District Distributors at the
 boundary to access roads. The route of the Local Distributor discourages through traffic so
 that the cell formed by the grid of District Distributors only carries traffic belonging to or
 serving the area. These roads should accommodate buses but discourage trucks. They are
 managed by Local Government.
- Access Roads (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government.

The roads surrounding the proposed Parkridge Structure Plan area are illustrated in **Figure 3-4**. Eaton Drive to the east is classified as *Distributor A*, while all other roads in the immediate vicinity of the proposed Parkridge Structure Plan area are classified as *Access Road*. Eaton Drive becomes The Boulevard just before the bridge crossing Collie River to the east of the Site. **Table 3-1** describes the characteristics of the roads in the vicinity of the Parkridge Structure Plan area.

Table 3-1 Characteristics of the Surrounding Road Network

Road Names	Road Hierarchy	Jurisdiction	No. of Lanes	No. of Footpaths	Road Width (m)	Posted Speed Limit (km/h)
Eaton Drive	Distributor A	Local Government	4	2	20.0 (including 6.0 median)	60
Peninsula Lakes Drive	Access Road	Local Government	2	1	7.42	50
Glenhuon Boulevard	Access Road	Local Government	2	1	7.2	50
Wandoo Way	Access Road	Local Government	2	1	6.2	50
Robusta Road	Access Road	Local Government	2	1	6.2	50

Source: MRWA Road Information Mapping System

No traffic data is available for the newly constructed roads within the structure plan.

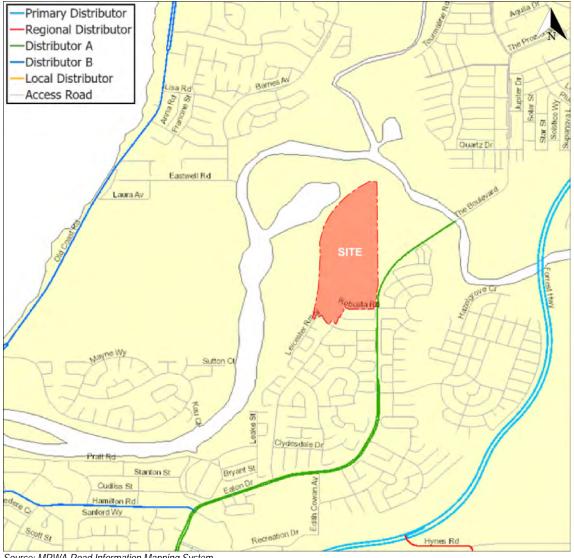


Figure 3-4 Existing Road Network Hierarchy Map

Source: MRWA Road Information Mapping System

Existing Traffic Volumes 3.5

The latest traffic volumes on Peninsula Lakes Drive are presented in **Table 3-2**. The traffic data was extracted from the Main Roads Traffic Map. The volumes are considered low, ranging from 137 to 148 vehicles during the weekday/weekend peak hour periods.

Table 3-2 Existing Traffic Volumes - Peninsula Lakes Drive

	Thursday / 09 June 2022			Saturday / 11 June 2022		
Direction	AM 07:45-08:45	PM 16:45-17:45	12hr Total 06:00-18:00	Midday 11:00-12:00	12hr Total 06:00-18:00	
Eastbound	102	56	600	73	638	
Westbound	37	92	586	64	565	
Total	139	148	1186	137	1203	

Source: MRWA Traffic Map

3.6 Existing Pedestrian and Cycle Networks

Footpaths are present on both sides of Eaton Drive which are anticipated to be the primary walk/bike paths from the Site to the surrounding areas. In addition, **Figure 3-3** also shows the footpaths provided on the roads within the structure plan's southern stage. The location of these footpaths relative to the internal roads are as follows:

- Robusta Road east side
- Tukidale Street east side
- Peninsula Lakes west side
- Guernsey Street north side
- Camargue Street south side
- Shiraz Street east side

3.7 Existing Public Transport Services

The bus routes surrounding the proposed Parkridge Structure Plan area are shown in **Figure 3-5**. Route 844 runs along Peninsula Lakes Drive to the south of the proposed Parkridge Structure Plan area, while Route 845 runs along Eaton Drive to the east. Both routes begin at the Bunbury Bus station. Route 844 terminates at Millbridge Boulevard/Braddon Way to the southeast of the proposed Parkridge Structure Plan area, while Route 845 terminates at Kingston Drive/Holbrook Road to the northeast of the Site. The frequency of service of the bus routes near the proposed Parkridge Structure Plan area is summarised in **Table 3-3**.

Legend ne St Dawe St The Train and Bus Transfer stwell Rd Timed Stop Boulevar Barnes Av Secondary School, University, TAFE 845 Rothesay Cr Collie River Peninsula Chestnut Lakes Dr Mayne Bvd Denison usitano Millbridge Bvd Victoria A Clydesdale Dr Hamilton Rd dith Cowan Av

Figure 3-5 Existing Public Transport Network

Source: TransBunbury

Table 3-3 Existing Bus Routes – Service Frequencies

		Service Frequency		
Route Number	Direction	Weekday	Saturday	
Route 844	To Australind, Eaton and Millbridge	60 minutes	120 minutes	
	To Bunbury Bus Station	60 minutes	120 minutes	
Route 845	To Australind, Eaton and Millbridge	60 minutes	120 minutes	
Communication Devices	To Bunbury Bus Station	60 minutes	120 minutes	

Source: TransBunbury

The nearest bus stops are shown in **Figure 3-6** (in red pins) and includes two stops along Eaton Drive to the east and a stop on Peninsula Lakes Drive to the south. These stops are located approximately 200 metres from the nearest point of the proposed Parkridge Structure Plan area.

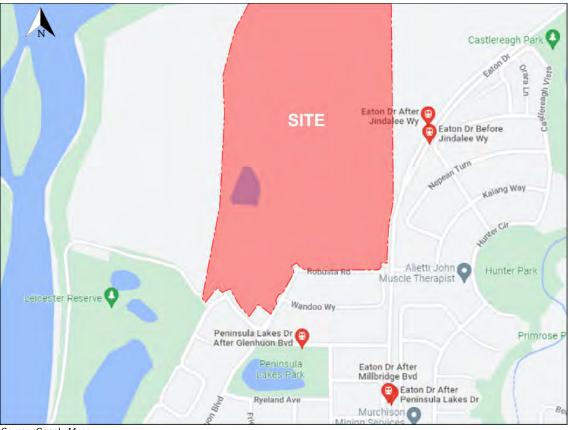


Figure 3-6 Surrounding Bus Stops

Source: Google Maps

Despite the close proximity of the bus stops and bus routes that operate near the Site, the bus trips on these routes are long, ranging between 1 to 2 hours. It is anticipated that few patrons will use the public transport due to its limited flexibility. Therefore, the existing public transport near the proposed Parkridge Structure Plan area can be considered to be poor and inadequate. No public transport networks and services currently operate within the Parkridge Structure Plan area.

3.8 Crash Assessment

A review of crashes that have been reported within the 5-year period from 2019 – 2023 has been undertaken using the Main Roads WA Crash Analysis Reporting System. **Table 3-4** to **Table 3-6** provides a summary of all crashes that occurred within the vicinity of the Site, with the location and severity of these crashes illustrated in **Figure 3-7**.

POD Macro 18 (2019 Set 2014 19 Set 2014 19

Figure 3-7 Crash Locations

Source: MRWA Crash Map

Table 3-4 Total Crashes

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Sideswipe Same Direction	-	-	-	3	-	3
Rear End	-	1	1	3	-	5
Hit Object	-	-	-	1	-	1
Head On	-	-	-	1	-	1
Right Angle	-	-	-	1	-	1
Unspecified	-	-	-	1	-	1
Total	-	1	1	10	-	12

Table 3-5 Intersection Crashes

Intersection Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Eaton Dr - Peninsula Lakes Dr	-	1	-	2	-	3
Wandoo Wy - Robusta Rd	-	-	-	1	-	1
Total	-	1	-	3	-	4

Table 3-6 Midblock Crashes

Intersection Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Eaton Dr	-	-	1	5	-	6
Perendale Loop	-	-	-	1	-	1
Abercrombie Wy	-	-	-	1	-	1
Total	-	-	1	7	-	8

Results of the crash assessment are summarised as follows:

- A total of twelve (12) crashes were recorded.
- Ten (10) PDO major crashes were recorded.
- At least one (1) hospital and one (1) medical crash was recorded.
- Eight crashes occurred in midblock sections while 4 crashes occurred at intersections.

The low number of crashes within the surrounding area suggests that safety concerns are minimal. Overall, the proposed Parkridge Structure Plan is not anticipated to have a significant impact on traffic safety within the surrounding area.

4 Proposed Internal Transport Network

4.1 Changes/Additions to the Existing Road Network or Proposed New Road Network

The proposed local roads within the structure plan are shown in **Figure 4-1.** These roads are anticipated to carry local traffic only.

LOCAL ROADS - 21m Reserve 18m Reserve 15m Reserve 12.5m Reserve 9m Reserve JINDALEE

Figure 4-1 Internal Roads within the Structure Plan

Source: Harley Dykstra (December 2024)

4.2 Road Reservation Widths

According to Liveable Neighbourhoods (2015), the road reserve widths for all access streets (Access Street B, C, or D) within the Parkridge Structure Plan area may range between 15.5m to 20.1m. The projected maximum volume for these streets may range between 1,000 to 3,000 vehicles per day.

In addition, the indicative road reserve widths for laneways/service lanes according to Liveable Neighbourhoods (2015) is 6m with a maximum of 300 vehicles per day. The other proposed road reserve widths within the structure plan that fall below the 'Access Street' category are expected to be sufficient in providing access to the side or rear of the lots, mainly for access to garages only.

4.3 Road Cross-Sections & Speed Limits

According to Liveable Neighbourhoods (2015), the speed limits for Access Streets B, C, and D may range from 20 km/h to 50 km/h. for laneways and service lanes, speed limits are anticipated to not exceed 15 km/h. It is expected that the speeds on the access roads within the Structure Plan area will be 50 km/h, similar to the speed limits on access roads to the south as shown in **Figure 4-2**.

SITE

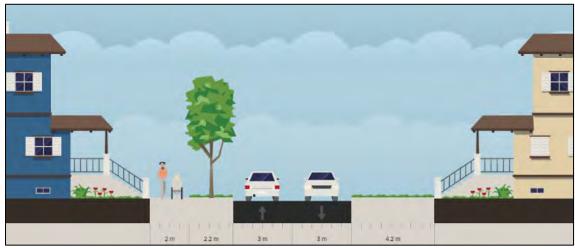
Speed Limit 10 km/h
Speed Limit 20 km/h
Speed Limit 30 km/h
Speed Limit 40 km/h
Speed Limit 50 km/h
Speed Limit 50 km/h
Speed Limit 50 km/h
Speed Limit 70 km/h
Speed Limit 70 km/h
Speed Limit 10 km/h

Figure 4-2 Speed Limits on Surrounding Roads

Source: MRWA Road Information Mapping System

The widths of the access roads within the proposed Parkridge Structure Plan area are anticipated to correlate with the widths in the developed areas of the original structure plan. Access streets in the developed section have widths of 6.0m, with a 2.2m-wide verge and a 2.0m-wide footpath on one side. Peninsula Lakes Drive is an exception and has a 7.2m-wide carriageway. The typical access road cross-section on the developed section of the original structure plan is shown in **Figure 4-3**.

Figure 4-3 Typical Access Street Cross-section



Source: StreetMix

4.4 Intersection Controls

According to Liveable Neighbourhoods (2015), intersections of two access roads are anticipated to be controlled by either stop/give-way signs or roundabouts (for very limited cases). It is anticipated that sign controls will be sufficient for all intersections within the proposed Parkridge Structure Plan area since there are only three-way intersections and the traffic volume is anticipated to be low. Similar intersection control measures as above are anticipated to be adequate for access street and laneway intersections.

4.5 Pedestrian/Cycle Networks and Crossing Facilities

A 2.0m-wide footpath is provided on one side of all access streets on the developed section of the original structure plan. Designated crossing points are also provided in the form of kerb ramps as shown in **Figure 4-4**. The same pedestrian and cycling facilities are anticipated to be provided within the internal access streets of the proposed Parkridge Structure Plan modification area.



Figure 4-4 Kerb Ramps at the Intersection of Robusta Road and Glenhuon Boulevard

Source: Metromap (2024)

4.6 Public Transport Routes

The Public Transport Authority (PTA) has advised that there are no immediate plans to modify the TransBunbury network within the area.

5 Changes to External Transport Network

5.1 Road Network

Stantec has contacted the Shire of Dardanup and was informed that no proposed changes to the road network are planned.

Referring to **Figure 5-1**, there appears to be a proposed intersection on Eaton Drive to the east of the proposed Parkridge Structure Plan area as part of the Millbridge Estate development (formerly 'Southbank @ Eaton). Details of the adjacent development are discussed in **Section 6.2**. This intersection may potentially be shared by residents of the Parkridge and Millbridge Estate developments in the future. However, the timeline for the construction of the Millbridge Estate development, including the future intersection is unknown.

SITE

NOCATIVE STRUCTURE

PLANTESON

Indicative Millbridge

Estate Development

The structure of the structu

Figure 5-1 Future Access to Millbridge Estate Development

Source: Subdivision Concept Plan from Taylor Burell Barnett Pty Ltd (December 2023)

5.2 Intersection Controls

Stantec has contacted the Shire of Dardanup and was informed that no proposed changes to the intersection controls outside of the structure plan area are planned.

5.3 Pedestrian/Cycle Networks and Crossing Facilities

Stantec has contacted the Shire of Dardanup and was informed that no proposed changes to existing footpaths and cycling facilities outside of the structure plan area are anticipated.

5.4 Public Transport Services

Stantec has contacted the Public Transport Authority and was informed that no proposed changes to the TransBunbury network outside of the structure plan area are planned.

6 Integration with Surrounding Area

6.1 Trip Attractors/Generators

Since the entire Parkridge Structure Plan Site is proposed to be residential, trips are anticipated to be from/to places of work, retail, and recreation. The main attractors/generators of traffic to/from the proposed Parkridge Structure Plan area are shown in **Figure 6-1**. These include the nearest commercial districts in the area: Treendale Shopping Centre and Eaton Fair Shopping Centre. It is also anticipated that several trips from the proposed Parkridge Structure Plan area will be arriving from or departing to the City of Bunbury which is situated approximately 9km to the west of the Proposed Parkridge Structure Plan area.



Figure 6-1 Major Trip Attractors / Generators

Source: Metromap (2024)

6.2 Proposed Changes to Land Uses within 800m

The indicative land uses at the Millbridge Estate development (formerly Southbank @ Eaton) located east of the proposed Parkridge Structure Plan area are shown in **Figure 6-2**. Only 'Residential' land uses are proposed in the area which is complimentary with the land uses within the proposed Parkridge Structure Plan. It is estimated that 132 residential lots will be available within this area. Due to the proximity of this future development to the proposed Parkridge Structure Plan area and the potential shared access between the two developments (as shown in **Figure 5-1**), the Millbridge Estate development was taken into consideration in the traffic analysis. A high-resolution version of the subdivision concept plan for the Millbridge Estate development is provided in **Appendix C**.

Legend Site Boundary Regional Open Space Boundary Indicative Subdivision Concept Plan for Millbridge Estate Development

Figure 6-2 Proposed Land Uses to the East of the Parkridge Structure Plan

Source: Subdivision Concept Plan from Taylor Burell Barnett Pty Ltd (December 2023)

7 Analysis of Internal Transport Network

To identify the impact of the proposed development on the surrounding road network, the performance of the following intersections was assessed:

- Eaton Drive/Peninsula Lakes Drive intersection, and
- Eaton Drive/Millbridge Estate Access intersection

Although the intersection of Eaton Drive and Jindalee Way is located between the two identified intersections to be assessed, the trips generated by the development will only affect the through movements at this intersection. This is envisaged to have a minimal effect on the intersection performance; therefore, the intersection of Eaton Drive and Jindalee Way has been excluded from this analysis.

7.1 Assessment Years and Time Periods

The following scenarios were considered for assessment purposes:

- Scenario 1: 2025 Base Scenario;
- Scenario 2: 2030 future traffic with 50% Parkridge development (no Millbridge Estate); and
- Scenario 3: 2035 future traffic with 100% Parkridge development and 50% Millbridge Estate development
- Scenario 4: 2040 future traffic with 100% Parkridge development and 100% Millbridge Estate development

Note that the above years and percentage of development were assumed as the timeline of the implementation of the developments for the two structure plans are unknown.

The peak hour periods were derived from the traffic count data from the Main Roads Traffic Map. The peak periods are as follows:

AM Peak: 7:45-8:45 AMPM Peak: 4:45-5:45 PM

7.2 Structure Plan Generated Traffic

The trip generation rate used for estimating development-generated trips for the proposed Parkridge Structure Plan Site was obtained from NSW's Guide to Transport Impact Assessment (2024). The trip generation rates from this guide comes from a 2022 survey on low-density residential developments around metropolitan Sydney area and regional NSW. The rates were selected due to its similarity to the Site in the following aspects:

- No traffic-generating developments within the area (e.g. childcare, etc.), and
- Significantly distant residential development from the CBD.

The proposed modification of the original structure plan area is anticipated to have a yield of at least 354 residential lots. This number was used to estimate the additional number of trips that the structure plan is expected to generate. The adopted trip generation rate is presented in **Table 7-1**. In addition, the anticipated trips to be generated by the proposed Millbridge Estate development (formerly Southbank), located east of the Site, was also considered.

Table 7-1 Adopted Trip Generation Rates

Land Use	Yield	Source	AM Peak	PM Peak	Daily
Residential Dwelling - Parkridge	354	RTA Trip Gen for Low-Density	0.68 per dwelling	0.77 per dwelling	0.10
Residential Dwelling - Millbridge Estate	132	Residential Dwelling LDR 10	o.oo per aweiiing	o.77 per aweiling	8.12 per dwelling

In the absence of directional distribution data from the RTA reference, ITE 210 directional distributions were used as illustrated in **Table 7-2** for estimating the inbound and outbound traffic proportions.

Table 7-2 Directional Distribution

	AM Peak		PM Peak		Daily	
Land Use	ln	Out	ln	Out	ln	Out
Residential Dwellings	26%	74%	64%	36%	50%	50%

Using the above trip generation rates and distribution, the total estimated trips to be generated for the full build-out of the proposed Parkridge Structure Plan and Millbridge Estate developments are shown in **Table 7-3**.

Table 7-3 Estimated Total Trip Generation for 2040 Design Year

_	AM Peak		PM I	Peak	Daily	
Land Use	ln	Out	In	Out	ln	Out
Residential Dwelling -						
Parkridge	63	178	174	98	1437	1437
	241		272		2874	
Residential Dwelling -						
Millbridge Estate	23	66	65	37	536	536
	89		102		1072	
Sub Total	86	244	239	135	1973	1973
Total	330		374		3946	

The estimated total traffic to be generated by the proposed Parkridge Structure Plan and the Millbridge Estate development for the 2040 design year scenario is 330, 374, and 3,946 vehicle trips during the AM peak hour, PM peak hour and daily periods, respectively.

7.3 Extraneous (Through) Traffic

Through traffic at Eaton Drive/Peninsula Lakes Drive is already captured by the available traffic count at this intersection. However, additional through traffic is anticipated within the proposed Parkridge Structure Plan area due to the trips generated by the developed section of the structure plan.

The original TIA report, which was prepared in 2023, mentioned a total of 71 lots within the developed section of the original structure plan area; 20 dwelling units have been built while the remaining 51 lots were considered to be 'undeveloped' (meaning no dwelling units have been built yet as discussed in **Section 2.2**). It is assumed that the traffic generated by the 20 dwelling units in the 'developed' lots is already incorporated in the background traffic data. However, to account for the development of the 51 'undeveloped' lots, the estimated trip movements associated with these lots has been assumed to use the Eaton Drive/Peninsula Lakes Drive intersection.

The estimated trip generation of the undeveloped lots was calculated using the same rates in **Table 7-1**, while the trip distribution was based on the percentage values indicated in **Table 7-2**. The estimated trips to be generated by the remaining undeveloped lots has been included in the base year background traffic as shown in **Figure 8-2**.

7.4 Design Traffic Flows

Based on the forecasted trip generation of the Proposed Parkridge Structure Plan in the ultimate 2040 scenario of almost 3,000 vehicles daily as indicated in **Table 7-3** and the existing volumes on Peninsula Lakes Drive west of Eaton Drive of 1,200 daily vehicles as indicated in **Table 3-2**, the approximate daily traffic volumes on Peninsula Lakes Drive and Glenhuon Boulevard are shown in **Figure 7-1**.



Figure 7-1 Approximate Design Traffic Flows

Source: Metromap (base map)

The volumes on Glenhuon Boulevard (north of Peninsula Lakes Drive) and Peninsula Lakes Drive (west of Glenhuon Boulevard) are anticipated to remain under the maximum volume for an Access Street C from the *Liveable Neighbourhoods Guidelines*, which is 3,000vpd.

However, the volumes along Peninsula Lakes Drive, east of Glenhuon Boulevard, are anticipated to exceed the projected maximum volume for an Access Street. The next street type which can accommodate the volumes on Peninsula Lakes Drive is a Neighbourhood Connector A (7,000vpd max) with its function and characteristics detailed in **Table 7-4**. The pavement width for a Neighbourhood Connector A is 2 x 7.2m, while the existing pavement on Peninsula Lakes Drive is a single carriageway approximately 7.6m wide. This indicates that the road may not be able to accommodate the traffic volumes in the 2040 ultimate scenario.

The volume on Peninsula Lakes Drive is anticipated to exceed 3,000vpd at about 63% completion (equivalent to about 222 lots) of the proposed Parkridge Structure Plan modification area. Since the improvement of Peninsula Lakes Drive does not appear to be possible due to constraints in the road reserve, the construction of the proposed intersection for the anticipated Millbridge Estate Access on Eaton Drive, which also links to the proposed Parkridge development will need to be considered to mitigate against the anticipated increase in traffic along Peninsula Lakes Drive.

Table 7-4 Function and Characteristics of Local Streets (Excerpt from Liveable Neighbourhoods)

Street type and function	Street name	Projected maximum volume (vehicles per day)	Indicative street reserve width (metres)	Maximum design/ target operating speed (km/hr)	Minimum street pavement width (metres)	Typical residential density
Neighbourhood connectors Streets with mostly residential frontage that typically provide the lower order sub- arterial network. These streets service and link neighbourhoods and activity centres.	Neighbourhood connector A	7,000	27.6	50 / 50	2 x 7.3 including parking, on- street bike lane, median plus shared path on one verge and footpath on the other side	R40 to R80
	Neighbourhood connector B	3,000	21.6	50 / 50	11.6 including parking, plus shared path on one verge.	R40 to R80
Access streets Access streets are to accommodate shared pedestrian, bike and vehicular movements. The requirements of adjacent land uses should be supported through street design.	Access street A – avenue	3,000	Overall width depends on design and function of central median	50 / 40	2 x 3.5 plus embayment parking.	Varies
	Access street B – wider street	3,000	20.1	50 / 40	10	Up to R40
	Access street C – yield or give way street	3,000	17.2	50 / 30	7.2 typical 7-7.5 range	Up to R35
	Access street D – narrow yield or give way street	1,000	15.5	50-20	5.5 typical 5.5-6 range	Less than R30

Source: WAPC Draft Liveable Neighbourhoods (2015)

7.5 Access Strategy

In the short term, the traffic generated by the proposed Parkridge Structure Plan area is anticipated to exclusively use the Peninsula Lakes Drive/Eaton Drive intersection to enter/exit the area. When the development of Millbridge Estate (formerly Southbank @ Eaton) commences, an additional intersection with Eaton Drive is proposed to the east of the proposed Parkridge Structure Plan Site, as discussed in **Section 5.1**. Although some traffic heading south may use Glenhuon Boulevard, this is considered unlikely due to the following:

- Lower speed limit on Glenhuon Boulevard.
- Presence of multiple roundabouts along the route, further increasing the travel time.
- Higher through volumes at the Eaton Drive/Glenhuon Boulevard intersection to the south, making right-turn movements from Glenhuon Drive more difficult.

As such, the analysis assumes that traffic from the proposed Parkridge Structure Plan area will only use Peninsula Lakes Drive and the future Millbridge Estate access in the longer term.

7.6 Safe Routes to School

The nearest school (Glen Huon Primary School) is located approximately 1.5km to the South of the proposed Parkridge Structure Plan area as shown in **Figure 7-2**. Students are not anticipated to walk to school due to the long distance. Some students may opt to ride their bikes to school and may take the route along Glenhuon Boulevard, as it has a lower posted speed and less vehicular traffic compared to Eaton Drive.



Figure 7-2 Potential Route from the Parkridge Structure Plan Area to Glen Huon Primary School

Source: Metromap (base map)

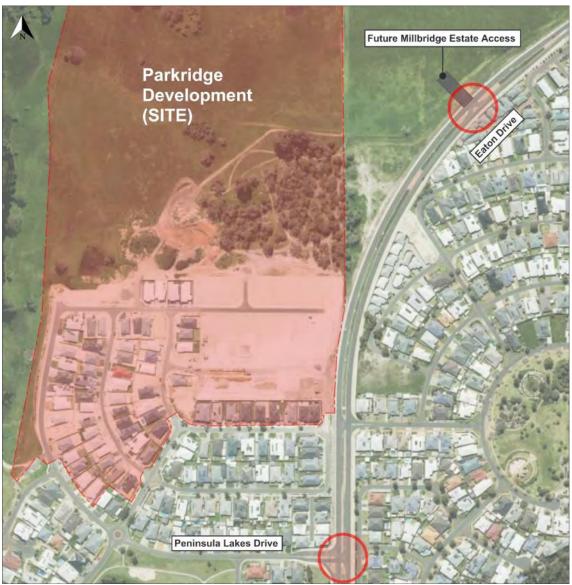
8 Analysis of External Transport Network

8.1 Extent of Analysis

As illustrated below in Figure 8-1, two intersections were assessed as part of the analysis:

- Eaton Drive/Peninsula Lakes Drive intersection, and
- Eaton Drive/ Millbridge Estate Access intersection.

Figure 8-1 Assessed Intersections



Source: Metromap (base map)

8.2 Key Assumptions

Assumptions used in undertaking the SIDRA analysis are detailed below:

- The 2025 base scenario and future scenario volumes were obtained by adding a background traffic growth rate to the 2022 volumes from the video survey at the intersection of Eaton Drive and Peninsula Lakes Drive (obtained from the MRWA Traffic Map).
- Growth rates used for different scenarios were based on population forecast for the Shire of Dardanup as summarised in Table 8-1.
- Heavy vehicle percentage used in the analysis is based on the surveyed traffic data. It is
 assumed that the distribution of vehicle classes will not change in future scenarios. The
 existing counts indicated that no Class 10, 11, and 12 vehicles are using the existing
 intersections.

8.3 Estimated Growth Rates

The forecast population growth for Eaton East, Shire of Dardanup was used in estimating the traffic growth rate on the surrounding roads. The growth rate is faster within the short/medium term but steadily slows down for the future years. Hence, different growth rates (from the base year) and associated with the future years as indicated in **Table 8-1** were used for the traffic analysis.

Table 8-1 Estimated Growth Rates

Analysis period (number of years from base year)	Growth Rate Per Annum
5	2.4%
10	2.0%
15	1.8%
20	1.5%

Source: Population and Household Forecasts by Informed Decisions (December 2021)

8.4 Trip Distribution

The trip distribution from the proposed structure plan was based on data from the Australian Bureau of Statistics (ABS) 2021 census. Data on the place of work of Eaton residents was extracted, and it was determined that approximately 80% of the residents head south, primarily to Bunbury and Dardanup centres, and 20% of the residents head north, primarily to Harvey and Collie centres. This directional distribution was used in estimating the turn volumes at the identified key intersections to be assessed.

Although the Base Scenario traffic data indicates a higher percentage of traffic heading to or approaching from the north, the ABS data distribution was used since this is considered to be more conservative since right-turn movements from the minor road have a greater impact on the intersection performance when compared to left-turn movements.

8.5 Traffic Volumes

The traffic volumes for the assessed intersections under different scenarios are presented in the following figures.

Figure 8-2 shows the 2025 base scenario volumes for the Peninsula Lakes Drive/Eaton Drive intersection. This volume was obtained by applying a growth rate of 2.4% for each year from the available 2022 traffic data. This does not include any traffic from the proposed Parkridge Structure Plan developments.

Figure 8-2 Scenario 1 – 2025: Base Year Scenario

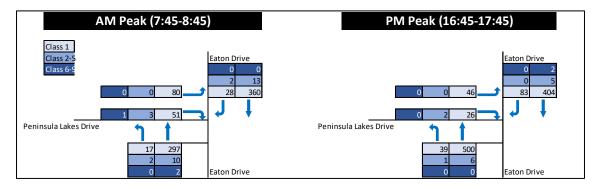


Figure 8-3 shows the Scenario 2 traffic volumes which assumes that 50% of the Parkridge development has been completed, while the Millbridge Estate development has not commenced yet. This scenario also assumes that the intersection of the future Millbridge Estate Access and Eaton Drive intersection is still not constructed.

Figure 8-3 Scenario 2 – 2030: 50% Parkridge without Millbridge Estate Development

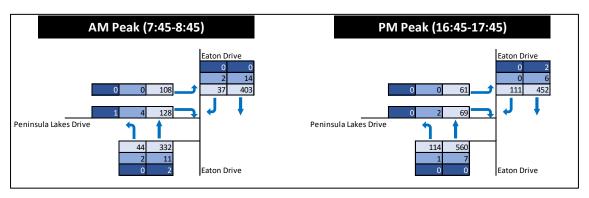


Figure 8-4 shows the Scenario 3 traffic volumes which assumes that the proposed Parkridge Structure Plan development has been fully completed, while the Millbridge Estate development is at 50% completion. This scenario also assumes that the intersection of Millbridge Estate Access and Eaton Drive has been constructed. In this scenario, it is assumed that 40% of the combined traffic from the two structure plan areas will use the proposed Millbridge Estate Access while the remaining 60% will still use the Peninsula Lakes Drive intersection.

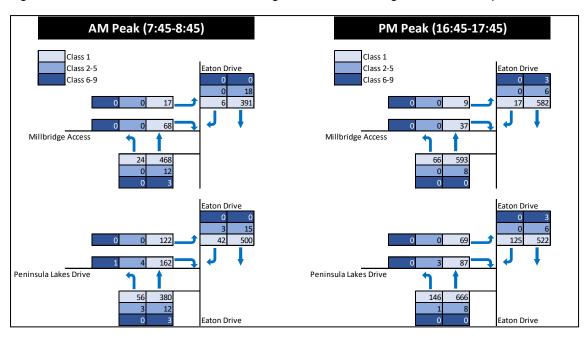


Figure 8-4 Scenario 3 – 2035: 100% Parkridge with 50% Millbridge Estate Development

Figure 8-5 shows the Scenario 4 traffic volumes which assumes that both the Parkridge and Millbridge Estate developments have been fully developed. This assumes that the intersection of Millbridge Estate Access and Eaton Drive has also been constructed. In this scenario, it is assumed that 50% of the combined traffic from the two structure plan areas will use the proposed Millbridge Estate Access, while the remaining 50% will still use the Peninsula Lakes Drive intersection. The shift in distribution between the two accesses is based on the likelihood that drivers will avoid Peninsula Lakes Drive as it becomes busier during peak hour periods.

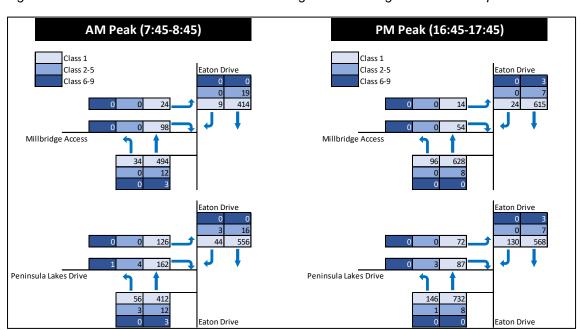
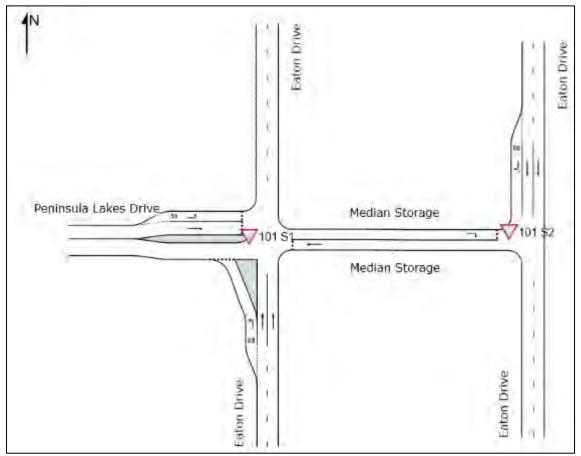


Figure 8-5 Scenario 4 – 2040: 100% both Parkridge and Millbridge Estate Developments

8.6 Intersection Layouts and Controls

The existing intersection of Peninsula Lakes Drive and Eaton Drive is a give-way sign-controlled intersection with a storage capacity for one (1) vehicle in the median area. The Main Roads WA Operational Modelling Guidelines prescribes that staged crossings are modelled as a network of two intersections to incorporate the effect of the median storage more accurately. The SIDRA model of the intersection is illustrated in **Figure 8-6**.

Figure 8-6 SIDRA Model: Peninsula Lakes Drive and Eaton Drive Intersection



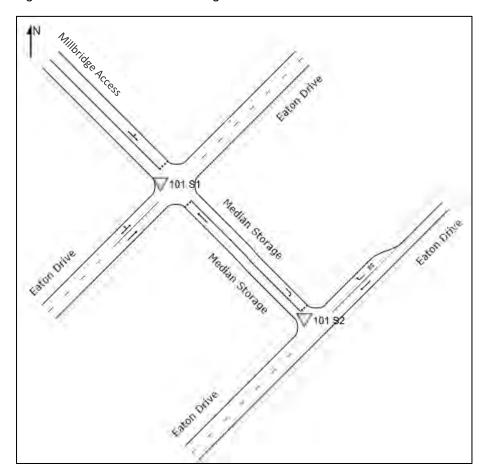
Based on the latest aerial image shown in **Figure 8-7**, the indicative future layout of the Millbridge Estate Access and Eaton Drive intersection appears to be a seagull crossing. This intersection also has a median storage and was modelled as a staged crossing as per the Main Roads WA Operational Modelling Guidelines. Assumptions were made regarding the controls (give-way sign-controlled) and the number of lanes on the proposed new access since its layout is currently unknown. The SIDRA intersection layout for the future Eaton Drive/ Millbridge Estate Access intersection is shown in **Figure 8-8**.





Source: Metromap (2024)

Figure 8-8 SIDRA Model: Millbridge Estate Access and Eaton Drive Intersection



8.7 SIDRA Analysis

SIDRA results for each approach are presented below in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

- Degree of Saturation (DOS): the ratio of the arrival traffic flow to the capacity of the
 approach during the same period. The theoretical intersection capacity is exceeded for an unsignalized intersection where DOS > 0.80;
- **95% Queue:** is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- Average Delay: is the average of all travel time delays for vehicles through the intersection.
 An unsignalised intersection can be considered to be operated at capacity where the average delay exceeds 40 seconds for any movement; and
- Level of Service (LOS): is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 8-2**.

Table 8-2 Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
А	Free-flow operations (best condition)	≤10 sec	≤10 sec
В	Reasonable free-flow operations	10-20 sec	10-15 sec
С	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	5-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

The results of the SIDRA analysis are discussed in the following subsections. Detailed results of the SIDRA analysis are provided in **Appendix D**.

8.7.1 Scenario 1 – 2025 Base Scenario

The performance of Eaton Drive/Peninsula Lakes Drive intersection for Scenario 1 (2025 base scenario) is summarised in **Table 8-3**. The analysis indicates that this intersection performs at an excellent LOS with minimal delays and queues.

Table 8-3 Scenario 1: Eaton Drive / Peninsula Lakes Drive Intersection

			AM P	eak		PM Peak						
Intersection	Approach	DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)			
South:	L	0.013	5.9	Α	0.4	0.028	5.9	Α	0.8			
Eaton Drive	T	0.087	0	Α	0	0.138	0	Α	0			
North: Eaton	Т	0.103	0	Α	0	0.112	0	Α	0			
Drive	R	0.018	6	Α	0.3	0.047	6.1	Α	0.9			
West:	L	0.059	5.1	Α	1.8	0.037	5.4	Α	1.1			
Peninsula Lakes Drive	R	0.071	8.8	А	3.5	0.052	11.3	В	2.2			
All Vehicles		0.103	2.5	Α	3.5	0.138	2.1	Α	2.2			

8.7.2 Scenario 2 – 50% Parkridge Development in 2030

The performance of Eaton Drive/Peninsula Lakes Drive intersection for Scenario 2, without any Millbridge Estate Development, is summarised in **Table 8-4**. It is anticipated that the additional traffic generated by the proposed Parkridge Structure Plan will not significantly affect the performance of this intersection. The average delay of all vehicles is anticipated to increase by less than 3 seconds, while queues are expected to be minimal, with the intersection expected to perform at LOS A.

Table 8-4 Scenario 2: Eaton Drive / Peninsula Lakes Drive Intersection

			AM P	eak		PM Peak					
Intersection	Approach	DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)		
South:	L	0.031	5.8	Α	1	0.082	6	Α	2.5		
Eaton Drive	T	0.097	0	Α	0	0.155	0	Α	0		
North: Eaton	Т	0.115	0	Α	0	0.000	0		0		
Drive	R	0.023	6.1	Α	0.4	0.126	0.5	Α	1.3		
West:	L	0.081	5.1	Α	2.5	0.051	5.5	Α	1.5		
Peninsula Lakes Drive	R	0.181	9.7	А	9	0.152	10.6	В	4		
All Vehicles		0.181	3.6	Α	9	0.155	4.4	Α	4		

8.7.3 Scenario 3 – 100% Parkridge Development and 50% Millbridge Estate Development in 2035

The performance of Eaton Drive/Peninsula Lakes Drive intersection for Scenario 3 is summarised in **Table 8-5**. All movements at the intersection are still anticipated to operate at LOS A with minimal delays and short queue lengths.

Table 8-5 Scenario 3: Eaton Drive / Peninsula Lakes Drive Intersection

			AM P	eak		PM Peak							
Intersection	Approach	DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)				
South:	L	0.041	5.8	Α	1.3	0.106	6	Α	3.3				
Eaton Drive	Т	0.111	0	Α	0	0.184	0	Α	0				
North: Eaton	T	0.142	0	Α	0	0.145	0	Α	0				
Drive	R	0.027	6.1	Α	0.5	0.070	6.3	Α	1.5				
West:	L	0.094	5.3	Α	2.9	0.061	5.8	Α	1.8				
Peninsula Lakes Drive	R	0.247	11	В	12.5	0.241	16.4	С	9.3				
All Vehicles		0.247	4.1	Α	12.5	0.241	3.7	Α	9.3				

The performance of Eaton Drive/ Millbridge Estate Access intersection for Scenario 3 is summarised in **Table 8-6**. The results show that the future intersection is anticipated to operate at an excellent LOS, with minimal delays and queues.

Table 8-6 Scenario 3: Eaton Drive / Millbridge Estate Access Intersection

			AM P	eak		PM Peak							
Intersection	Approach	DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)				
South West:	L	0.141	5.6	Α	0	0.181	5.6	Α	0				
Eaton Drive	T	0.141	0	Α	0	0.181	0	Α	0				
North East:	T	0.229	0.1	Α	0	0.324	0.1	Α	0				
Eaton Drive	R	0.003	6.1	Α	0.1	0.009	6.3	Α	0.2				
North West:	L	0.116	5.4	Α	3.2	0.076	5.5	Α	2				
Millbridge Access	R	0.116	9	А	4.2	0.076	10.7	В	2.6				
All Vehicles		0.229	1.6	Α	4.2	0.324	1.5	Α	2.6				

8.7.4 Scenario 4 – 100% both Parkridge and Millbridge Estate Developments in 2040

The performance of Eaton Drive/Peninsula Lakes Drive intersection for Scenario 4 is summarised in **Table 8-7**. The table shows that even at full buildout of the two developments, all movements at the intersection are still anticipated to operate at an acceptable level of service, with minimal delays and short queue lengths. The maximum delay (of 18.6 seconds) is anticipated to be experienced for vehicles turning right from the Peninsula Lakes Drive approach during the PM peak hour period.

Table 8-7 Scenario 4: Eaton Drive / Peninsula Lakes Drive Intersection

			AM P	eak		PM Peak							
Intersection	Approach	DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)				
South:	L	0.041	5.8	Α	1.3	0.107	6.1	Α	3.3				
Eaton Drive	Т	0.120	0	Α	0	0.201	0.1	Α	0				
North: Eaton	T	0.157	0	Α	0	0.158	0	Α	0				
Drive	R	0.028	6.1	Α	0.5	0.073	6.4	Α	1.7				
West:	L	0.099	5.3	Α	3	0.067	6	Α	1.9				
Peninsula Lakes Drive	R	0.258	11.8	В	13.4	0.271	18.6	С	10.3				
All Vehicles		0.258	4.1	Α	13.4	0.271	3.7	Α	10.3				

The performance of Eaton Drive/ Millbridge Estate Access intersection for Scenario 4 is summarised in **Table 8-8**. The results indicate that the future intersection is anticipated to operate at an excellent LOS, with minimal delays and queueing during the AM and PM peak hour periods.

Table 8-8 Scenario 4: Eaton Drive / Millbridge Estate Access Intersection

			AM P	eak			PM P	eak	
Intersection	Approach	DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
South West:	L	0.151	5.6	Α	0	0.199	5.6	Α	0
Eaton Drive	Т	0.151	0	Α	0	0.199	0.1	Α	0
North East:	Т	0.243	0.1	Α	0	0.343	0.1	Α	0
Eaton Drive	R	0.005	6.1	Α	0.1	0.013	6.3	Α	0.3
North West:	L	0.174	5.4	Α	4.9	0.120	5.5	Α	3.2
Millbridge Access	R	0.174	9.6	А	6.3	0.120	11.7	В	4.1
All Vehicles		0.243	2.1	Α	6.3	0.343	1.8	А	4.1

In summary, the trips generated by the proposed modifications in the Parkridge Structure Plan will not significantly affect the performance of the existing intersection of Eaton Drive and Peninsula Lakes Drive. It is also anticipated that the future Eaton Drive and Millbridge Estate Access will perform at satisfactory levels of service and capacity.

9 Conclusions

This Transport Impact Assessment (TIA) outlines the transport aspects of the proposed modifications on the Parkridge Structure Plan, focusing on traffic operations, access and intersection performances. Included are discussions regarding pedestrian, cycle, and public transport considerations.

This report has been prepared in accordance with the Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans and Activity Centre Zones (2016).

The following conclusions have been made in regard to the proposed Structure plan modification:

- The proposed structure plan is expected to generate the following yields:
 - » Residential R20 25 lots
 - » Residential R30 296 lots
 - » Residential R40 33 lots
 - » Public and Regional open spaces
- The proposed Parkridge Structure Plan area currently has poor/inadequate connectivity to public transportation due to the limited infrastructure and services in the surrounding area and the absence of any plans to modify the TransBunbury network.
- The active transport network is considered to be well-connected since adequate walking and
 cycling facilities are provided within the proposed Parkridge Structure Plan area and in the
 immediate surrounding areas.
- The proposed Parkridge Structure Plan area is considered to be adequately connected to the surrounding road network (The Boulevard to the north, and Forrest Highway in the east-west direction via Eaton Drive to the south),
- In terms of traffic generation, the proposed Parkridge Structure Plan is expected to generate a
 daily total of 2,874 trips, with 241 trips in the AM peak and 272 trips in the PM peak when the
 Site is fully developed.
- For a robust assessment, the adjacent Millbridge Estate development trip generation was included. The total traffic generation of both development at full build-out is 3,946 daily vehicle trips, with 330 trips in the AM peak hour and 374 trips in the PM peak hour period.
- The midblock traffic flow on Peninsula Lakes Drive between Glenhuon Boulevard and Eaton Drive is anticipated to reach 4,200vpd east of Glenhuon Boulevard. This exceeds the projected maximum volume for Access Streets of 3,000vpd. Improvements on Peninsula Lakes Drive or construction of the Millbridge Estate Access should be considered when the daily traffic volume reaches 3,000vpd at approximately at 63% completion of the proposed Parkridge development.
- The intersections of Eaton Drive/Peninsula Lakes Drive and Eaton Drive/ Millbridge Estate
 Access are anticipated to operate at satisfactory levels of service, with minimal queues and
 delays in the 2040 ultimate design year.

Overall, the proposed modification of the Parkridge Structure Plan will have minimal impact on the traffic operations and safety on the surrounding road network.

1.

Appendices.

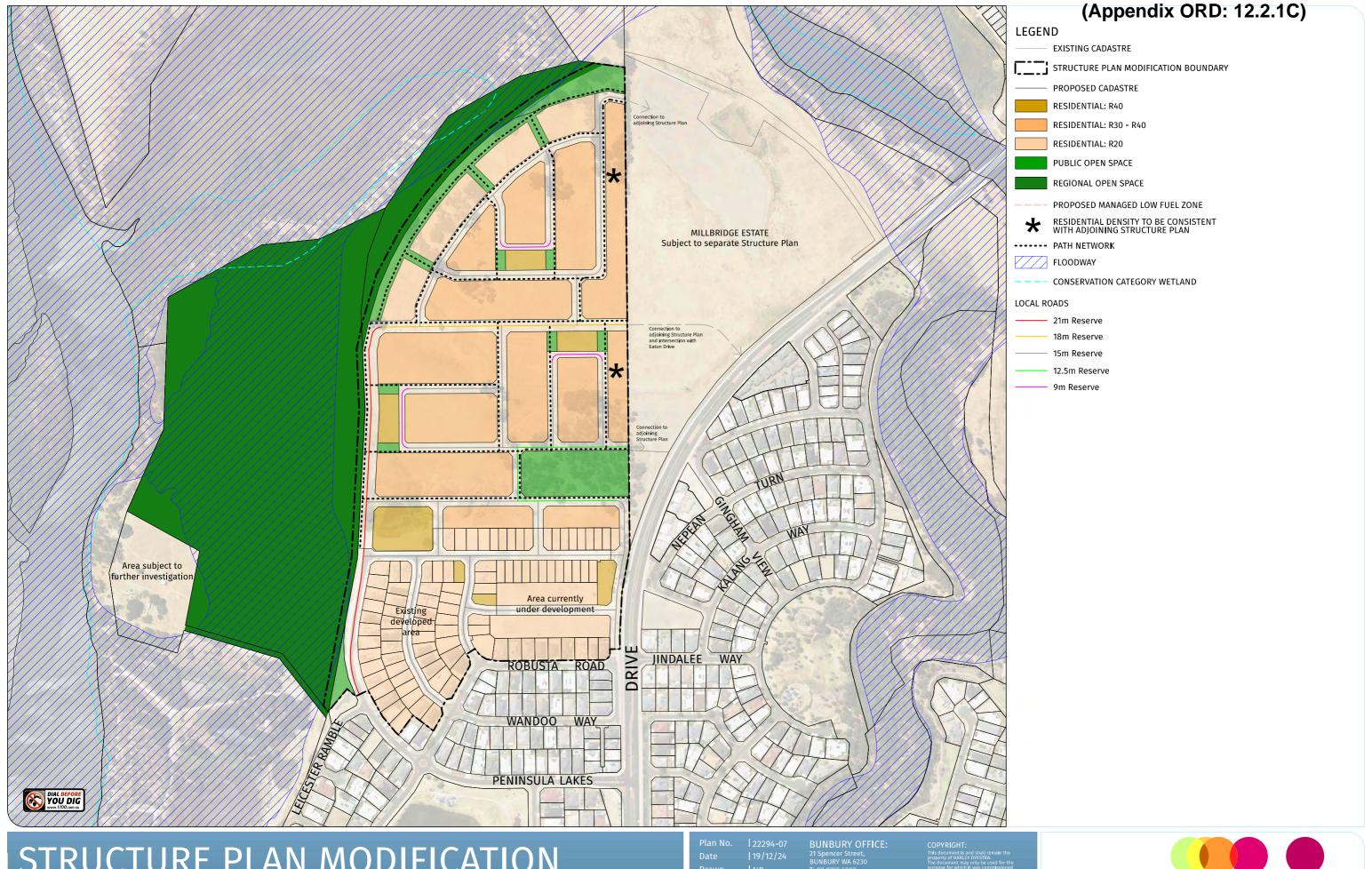
Appendix A WAPC Checklist

Item	Section	Comments/Proposals
SUMMARY	Section 1	
INTRODUCTION/BACKGROUND	Section 1	
STRUCTURE PLAN PROPOSAL		
Regional context	Section 2	
Proposed land uses	Section 2	
Table of land uses and quantities	Section 2	
Major attractors/generators	Section 6	
Any specific issues	NA	
EXISTING SITUATION		
Existing land uses within structure plan	Section 3	
Existing land uses within 800m of Structure Plan area	Section 3	
Existing road network within Structure Plan area	Section 3	
Existing pedestrian/cycle networks within Structure Plan area	Section 3	
Existing public transport services within Structure Plan area	Section 3	
Existing road network within 2 (or 5) km of Structure Plan area	Section 3	
Traffic flows on roads within Structure Plan area (AM and PM Peak Hours)	Section 3	
Traffic flows on roads within 2 (or 5) km of Structure Plan area (AM and PM Peak Hours)	Section 3	
Existing pedestrian/cycle networks within 800m of the Structure Plan area	Section 3	
Existing public transport services within 800m of the Structure Plan area	Section 3	
PROPOSED INTERNAL TRANSPORT NETWORKS		
Changes/additions to existing road network or proposed new road network	Section 4	
Road reservation widths	Section 4	
Road cross-sections & speed limits	Section 4	
Intersection controls	Section 4	
Pedestrian/cycle networks and crossing facilities	Section 4	
Public transport routes	Section 4	
CHANGES TO EXTERNAL TRANSPORT NETWORKS		
Road network	Section 5	
Intersection controls	Section 5	
Pedestrian/cycle networks and crossing facilities	Section 5	
Public transport services	Section 5	
INTEGRATION WITH SURROUNDING AREA		

Trip attractors/generators within 800m	Section 6
Proposed changes to land uses within 800m	Section 6
Travel desire lines from Structure Plan to these attractors/generators	N/A
Adequacy of existing transport networks	N/A
Deficiencies in existing transport networks	N/A
Remedial measures to address deficiencies	N/A
ANALYSIS OF INTERNAL TRANSPORT	
Assessment years and time periods	Section 7
Structure Plan generated traffic	Section 7
Extraneous (through) traffic	Section 7
Design traffic flows	Section 7
Road cross-sections	Section 5
Intersection controls	Section 5
Access strategy	Section 7
Pedestrian/cycle networks	Section 4
Safe routes to schools	Section 7
Pedestrian permeability & efficiency	Section 4
Access to public transport	Section 4
ANALYSIS OF EXTERNAL TRANSPORT NETWORKS	
Extent of analysis	Section 8
Base flows for assessment years	Section 8
Total traffic flows	Section 8
Road cross-sections	Section 4
Intersection layouts & controls	Section 8
Pedestrian/cycle networks	Section 4
CONCLUSIONS	Section 9

Appendix B

Structure Plan Modification Area.



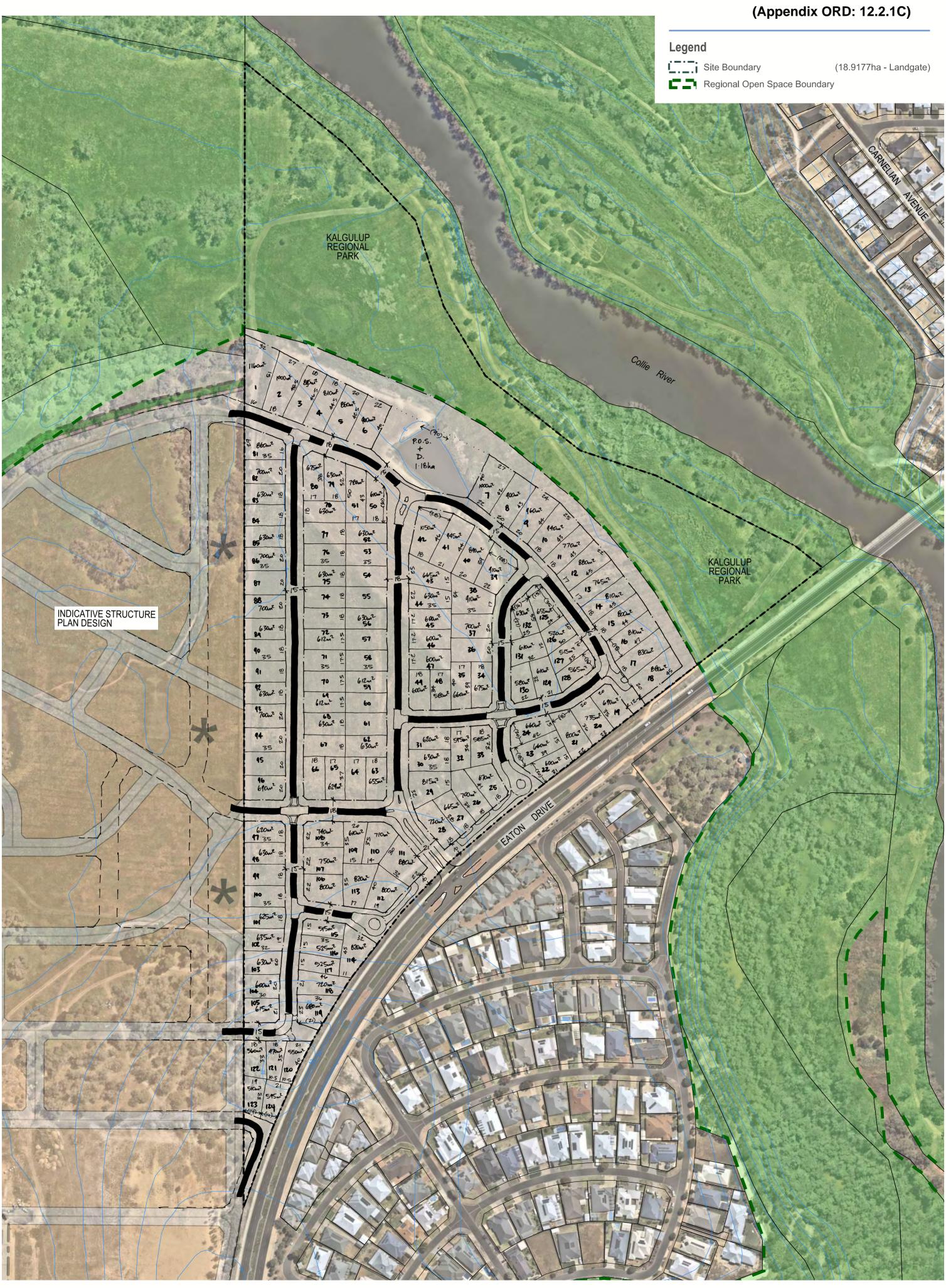
STRUCTURE PLAN MODIFICATION

Robusta Road, Eaton PARKRIDGE



Appendix C

Subdivision Concept Plan for Millbridge Estate Development.







Appendix D

SIDRA Results.

NETWORK LAYOUT

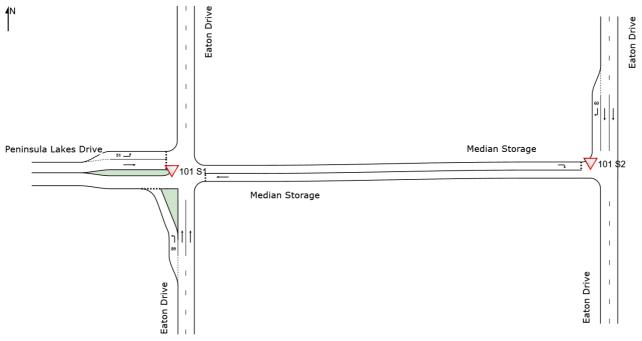
■■ Network: N101 [Eaton Drive - Peninsula Lakes AM (Network

Folder: S1 Base 2025)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN N	ETWORK										
Site ID	CCG ID Site Name										
∇101 S1	NA	Eaton Drive - Peninsula Lakes Drive AM S1									
√101 S2	NA	Eaton Drive - Peninsula Lakes Drive AM S2									

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Project: C:\Users\scano\Desktop\SIDRA (SP1)\300305774 - Parkridge Structure Plan Modification\Modelling\304900925 Parkridge Structure
Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive AM S1 (Site

Folder: S1 2025 Base)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

- Peninsula Lakes AM (Network

Folder: S1 Base 2025)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	Vehicle Movement Performance														
Mov ID	Turn	Mov Class		ows		rival ows HV]	Deg. Satn	Aver. Delay	Level of Service	95% Bad [Veh.	ck Of Que Dist]	ue Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
0 "		D :	veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South	: Eato	n Drive													
1	L2	All MCs	20	10.5	20	10.5	0.013	5.9	LOSA	0.1	0.4	0.10	0.51	0.10	48.7
2	T1	All MCs	325	3.9	325	3.9	0.087	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	60.0
Appro	ach		345	4.3	345	4.3	0.087	0.4	LOSA	0.1	0.4	0.01	0.03	0.01	59.2
East:	Media	n Storag	е												
5	T1	All MCs	32	6.7	32	6.7	0.010	0.2	LOSA	0.0	0.3	0.27	0.07	0.27	43.6
Appro	ach		32	6.7	32	6.7	0.010	0.2	LOSA	0.0	0.3	0.27	0.07	0.27	43.6
West	Penir	isula Lak	es Drive	Э											
10	L2	All MCs	84	0.0	84	0.0	0.059	5.1	LOSA	0.2	1.8	0.26	0.52	0.26	48.5
11	T1	All MCs	58	7.3	58	7.3	0.071	6.7	LOSA	0.3	2.0	0.45	0.63	0.45	42.4
Appro	ach		142	3.0	142	3.0	0.071	5.7	LOSA	0.3	2.0	0.34	0.56	0.34	46.8
All Ve	hicles		519	4.1	519	4.1	0.087	1.8	NA	0.3	2.0	0.11	0.18	0.11	55.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab)

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\scano\Desktop\SIDRA (SP1)\\300305774 - Parkridge Structure Plan Modification\Modelling\\304900925 Parkridge Structure
Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive AM S2 (Site

Folder: S1 2025 Base)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

- Peninsula Lakes AM (Network

Folder: S1 Base 2025)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehi	Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Dem Fl	nand lows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	393	3.5	393	3.5	0.103	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	60.0
9	R2	All MCs	32	6.7	32	6.7	0.018	5.8	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		424	3.7	424	3.7	0.103	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.5
West	: Media	an Storag	e												
12	R2	All MCs	58	7.3	58	7.3	0.059	2.1	LOSA	0.2	1.5	0.37	0.41	0.37	44.9
Appro	oach		58	7.3	58	7.3	0.059	2.1	LOSA	0.2	1.5	0.37	0.41	0.37	44.9
All Ve	hicles		482	4.1	482	4.1	0.103	0.7	NA	0.2	1.5	0.04	0.09	0.04	58.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive PM S1 (Site

Folder: S1 2025 Base)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

- Peninsula Lakes PM (Network

Folder: S1 Base 2025)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	ince										
Mov ID	Turn	Mov Class		ows		rival lows HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back [Veh.	Of Queue Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South	: Eato	n Drive													
1	L2	All MCs	42	2.5	42	2.5	0.028	5.9	LOSA	0.1	8.0	0.17	0.52	0.17	48.8
2	T1	All MCs	533	1.2	533	1.2	0.138	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appro	ach		575	1.3	575	1.3	0.138	0.5	LOSA	0.1	8.0	0.01	0.04	0.01	58.9
East:	Media	ın Storag	е												
5	T1	All MCs	87	0.0	87	0.0	0.031	0.4	LOSA	0.1	0.9	0.35	0.13	0.35	43.8
Appro	ach		87	0.0	87	0.0	0.031	0.4	LOSA	0.1	0.9	0.35	0.13	0.35	43.8
West:	Penir	isula Lak	es Drive	Э											
10	L2	All MCs	48	0.0	48	0.0	0.037	5.4	LOSA	0.1	1.1	0.33	0.54	0.33	48.3
11	T1	All MCs	29	7.1	29	7.1	0.052	9.1	LOSA	0.2	1.4	0.57	0.73	0.57	40.2
Appro	ach		78	2.7	78	2.7	0.052	6.8	LOSA	0.2	1.4	0.42	0.61	0.42	46.1
All Ve	hicles		740	1.3	740	1.3	0.138	1.1	NA	0.2	1.4	0.10	0.11	0.10	56.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab)

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: C:\Users\scano\Desktop\SIDRA (SP1)\\300305774 - Parkridge Structure Plan Modification\Modelling\\304900925 Parkridge Structure
Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive PM S2 (Site

Folder: S1 2025 Base)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

- Peninsula Lakes PM (Network

Folder: S1 Base 2025)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehi	cle Mo	ovement	Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	and ows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total l veh/h		[Total veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	433	1.7	433	1.7	0.112	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	87	0.0	87	0.0	0.047	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		520	1.4	520	1.4	0.112	1.0	NA	0.0	0.0	0.00	0.11	0.00	58.9
West	Media	an Storag	е												
12	R2	All MCs	29	7.1	29	7.1	0.031	2.2	LOS A	0.1	8.0	0.38	0.41	0.38	44.9
Appro	oach		29	7.1	29	7.1	0.031	2.2	LOSA	0.1	0.8	0.38	0.41	0.38	44.9
All Ve	hicles		549	1.7	549	1.7	0.112	1.0	NA	0.1	0.8	0.02	0.12	0.02	58.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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NETWORK LAYOUT

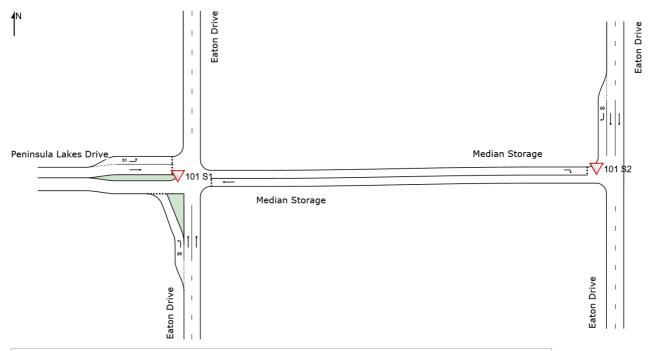
■■ Network: N101 [Eaton Drive - Peninsula Lakes AM (Network

Folder: S2 2030 50% Parkridge)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NE	TWORK	
Site ID	CCG ID	Site Name
∇101 S1	NA	Eaton Drive - Peninsula Lakes Drive AM S1
V 101 S2	NA	Eaton Drive - Peninsula Lakes Drive AM S2

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Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive AM S1 (Site

Folder: S2 2030 50% Parkridge)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■■ Network: N101 [Eaton Drive - Peninsula Lakes AM (Network Folder: S2 2030 50% Parkridge)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	ince										
Mov ID	Turn	Mov Class	[Total l	ows HV]	Fl [Total		Deg. Satn	Aver. Delay	Level of Service	95% Back [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
South	: Eato	n Drive	veh/h	%	veh/h	%	v/c	sec	_	veh	m	_	_	_	km/h
1	L2	All MCs	48	4.3	48	4.3	0.031	5.8	LOSA	0.1	1.0	0.11	0.52	0.11	48.9
2	T1	All MCs	363	3.8	363	3.8	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Appro	ach		412	3.8	412	3.8	0.097	0.7	LOSA	0.1	1.0	0.01	0.06	0.01	58.4
East:	Media	ın Storag	е												
5	T1	All MCs	41	5.1	41	5.1	0.014	0.3	LOSA	0.1	0.4	0.28	0.08	0.28	43.7
Appro	ach		41	5.1	41	5.1	0.014	0.3	LOSA	0.1	0.4	0.28	0.08	0.28	43.7
West:	Penir	isula Lak	es Drive	Э											
10	L2	All MCs	114	0.0	114	0.0	0.081	5.1	LOSA	0.3	2.5	0.28	0.53	0.28	48.4
11	T1	All MCs	140	3.8	140	3.8	0.181	7.3	LOSA	0.7	5.3	0.51	0.69	0.51	41.8
Appro	ach		254	2.1	254	2.1	0.181	6.3	LOSA	0.7	5.3	0.41	0.62	0.41	45.7
All Ve	hicles		706	3.3	706	3.3	0.181	2.7	NA	0.7	5.3	0.17	0.26	0.17	53.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab)

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive AM S2 (Site

Folder: S2 2030 50% Parkridge)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228 — Network: N101 [Eaton Drive - Peninsula Lakes AM (Network

Folder: S2 2030 50% Parkridge)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle Mo	ovement	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	and ows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total I veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eatoı	n Drive													
8	T1	All MCs	439	3.4	439	3.4	0.115	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	41	5.1	41	5.1	0.023	5.8	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		480	3.5	480	3.5	0.115	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.4
West	Media	an Storag	je												
12	R2	All MCs	140	3.8	140	3.8	0.144	2.4	LOSA	0.5	3.7	0.41	0.47	0.41	46.3
Appro	oach		140	3.8	140	3.8	0.144	2.4	LOSA	0.5	3.7	0.41	0.47	0.41	46.3
All Ve	hicles		620	3.6	620	3.6	0.144	0.9	NA	0.5	3.7	0.09	0.15	0.09	57.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive PM S1 (Site

Folder: S2 2030 50% Parkridge)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■■ Network: N101 [Eaton Drive - Peninsula Lakes PM (Network Folder: S2 2030 50% Parkridge)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	ince										
Mov ID	Turn	Mov Class	[Total l	ows HV]	Fl [Total		Deg. Satn	Aver. Delay	Level of Service	95% Back [Veh.	Dist]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
South	: Eato	n Drive	veh/h	%	veh/h	%	v/c	sec		veh	m	_	_		km/h
1	L2	All MCs	121	0.9	121	0.9	0.082	6.0	LOSA	0.3	2.5	0.21	0.53	0.21	48.8
2	T1	All MCs	597	1.2	597	1.2	0.155	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Appro	ach		718	1.2	718	1.2	0.155	1.0	LOSA	0.3	2.5	0.04	0.09	0.04	57.7
East:	Media	ın Storag	е												
5	T1	All MCs	117	0.0	117	0.0	0.043	0.5	LOSA	0.2	1.3	0.38	0.15	0.38	43.8
Appro	ach		117	0.0	117	0.0	0.043	0.5	LOSA	0.2	1.3	0.38	0.15	0.38	43.8
West:	Penir	isula Lak	es Drive	Э											
10	L2	All MCs	64	0.0	64	0.0	0.051	5.5	LOSA	0.2	1.5	0.36	0.56	0.36	48.2
11	T1	All MCs	75	2.8	75	2.8	0.152	10.6	LOS B	0.6	4.0	0.65	0.83	0.65	38.9
Appro	ach		139	1.5	139	1.5	0.152	8.3	LOSA	0.6	4.0	0.51	0.71	0.51	44.3
All Ve	hicles		974	1.1	974	1.1	0.155	2.0	NA	0.6	4.0	0.15	0.18	0.15	54.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab)

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive PM S2 (Site

Folder: S2 2030 50% Parkridge)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

■■ Network: N101 [Eaton Drive - Peninsula Lakes PM (Network Folder: S2 2030 50% Parkridge)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehi	cle Mo	ovement	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	and ows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	484	1.7	484	1.7	0.126	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	117	0.0	117	0.0	0.062	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		601	1.4	601	1.4	0.126	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.8
West	Media	an Storag	e												
12	R2	All MCs	75	2.8	75	2.8	0.079	2.4	LOS A	0.3	1.9	0.41	0.46	0.41	46.7
Appro	oach		75	2.8	75	2.8	0.079	2.4	LOSA	0.3	1.9	0.41	0.46	0.41	46.7
All Ve	hicles		676	1.6	676	1.6	0.126	1.3	NA	0.3	1.9	0.05	0.16	0.05	57.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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NETWORK LAYOUT

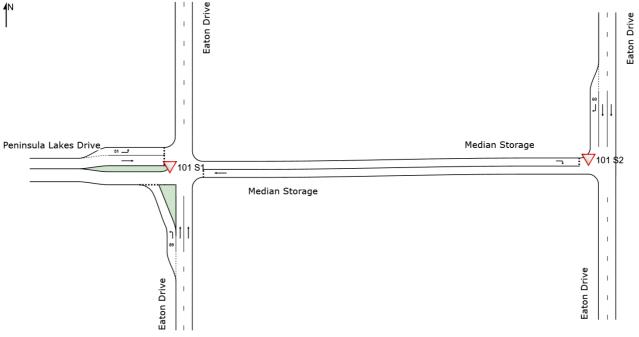
■■ Network: N101 [Eaton Drive - Peninsula Lakes AM (Network

Folder: S3 2035 100% Parkridge 50% Southbank)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN N	ETWORK									
Site ID CCG ID Site Name										
∇101 S1	NA	Eaton Drive - Peninsula Lakes Drive AM S1								
√101 S2	NA	Eaton Drive - Peninsula Lakes Drive AM S2								

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive AM S1 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes AM (Network Folder: S3 2035 100% Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class		ows HV]		rival ows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	: Eato	n Drive													
1 2	L2 T1	All MCs All MCs		5.1 3.8	62 416	5.1 3.8	0.041 0.111	5.8 0.0	LOS A LOS A	0.2 0.0	1.3 0.0	0.13 0.00	0.52 0.00	0.13 0.00	48.9 59.9
Appro	ach		478	4.0	478	4.0	0.111	0.8	LOSA	0.2	1.3	0.02	0.07	0.02	58.2
East:	Media	n Storag	е												
5	T1	All MCs	47	6.7	47	6.7	0.016	0.3	LOSA	0.1	0.5	0.31	0.10	0.31	43.5
Appro	ach		47	6.7	47	6.7	0.016	0.3	LOSA	0.1	0.5	0.31	0.10	0.31	43.5
West:	Penir	isula Lak	es Drive	9											
10	L2	All MCs	128	0.0	128	0.0	0.094	5.3	LOSA	0.4	2.9	0.30	0.54	0.30	48.4
11	T1	All MCs	176	3.0	176	3.0	0.247	8.0	LOSA	1.0	7.3	0.56	0.73	0.56	41.1
Appro	ach		304	1.7	304	1.7	0.247	6.8	LOSA	1.0	7.3	0.45	0.65	0.45	45.1
All Ve	hicles		829	3.3	829	3.3	0.247	3.0	NA	1.0	7.3	0.19	0.28	0.19	53.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive AM S2 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes AM (Network Folder: S3 2035 100% Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle Mo	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	nand lows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	542	2.9	542	2.9	0.142	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	47	6.7	47	6.7	0.027	5.8	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	ach		589	3.2	589	3.2	0.142	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.5
West	Media	an Storag	е												
12	R2	All MCs	176	3.0	176	3.0	0.198	3.0	LOSA	0.7	5.2	0.47	0.54	0.47	46.0
Appro	ach		176	3.0	176	3.0	0.198	3.0	LOSA	0.7	5.2	0.47	0.54	0.47	46.0
All Ve	hicles		765	3.2	765	3.2	0.198	1.1	NA	0.7	5.2	0.11	0.16	0.11	57.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive PM S1 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes PM (Network Folder: S3 2035 100% Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class		ows HV]		rival ows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	: Eato	n Drive													
1 2	L2 T1	All MCs All MCs		0.7 1.2	155 709	0.7 1.2	0.106 0.184	6.0 0.0	LOS A LOS A	0.4 0.0	3.3 0.0	0.23 0.00	0.53 0.00	0.23 0.00	48.7 59.9
Appro	ach		864	1.1	864	1.1	0.184	1.1	LOSA	0.4	3.3	0.04	0.10	0.04	57.5
East:	Media	ın Storag	е												
5	T1	All MCs	132	0.0	132	0.0	0.051	0.6	LOSA	0.2	1.5	0.42	0.19	0.42	43.6
Appro	ach		132	0.0	132	0.0	0.051	0.6	LOSA	0.2	1.5	0.42	0.19	0.42	43.6
West:	Penir	isula Lak	es Drive	Э											
10	L2	All MCs	73	0.0	73	0.0	0.061	5.8	LOSA	0.2	1.8	0.40	0.59	0.40	48.1
11	T1	All MCs	95	3.3	95	3.3	0.241	13.6	LOS B	0.9	6.6	0.74	0.90	0.81	36.6
Appro	ach		167	1.9	167	1.9	0.241	10.2	LOS B	0.9	6.6	0.59	0.76	0.63	42.8
All Ve	hicles		1163	1.1	1163	1.1	0.241	2.4	NA	0.9	6.6	0.16	0.20	0.17	54.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive PM S2 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes PM (Network Folder: S3 2035 100% Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle Mo	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	and ows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	559	1.7	559	1.7	0.145	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	132	0.0	132	0.0	0.070	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		691	1.4	691	1.4	0.145	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.8
West	Media	an Storag	е												
12	R2	All MCs	95	3.3	95	3.3	0.108	2.8	LOSA	0.4	2.7	0.45	0.52	0.45	46.0
Appro	ach		95	3.3	95	3.3	0.108	2.8	LOSA	0.4	2.7	0.45	0.52	0.45	46.0
All Ve	hicles		785	1.6	785	1.6	0.145	1.3	NA	0.4	2.7	0.05	0.17	0.05	57.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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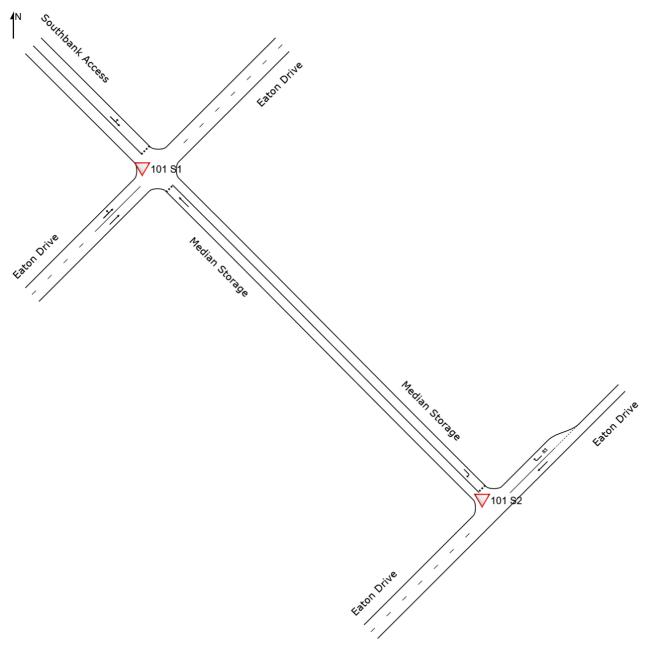
NETWORK LAYOUT

■■ Network: N101 [Eaton Drive - Southbank Access AM (Network Folder: S3 2035 100% Parkridge 50% Southbank)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK									
Site ID	CCG ID Site Name								
∇101 S1	NA	Eaton Drive - Southbank Access AM S1							
√101 S2	NA	Eaton Drive - Southbank Access AM S2							

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Project: C:\Users\scano\Desktop\SIDRA (SP1)\300305774 - Parkridge Structure Plan Modification\Modelling\304900925 Parkridge Structure Plan TIA V6.sip9

MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Southbank Access AM S1 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access AM
 (Network Folder: S3 2035 100%
 Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class		lows HV]		rival lows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	e Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthEast: Median Storage															
5	T1	All MCs	6	0.0	6	0.0	0.002	0.4	LOSA	0.0	0.1	0.35	0.13	0.35	44.3
Appro	ach		6	0.0	6	0.0	0.002	0.4	LOSA	0.0	0.1	0.35	0.13	0.35	44.3
North	NorthWest: Southbank Access														
10	L2	All MCs	18	0.0	18	0.0	0.116	5.4	LOSA	0.5	3.2	0.51	0.67	0.51	47.6
11	T1	All MCs	72	0.0	72	0.0	0.116	7.5	LOSA	0.5	3.2	0.51	0.67	0.51	42.0
Appro	ach		89	0.0	89	0.0	0.116	7.0	LOSA	0.5	3.2	0.51	0.67	0.51	43.7
South	West:	Eaton D	rive												
1	L2	All MCs	25	0.0	25	0.0	0.141	5.6	LOSA	0.0	0.0	0.00	0.06	0.00	57.0
2	T1	All MCs	508	3.1	508	3.1	0.141	0.0	LOSA	0.0	0.0	0.00	0.03	0.00	59.7
Appro	ach		534	3.0	534	3.0	0.141	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
All Ve	hicles		629	2.5	629	2.5	0.141	1.3	NA	0.5	3.2	0.08	0.12	0.08	57.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Southbank Access AM S2 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access AM
 (Network Folder: S3 2035 100%
 Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Dem Fl	and ows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	East: l	Eaton Dri	ve												
8	T1	All MCs	431	4.4	431	4.4	0.229	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	6	0.0	6	0.0	0.003	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		437	4.3	437	4.3	0.229	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
North	West:	Median S	Storage												
12	R2	All MCs	72	0.0	72	0.0	0.058	1.5	LOS A	0.1	1.0	0.27	0.37	0.27	49.4
Appro	oach		72	0.0	72	0.0	0.058	1.5	LOSA	0.1	1.0	0.27	0.37	0.27	49.4
All Ve	hicles		508	3.7	508	3.7	0.229	0.3	NA	0.1	1.0	0.04	0.06	0.04	58.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Southbank Access PM S1 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access PM
 (Network Folder: S3 2035 100%
 Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class		ows HV]		rival lows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	SouthEast: Median Storage														
5	T1	All MCs	18	0.0	18	0.0	0.007	0.6	LOSA	0.0	0.2	0.41	0.18	0.41	44.1
Appro	ach		18	0.0	18	0.0	0.007	0.6	LOS A	0.0	0.2	0.41	0.18	0.41	44.1
NorthWest: Southbank Access															
10	L2	All MCs	9	0.0	9	0.0	0.076	5.5	LOS A	0.3	2.0	0.56	0.71	0.56	46.9
11	T1	All MCs	39	0.0	39	0.0	0.076	8.8	LOSA	0.3	2.0	0.56	0.71	0.56	41.0
Appro	ach		48	0.0	48	0.0	0.076	8.1	LOSA	0.3	2.0	0.56	0.71	0.56	42.7
South	West:	Eaton D	rive												
1	L2	All MCs	69	0.0	69	0.0	0.181	5.6	LOS A	0.0	0.0	0.00	0.12	0.00	56.4
2	T1	All MCs	632	1.2	632	1.2	0.181	0.0	LOSA	0.0	0.0	0.00	0.05	0.00	59.4
Appro	ach		701	1.1	701	1.1	0.181	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
All Ve	hicles		767	1.0	767	1.0	0.181	1.1	NA	0.3	2.0	0.04	0.10	0.04	58.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Southbank Access PM S2 (Site

Folder: S3 2035 100% Parkridge 50% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access PM
 (Network Folder: S3 2035 100%
 Parkridge 50% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	nand lows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	East:	Eaton Dri	ve												
8	T1	All MCs	622	1.5	622	1.5	0.324	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	18	0.0	18	0.0	0.009	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	ach		640	1.5	640	1.5	0.324	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
North	West:	Median S	Storage												
12	R2	All MCs	39	0.0	39	0.0	0.036	1.9	LOS A	0.1	0.6	0.34	0.43	0.34	48.8
Appro	ach		39	0.0	39	0.0	0.036	1.9	LOSA	0.1	0.6	0.34	0.43	0.34	48.8
All Ve	hicles		679	1.4	679	1.4	0.324	0.4	NA	0.1	0.6	0.02	0.04	0.02	59.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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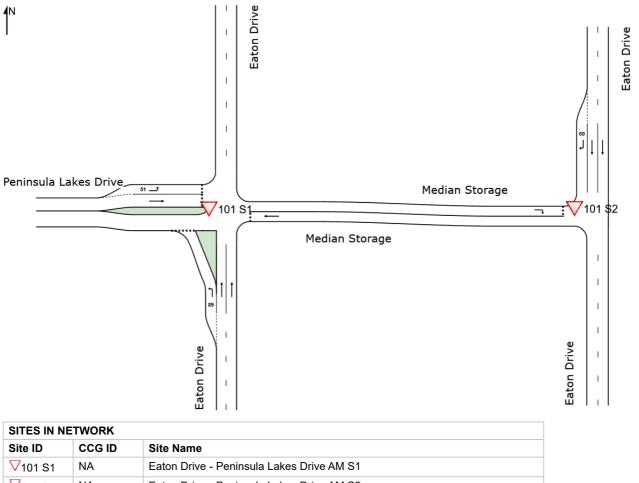
NETWORK LAYOUT

■■ Network: N101 [Eaton Drive - Peninsula Lakes AM (Network

Folder: S4 2040 100% Parkridge 100% Southbank)]

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NE	TWORK	
Site ID	CCG ID	Site Name
∇101 S1	NA	Eaton Drive - Peninsula Lakes Drive AM S1
√101 S2	NA	Eaton Drive - Peninsula Lakes Drive AM S2

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive AM S1 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes AM (Network Folder: S4 2040 100% Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	ince										
Mov ID	Turn	Mov Class		ows HV]		rival lows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	: Eato	n Drive													
1 2	L2 T1	All MCs All MCs		5.1 3.5	62 449		0.041 0.120	5.8 0.0	LOS A LOS A	0.2 0.0	1.3 0.0	0.13 0.00	0.52 0.00	0.13 0.00	48.9 59.9
Appro	ach		512	3.7	512	3.7	0.120	0.7	LOSA	0.2	1.3	0.02	0.06	0.02	58.3
East:	Media	ın Storagı	е												
5	T1	All MCs	49	6.4	49	6.4	0.017	0.3	LOSA	0.1	0.5	0.32	0.10	0.32	43.4
Appro	ach		49	6.4	49	6.4	0.017	0.3	LOSA	0.1	0.5	0.32	0.10	0.32	43.4
West:	Penir	isula Lak	es Drive	Э											
10	L2	All MCs	133	0.0	133	0.0	0.099	5.3	LOSA	0.4	3.0	0.32	0.55	0.32	48.3
11	T1	All MCs	176	3.0	176	3.0	0.258	8.5	LOSA	1.1	7.9	0.58	0.76	0.61	40.7
Appro	ach		308	1.7	308	1.7	0.258	7.1	LOSA	1.1	7.9	0.47	0.67	0.48	45.0
All Ve	hicles		869	3.1	869	3.1	0.258	3.0	NA	1.1	7.9	0.19	0.28	0.20	53.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive AM S2 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes AM (Network Folder: S4 2040 100% Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle Mo	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	nand lows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	602	2.8	602	2.8	0.157	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	49	6.4	49	6.4	0.028	5.8	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		652	3.1	652	3.1	0.157	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.5
West	Media	an Storag	е												
12	R2	All MCs	176	3.0	176	3.0	0.211	3.3	LOS A	0.7	5.5	0.49	0.57	0.49	45.6
Appro	oach		176	3.0	176	3.0	0.211	3.3	LOSA	0.7	5.5	0.49	0.57	0.49	45.6
All Ve	hicles		827	3.1	827	3.1	0.211	1.1	NA	0.7	5.5	0.11	0.16	0.11	57.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Peninsula Lakes Drive PM S1 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive - Peninsula Lakes PM (Network Folder: S4 2040 100% Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class		ows HV]		rival lows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	: Eato	n Drive		, ,		,,									
1 2	L2 T1	All MCs All MCs		0.7 1.1	155 779	0.7 1.1	0.107 0.201	6.1 0.1	LOS A LOS A	0.4 0.0	3.3 0.0	0.24 0.00	0.54 0.00	0.24 0.00	48.7 59.9
Appro	ach		934	1.0	934	1.0	0.201	1.0	LOSA	0.4	3.3	0.04	0.09	0.04	57.7
East:	Media	n Storag	е												
5	T1	All MCs	137	0.0	137	0.0	0.056	0.7	LOSA	0.2	1.7	0.44	0.21	0.44	43.6
Appro	ach		137	0.0	137	0.0	0.056	0.7	LOSA	0.2	1.7	0.44	0.21	0.44	43.6
West:	Penir	nsula Lak	es Drive	Э											
10	L2	All MCs	76	0.0	76	0.0	0.067	6.0	LOSA	0.3	1.9	0.42	0.61	0.42	48.1
11	T1	All MCs	95	3.3	95	3.3	0.271	15.5	LOS C	1.0	7.5	0.78	0.93	0.89	35.3
Appro	ach		171	1.9	171	1.9	0.271	11.2	LOS B	1.0	7.5	0.62	0.79	0.68	42.2
All Ve	hicles		1241	1.0	1241	1.0	0.271	2.4	NA	1.0	7.5	0.16	0.20	0.17	54.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Peninsula Lakes Drive PM S2 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Paninsula Lakes PM (Network

- Peninsula Lakes PM (Network Folder: S4 2040 100% Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	and ows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total I veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	: Eato	n Drive													
8	T1	All MCs	608	1.7	608	1.7	0.158	0.0	LOSA	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	137	0.0	137	0.0	0.073	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	ach		745	1.4	745	1.4	0.158	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.8
West	Media	an Storag	е												
12	R2	All MCs	95	3.3	95	3.3	0.114	3.1	LOSA	0.4	2.8	0.47	0.55	0.47	45.6
Appro	ach		95	3.3	95	3.3	0.114	3.1	LOSA	0.4	2.8	0.47	0.55	0.47	45.6
All Ve	hicles		840	1.6	840	1.6	0.158	1.3	NA	0.4	2.8	0.05	0.17	0.05	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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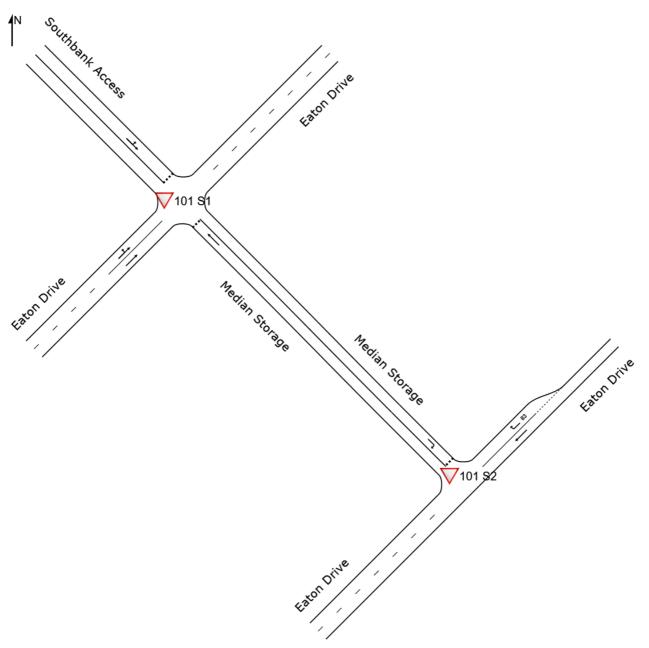
NETWORK LAYOUT

■■ Network: N101 [Eaton Drive - Southbank Access AM (Network Folder: S4 2040 100% Parkridge 100% Southbank)]

New Network

Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN N	ETWORK	
Site ID	CCG ID	Site Name
√101 S1	NA	Eaton Drive - Southbank Access AM S1
√101 S2	NA	Eaton Drive - Southbank Access AM S2

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MOVEMENT SUMMARY

∇ Site: 101 S1 [Eaton Drive - Southbank Access AM S1 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access AM
 (Network Folder: S4 2040 100%
 Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class		lows HV]		rival lows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Dist]	e Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	East:	Median S		/0	VEII/II	/0	V/C	366		ven	m				NIII/II
5	T1	All MCs	9	0.0	9	0.0	0.003	0.4	LOSA	0.0	0.1	0.36	0.14	0.36	44.3
Appro	ach		9	0.0	9	0.0	0.003	0.4	LOSA	0.0	0.1	0.36	0.14	0.36	44.3
North	West:	Southba	nk Acce	ess											
10	L2	All MCs	25	0.0	25	0.0	0.174	5.4	LOSA	0.7	4.9	0.54	0.70	0.54	47.3
11	T1	All MCs	103	0.0	103	0.0	0.174	8.0	LOSA	0.7	4.9	0.54	0.70	0.54	41.6
Appro	ach		128	0.0	128	0.0	0.174	7.5	LOSA	0.7	4.9	0.54	0.70	0.54	43.3
South	West:	Eaton D	rive												
1	L2	All MCs	36	0.0	36	0.0	0.151	5.6	LOSA	0.0	0.0	0.00	0.07	0.00	56.8
2	T1	All MCs	536	2.9	536	2.9	0.151	0.0	LOSA	0.0	0.0	0.00	0.03	0.00	59.6
Appro	ach		572	2.8	572	2.8	0.151	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.4
All Ve	hicles		709	2.2	709	2.2	0.174	1.7	NA	0.7	4.9	0.10	0.16	0.10	56.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

 $\label{eq:holes} \mbox{HV (\%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.}$

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Southbank Access AM S2 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access AM
 (Network Folder: S4 2040 100%
 Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	nand lows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total veh/h		[Total l veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	· km/h
North	East: l	Eaton Dri	ive												
8	T1	All MCs	456	4.4	456	4.4	0.243	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	All MCs	9	0.0	9	0.0	0.005	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		465	4.3	465	4.3	0.243	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.8
North	West:	Median S	Storage												
12	R2	All MCs	103	0.0	103	0.0	0.085	1.6	LOS A	0.2	1.4	0.29	0.39	0.29	49.2
Appro	oach		103	0.0	103	0.0	0.085	1.6	LOSA	0.2	1.4	0.29	0.39	0.29	49.2
All Ve	hicles		568	3.5	568	3.5	0.243	0.4	NA	0.2	1.4	0.05	0.08	0.05	58.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S1 [Eaton Drive - Southbank Access PM S1 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access PM
 (Network Folder: S4 2040 100%
 Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehic	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class		ows HV]		rival ows HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back [Veh. veh	Of Queue Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South	East:	Median S		,,,	731,711	,,,	• • • • • • • • • • • • • • • • • • • •			VO11					1311/11
5	T1	All MCs	25	0.0	25	0.0	0.010	0.6	LOSA	0.0	0.3	0.43	0.21	0.43	44.1
Appro	ach		25	0.0	25	0.0	0.010	0.6	LOSA	0.0	0.3	0.43	0.21	0.43	44.1
North'	West:	Southba	nk Acce	ss											
10	L2	All MCs	15	0.0	15	0.0	0.120	5.5	LOSA	0.5	3.2	0.59	0.75	0.59	46.5
11	T1	All MCs	57	0.0	57	0.0	0.120	9.7	LOSA	0.5	3.2	0.59	0.75	0.59	40.3
Appro	ach		72	0.0	72	0.0	0.120	8.8	LOSA	0.5	3.2	0.59	0.75	0.59	42.2
South	West:	Eaton D	rive												
1	L2	All MCs	101	0.0	101	0.0	0.199	5.6	LOSA	0.0	0.0	0.00	0.16	0.00	56.1
2	T1	All MCs	669	1.3	669	1.3	0.199	0.1	LOSA	0.0	0.0	0.00	0.07	0.00	59.3
Appro	ach		771	1.1	771	1.1	0.199	8.0	NA	0.0	0.0	0.00	0.08	0.00	58.9
All Ve	hicles		867	1.0	867	1.0	0.199	1.4	NA	0.5	3.2	0.06	0.14	0.06	57.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

V Site: 101 S2 [Eaton Drive - Southbank Access PM S2 (Site

Folder: S4 2040 100% Parkridge 100% Southbank)]
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Eaton Drive
 Southbank Access PM
 (Network Folder: S4 2040 100%
 Parkridge 100% Southbank)]

New Site

Site Category: (None) Give-Way (Two-Way)

Vehi	cle M	ovemen	t Perfo	rma	nce										
Mov ID	Turn	Mov Class	Dem Fl	nand lows		rival ows	Deg. Satn	Aver. Delay	Level of Service	95% Back	Of Queue	Prop. Que	Eff. Stop	Aver. No. of	Aver. Speed
			[Total veh/h		[Total veh/h	HV]	v/c	sec		[Veh. veh	Dist] m		Rate	Cycles	km/h
North	East:	Eaton Dri	ve												
8	T1	All MCs	658	1.6	658	1.6	0.343	0.1	LOSA	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	All MCs	25	0.0	25	0.0	0.013	5.7	LOSA	0.0	0.0	0.00	0.63	0.00	50.5
Appro	oach		683	1.5	683	1.5	0.343	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.6
North	West:	Median S	Storage												
12	R2	All MCs	57	0.0	57	0.0	0.054	2.0	LOS A	0.1	0.9	0.35	0.46	0.35	48.7
Appro	oach		57	0.0	57	0.0	0.054	2.0	LOSA	0.1	0.9	0.35	0.46	0.35	48.7
All Ve	hicles		740	1.4	740	1.4	0.343	0.4	NA	0.1	0.9	0.03	0.06	0.03	59.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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APPENDIX G | SERVICING AND INFRASTRUCTURE

(Appendix ORD: 12.2.1C) calibre



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DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
А	13 Mar 18	For Review	Natalie Adams	Gary Barbour	
В	14 Mar 18	For inclusion in Structure Plan Report	Natalie Adams	Gary Barbour	

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1 Introduction

Parkridge Group Pty Ltd has engaged Calibre Professional Services Pty Ltd (Calibre) to undertake the initial investigations and reporting on servicing constraints for the potential redevelopment of Lot 9004 Eaton Drive, Eaton.

The site is a previously undeveloped site which consists of Lot 9004 subdivided into three stages of residential lots as shown in the Structure Plan extract in Figure 1 below. The proposed Structure Plan boundary sits within the Lot 9004 boundary with the intention to commence the Development in 2018.

This area of land sits approximately 2km upstream of the estuary along the Collie River flood plain.

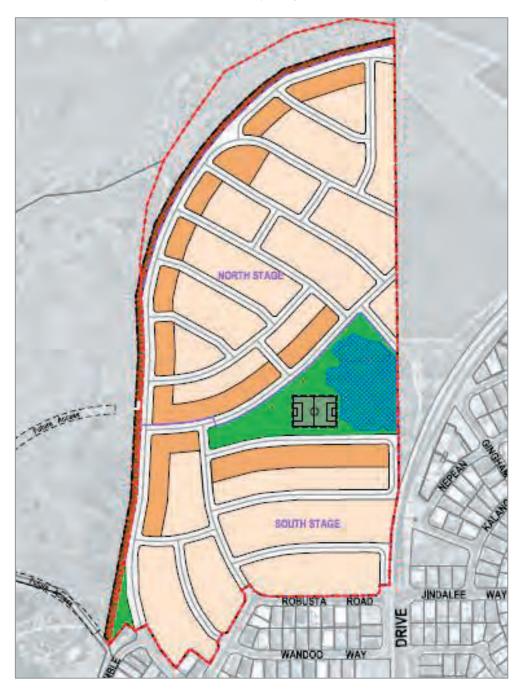


Figure 1: Proposed Structure Plan, Lot 9004

An historical aerial photograph of the site is shown below to depict the extent of the surrounding developments.

The residential developments to the south and east represent the extent of services.

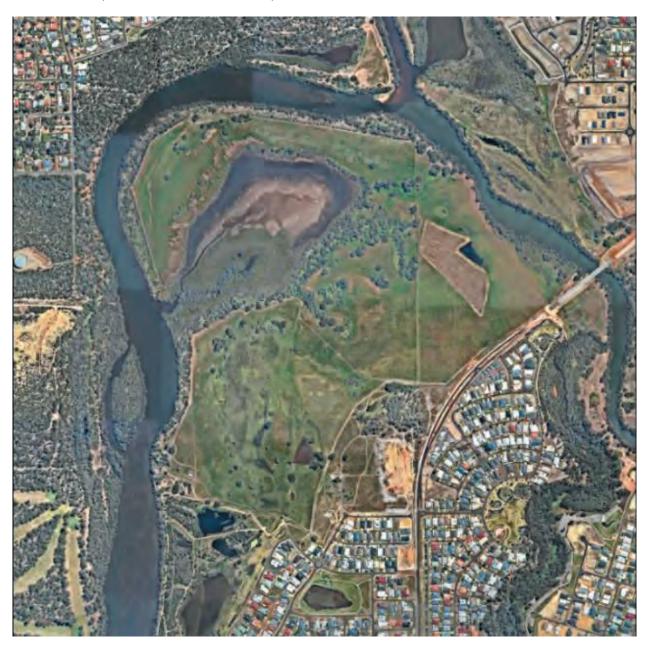


Figure 2: Aerial Imagery of Surrounding Area, Nearmaps 2018

2 Topography and Vegetation

The Site is adjacent to the east side of the Collie River and is bounded by Leicester Reserve to the north. Wandoo Way to the south and Eaton Drive to the east have the roads that bound the extent of the existing residential developments.

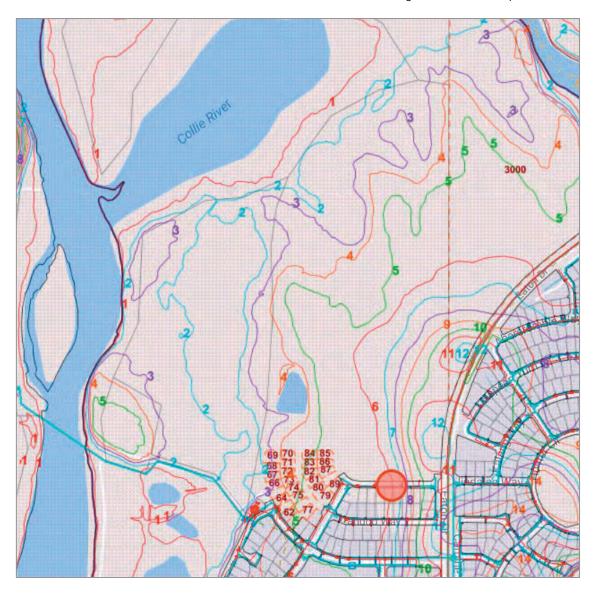


Figure 3: Contours of Site, Esinet Data, Water Corporation 2018

3 Existing Site Conditions

Approximately 51,500m³ of fill has been accessed from the area between December 2004 and November 2005.

The existing contours (predevelopment) show that the Site grades from an RL of 10m AHD in the south-eastern area down to approximately 3m AHD on the western side of the development.

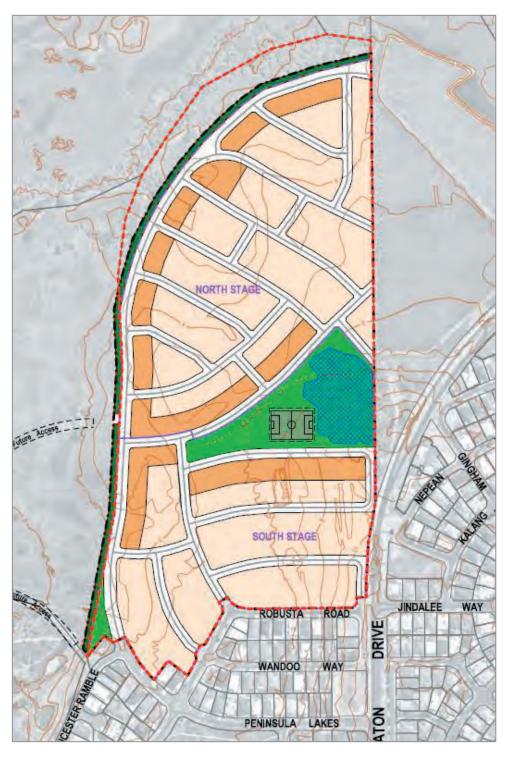


Figure 4: Proposed Subdivision Plan with Contours

4 Geotechnical Review

4.1 Site Classification

Assuming that recommended earthworks are implemented across the Site, site classifications of Class A and Class M can be expected to be achieved.

4.2 Groundwater Assessment

The geotechnical review advises that the groundwater level generally at and within 1m of the natural surface level should be allowed for in the design and during construction (excludes flood level requirements).

4.3 Acid Sulphate Soils

A preliminary assessment of acid sulphate soils (ASS) was conducted in December 2005 by Golder Associates. The results of this preliminary assessment showed that generally across the Site, actual ASS (AASS) can be expected to be encountered at depths of 3m or more. As shown in Figure 5, there is AASS at surface through to depths of 1.25m. Potential ASS has been encountered elsewhere throughout the geological profile.

Based on the geotechnical assessment, an Acid Sulphate Soils Management Plan will need to be prepared and implemented during any earthworks and construction.

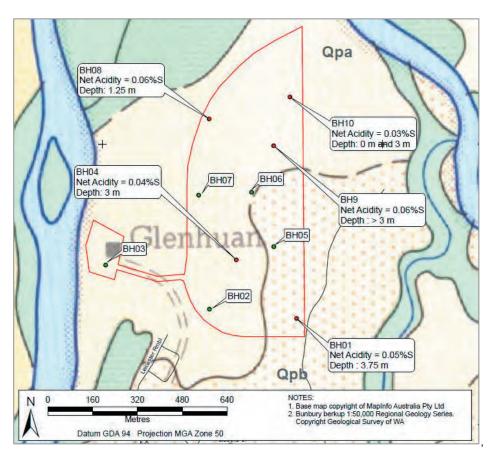


Figure 5: Results of ASS Testing, Golder Associates Report 2005

5 Roads and Pavement

The geotechnical assessment has advised that the pavement design should accommodate the relatively poor drainage conditions across the Site.

The existing pavement of Eaton Drive and the roads to the south are asphalted, kerbed roads. Major access to the southern stage of the proposed development will be via Robusta Road, Wandoo Way and Peninsula Lakes Road. There is currently no access shown off Eaton Drive for the north or southern stages.

The southern accesses are not expected to create any future traffic or safety issues. Should any future access points be required off Eaton Drive, a traffic study will be required to assess the safety and suitability of the access points.

There are back-of-kerb paths provided along Eaton Drive and Peninsula Lakes Drive and offset kerbs on the other residential streets. Additional paths would be expected as a result of development of the site.

6 Drainage Considerations

Stormwater disposal over the Site has been identified as a potential issue due to the low availability of free draining material and observed groundwater level.

Earthworked fill levels have been covered under Section

It is anticipated that a Drainage Management Plan will be requested for the site as a planning condition. This will require approval by Department of Water (DW).

6.1 Minor System

The minor drainage system is designed to cater for the 1 in 5 year rainfall event. Where possible, soakwells, rain gardens or shallow swales should be placed in road reserves to cater for this requirement. Road reserve widths should be designed to cater for this infrastructure.

The collection/storage nodes are to be connected by way of pipe (or swale in flatter areas) and discharged into compensation basins in the foreshore (adjacent lot - as in previous stages). These basins (as well as previously mentioned soakage structures) will not only ensure balance between pre and post development runoff volumes, but provide treatment chains to increase runoff water quality.

6.2 Major System

The 1 in 100 year rainfall event defines the major drainage system requirements. Road reserves and PAWs (in the event of trapped lows) will convey the major runoff events through to the foreshore. Adjacent lots and road gradients are to be designed to provide adequate capacity and freeboard for these events.

7 Hydraulic Modelling

A review of the hydraulic modelling was undertaken in April 2007 by SKM to investigate the impact of different development scenarios against a base line scenario as defined by the (WA) Department of Water. The concern that the development areas lie within the 1 in 100 year flood inundation area was shown to be unfounded and that there was no appreciable impact on the development/1 in 100 year event interface.

8 Earthworks Strategy and Considerations

All lot levels are to be above the 1 in 100 year flood level. Due to the presence of a clayey subgrade, the importation of additional fill is likely to be required to achieve the required separation between the AAMGL and the finished lot levels.

9 Sewer

The Site is currently serviced by a surrounding 150mm PVC sewer from Peninsula Lakes Drive at varying invert levels. This southern part of the proposed development will be directed to the existing sewer reticulation network via the gravity sewer. This part of the catchment will be directed to the existing wastewater pump station located in the south-western area of the Site.

The remainder of the Site will be directed to the vacuum sewer that services this part of the Site via Millbridge. The Water Corporation has confirmed that this strategy is the intention. The Water Corporation has confirmed that no prefundable infrastructure is required for the vacuum sewer area.

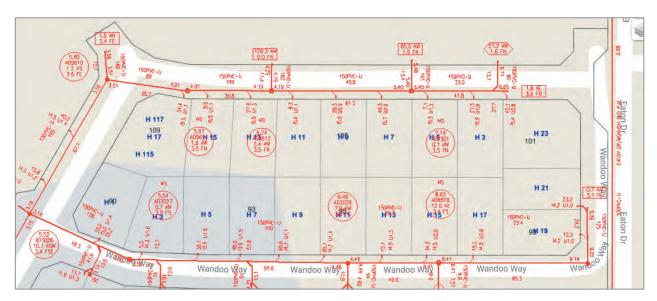


Figure 6: Existing Sewer Reticulation, Esinet Data, Water Corporation 2018

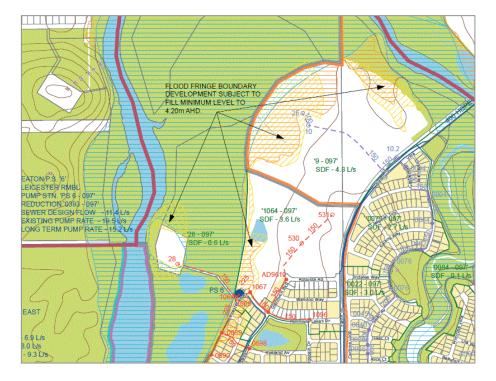


Figure 7: Sewer Plan, Water Corporation

10 Water

The proposed subdivision is likely to be connected to the existing 150P-12 reticulation capped ends that are shown in the extract from Esinet below.

A 600mm diameter water main was installed along Peninsula Lakes Drive in the first half of 2007. This main connects to a 375mm truck main on the eastern verge of Eaton Drive.

Water Corporation confirms that adequate water capacity exists to serve the proposed development.



Figure 8: Existing Water Reticulation, Esinet Data, Water Corporation 2018

11 Gas Reticulation

According to information supplied by ATCO Gas, there is existing 63PE 1.5 MP 70kPa gas reticulation in the existing southern development. These stubs are likely to be the connection points for the proposed subdivision's gas reticulation.

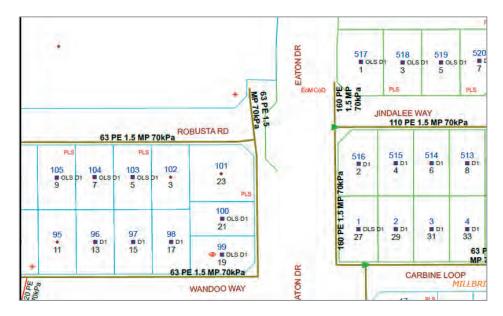


Figure 9: Existing Gas Reticulation, ATCO Gas 2018

12 Power

The HV concept plan will need to be revisited to ensure that alternative feeds are available and that the ringmain is maintained after every second transformer is installed. The HV concept plan will also be dependent on the stage sizes, location and timing to ensure compliance with WP requirements.

Underground power is to be provided to the development via the two High Voltage feeders available in Eaton Drive. No supply challenges are anticipated. All future developments are Option B (ie Western Power no longer supply cables and clearance can only be obtained on handover of infrastructure).

Telecommunications 13

It is expected that the telecommunications will be connected to the existing services available in Eaton Drive and to the south along Wandoo Way.

It is not expected that there will be a requirement for additional hubs or upgrades or backhaul to existing services for the telecommunications, but any backhaul requirements are unknown until a formal application is made.



(Appendix ORD: 12.2.1C) calibre



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